



Tuesday, November 19, 2019

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1910445
Project Name: CERCLA, OCTOBER 2019
Project Number: I20-002

Dear Ms. Waters-Husted:

Nine water samples were received from CH2M HILL Plateau Remediation Company, on 10/18/2019. The samples were scheduled for the following analyses:

- Inorganics
- Metals
- Strontium-90

The results for these analyses are contained in the enclosed reports.

This report was originally submitted on November 15, 2019. The report has been revised to correct the client sample identification on 1910445-1.

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
Katie M. O'Brien
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, any 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.

PROBLEM AND DISCREPANCY (P&D) REPORT		P&D Number: PD20-0007 Rev. Number: 0 Laboratory: ALS SDG Number: ALS1910445 Date Initiated: 11/19/2019
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	I20-002	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE MATRIX:	WATER	
<u>ISSUE BACKGROUND</u>		
CLASS:	Miscellaneous Issues	
TYPE:	Other	
DESCRIPTION:	In SDG ALS1910445, sample B3RM15 is misspelled as B3RB15.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Please correct the issue and resubmit the hard copy and electronic copy data packages.	
SUBMITTED BY:		
CAMPBELL, SC		11/19/2019

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910445

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: CERCLA, OCTOBER 2019

Client Project Number: I20-002

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3RM15	1910445-1		WATER	15-Oct-19	8:46
B3RM11	1910445-2		WATER	15-Oct-19	8:46
B3RMV8	1910445-3		WATER	15-Oct-19	10:40
B3RMW3	1910445-4		WATER	15-Oct-19	10:10
B3RMW7	1910445-5		WATER	15-Oct-19	10:10
B3RLB6	1910445-6		WATER	15-Oct-19	8:00
B3RL99	1910445-7		WATER	15-Oct-19	8:00
B3RLB7	1910445-8		WATER	15-Oct-19	13:09
B3RLB0	1910445-9		WATER	15-Oct-19	13:09

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1910445			C.O.C.# I20-002-026			
					Page 1 of 1			
Collector: CHRIS FULTON <small>CHPRC</small>		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: I20-002		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: CERCLA, OCTOBER 2019		Logbook No.: HNF-N-506 110-68		Ice Chest No.: GWS-663				
Shipped To (Lab): ALS Environmental Ft. Collins		Method of Shipment: Commercial Carrier		Bill of Lading/Air Bill No.: 7767 3095 9366				
Protocol: CERCLA		Priority: 30 Days		Offsite Property No.: N/A				
POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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 N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3RM15 1	Y		OCT 15 2019	0846	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 06	6 Months	HNO3 to pH <2
B3RM11 2	N	W	↓	0846	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 06	6 Months	HNO3 to pH <2

Relinquished By			Received By			Matrix *	
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time		
CHRIS FULTON CHPRC		OCT 15 2019 <small>1025</small>	Lady Wall CHPRC		OCT 15 2019 <small>1051</small>	S = Soil	DS = Drum Solids
Lady Wall CHPRC		OCT 15 2019	SSU-1	SSU-1	OCT 15 2019	SE = Sediment	DL = Drum Liquids
SSU-1	SSU-1	OCT 16 2019 <small>0645</small>	Troy Bacon CHPRC	Troy Bacon	OCT 16 2019 <small>0645</small>	SO = Solid	T = Tissue
Troy Bacon CHPRC		OCT 16 2019 <small>1400</small>	FEDEX	FEDEX		SL = Sludge	WI = Wipe
FEDEX	FEDEX		EMILY LYONS		10.18.19 0900	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:
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Collector: CHRIS FULTON CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I20-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, OCTOBER 2019	Logbook No.: HNF-N-506 110-68	Ice Chest No.: GWS-663
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7767 3095 9366
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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 N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3RMV8	3	N	OCT 15 2019	1040	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By			Received By			Matrix *
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time	
CHRIS FULTON CHPRC		OCT 15 2019	SSU-1		OCT 15 2019	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
SSU-1	SSU-1	OCT 16 2019	Troy Bacon CHPRC	Troy L. Bacon	OCT 16 2019	
Troy Bacon CHPRC	Troy L. Bacon	OCT 16 2019	FEDEX	FEDEX		
FEDEX	FEDEX		EMILY LYONS	Emily Lyons	10-18-19 0900	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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CH2MHill Plateau
Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
I20-002-030

1910445

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Collector: CHRIS FULTON CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I20-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, OCTOBER 2019	Logbook No.: HNF-N-506 110-68	Ice Chest No.: GWS-663
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7767 3095 9366
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3RMW3 4	N	W	OCT 15 2019	1010	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 06	6 Months	HNO3 to pH <2
B3RMW7 5	Y	W	↓	1010	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 06	6 Months	HNO3 to pH <2

Relinquished By

Received By

Matrix *

Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
CHRIS FULTON CHPRC Lady Wall		OCT 15 2019	Lady Wall CHPRC		OCT 15 2019
SSU-1	SSU-1	OCT 16 2019	SSU-1	SSU-1	OCT 15 2019
Troy Bacon CHPRC		OCT 16 2019	Troy Bacon CHPRC		OCT 16 2019
FEDEX	FEDEX		FEDEX	FEDEX	
			EMILY LYONS		10-18-19 0900

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# I20-002-044
		1910449		Page 1 of 1
Collector: Larry Roane ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650		
SAF No.: I20-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071		
Project Title: CERCLA, OCTOBER 2019	Logbook No.: HNF-N-506 112/32	Ice Chest No.: 6WS-663		
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 7767 3095 9366		
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: N/A		

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3RLB6 6	Y	W	OCT 15 2019	0800	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1); 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3RL99 7	N	W	OCT 15 2019	0800	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1); 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3RL99 7	N	W	OCT 15 2019	0800	2x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By			Received By			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
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time	
Larry Roane ICHPRC	<i>Larry Roane</i>	1315 OCT 15 2019	Roger Friesz Jr. ICHPRC	<i>Roger Friesz Jr.</i>	1315 OCT 15 2019	
Roger Friesz Jr. ICHPRC	<i>Roger Friesz Jr.</i>	1340 OCT 15 2019	SSU-1	SSU-1	1340 OCT 15 2019	
SSU-1 Troy Bacon ICHPRC	<i>Troy Bacon</i>	1400 OCT 16 2019	Troy Bacon ICHPRC	<i>Troy Bacon</i>	1400 OCT 16 2019	
FEDEX	FEDEX	1400	FEDEX	FEDEX		
			EMILY LYONS	<i>Emily Lyons</i>	10-18-19 0900	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1910445	C.O.C.# I20-002-045 Page 1 of 1
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Collector: Larry Rosano ICPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: I20-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, OCTOBER 2019	Logbook No.: HNF-N-506 112 / 32	Ice Chest No.: GWS-663
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 776730959366
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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 N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3RLB7 8	Y	W	OCT 15 2019	1309	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1); 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3RLB0 9	N	W	OCT 15 2019	1309	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: Chromium (1); 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3RLB0 ↓	N	W	OCT 15 2019	1309	2x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

Relinquished By			Received By			Matrix *
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time	
Larry Rosano ICPRC		OCT 15 2019 1340	Roger Frieaz Jr. ICPRC		OCT 15 2019 1340	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SL = Solid T = Tissue SI = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
SSU-1		OCT 16 2019 1400	SSU-1		OCT 15 2019 1340	
Troy Bacon ICPRC		OCT 16 2019 1400	FEDEX		OCT 16 2019 0900	
FEDEX	FEDEX		EMILY LYON		10.18.19 0900	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1910445
Project Manager: KMO Initials: CDT Date: 10-18-19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	<input checked="" type="radio"/> YES	<input type="radio"/> NO
2. Are custody seals on shipping containers intact?		NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO *
3. Are custody seals on sample containers intact?		NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO *
4. Is there a COC (chain-of-custody) present?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
6. Are short-hold samples present?			<input type="radio"/> YES	<input checked="" type="radio"/> NO
7. Are all samples within holding times for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
8. Were all sample containers received intact? (not broken or leaking)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
9. Is there sufficient sample for the requested analyses?			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
10. Are samples in proper containers for requested analyses? (form 250, Sample Handling Guidelines)			<input checked="" type="radio"/> YES	<input type="radio"/> NO *
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	<input checked="" type="radio"/> YES	<input type="radio"/> NO *
12. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		<input checked="" type="radio"/> N/A	<input type="radio"/> YES	<input type="radio"/> NO
13. Were the samples shipped on ice?			<input checked="" type="radio"/> YES	<input type="radio"/> NO
14. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#3	<input checked="" type="radio"/> #5	RAD ONLY
Cooler #: <u>663</u>				
Temperature (°C): <u>2.4</u>				
# of custody seals on cooler: <u>2</u>				
External mR/hr reading: <u>10</u>				
Background mR/hr reading: <u>12</u>				
Were external mR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)				

* Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

Were unpreserved bottles pH checked? YES / NO / NA All client bottle ID's vs ALS lab ID's double-checked by: CDT

If applicable, was the client contacted? YES / NO / NA, Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 10/22/19

1910445

ORIGIN ID#8CA (509) 531-0450
TROY BACON
CH2M
6257 LATW-H-ST.
RICHLAND WA 99352
UNITED STATES US

SHIP DATE: 16OCT19
ACTWGT: 57.00 LB
CAD: 107069051ANET4160
BILL THIRD PARTY

1910445

TO JULIE ELLINGSON
ALS GLOBAL-FORT COLLINS
225 COMMERCE DR

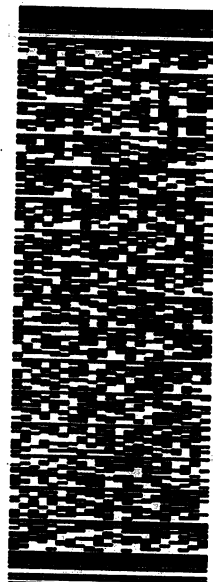
FORT COLLINS CO 80524

REF: 30072# GWS-663

10-2
2.2

557J32A3C05A2

PO: (970) 490-1511
NW: DEPT:

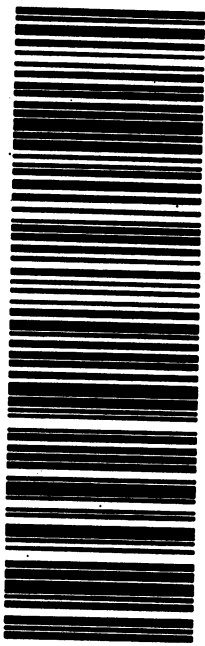


TRK# 7767 3095 9366
0201

THU - 17 OCT 10:30A
PRIORITY OVERNIGHT

XH FTCA

DSR 80524
COUS DEN



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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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



Inorganics Case Narrative

CH2M HILL Plateau Remediation Company

CERCLA, OCTOBER 2019 -- I20-002

Work Order Number: 1910445

1. The sample was prepared for analysis based on Standard Methods for the Examination of Water and Wastewater, 20th Edition 1998 procedures.
2. The sample was analyzed following Standard Method procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
Hydroxide	SM2320B	1106

3. All standards and solutions were used within their recommended shelf life.
4. The sample was prepared and analyzed within the established hold time for this analysis.

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

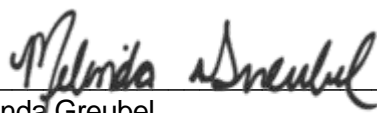
5. General quality control procedures.
 - A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the sample in this preparation batch.
 - The method blank associated with this batch was below the reporting limit for the requested analyte. Sample results have been compared to the blank results and are flagged as appropriate.
 - All laboratory control sample criteria were met.
6. Matrix specific quality control procedures.



Sample 1910445-3 was designated as the quality control sample for this analysis.

- A sample duplicate was prepared and analyzed with this batch. All guidance criteria for precision were met.
7. A reduced aliquot was taken of the sample for the total alkalinity analysis. Reporting limits were elevated accordingly.

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.



Melinda Greubel
Inorganics Primary Data Reviewer

11/5/19
Date



Inorganics Final Data Reviewer

11/12/19
Date



Inorganic Data Reporting Qualifiers

The following qualifiers are used as needed by the laboratory when reporting results of inorganic analyses.

- Concentration 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 ALS's Method Detection Limit. If the analyte was analyzed for but not detected a "U" is entered.
- 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.

BICARBONATE AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: CERCLA, OCTOBER 2019 I20-002
Work Order Number: 1910445 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** UG/L
Analyst: Lisa M. Champagne

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/LOQ/LOD	Flag	Sample Aliquot
B3RMV8	1910445-3	10/15/2019	10/24/2019	10/24/2019	N/A	1	200000	20000		25 ml

Comments:

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

Data Package ID: AK1910445-1

CARBONATE AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: CERCLA, OCTOBER 2019 I20-002
Work Order Number: 1910445 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** UG/L
Analyst: Lisa M. Champagne

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/LOQ/LOD	Flag	Sample Aliquot
B3RMV8	1910445-3	10/15/2019	10/24/2019	10/24/2019	N/A	1	20000	20000	U	25 ml

Comments:

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

Data Package ID: AK1910445-1

HYDROXIDE AS CaCO₃**Method SM2320BH****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: CERCLA, OCTOBER 2019 I20-002
Work Order Number: 1910445 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** UG/L
Analyst: Lisa M. Champagne

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/LOQ/LOD	Flag	Sample Aliquot
B3RMV8	1910445-3	10/15/2019	10/24/2019	10/24/2019	N/A	1	20000	20000	U	25 ml

Comments:

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

Data Package ID: AK1910445-1

TOTAL ALKALINITY AS CaCO₃**Method SM2320B****Sample Results**

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: CERCLA, OCTOBER 2019 I20-002
Work Order Number: 1910445 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** UG/L
Analyst: Lisa M. Champagne

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/LOQ/LOD	Flag	Sample Aliquot
B3RMV8	1910445-3	10/15/2019	10/24/2019	10/24/2019	N/A	1	200000	20000		25 ml

Comments:

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

Data Package ID: AK1910445-1

BICARBONATE AS CaCO3

Method SM2320B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: AK191024-1MB

Sample Matrix: WATER
% Moisture: N/A

Prep Batch: AK191024-1
QCBatchID: AK191024-1-1
Run ID: AK191024-1A1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ml
Final Volume: 100 ml
Result Units: UG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK191024-1MB	10/24/2019	10/24/2019	N/A	1	5000	5000	U

Comments:

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

Data Package ID: AK1910445-1

CARBONATE AS CaCO₃**Method SM2320B****Method Blank****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Lab ID:** AK191024-1MB**Sample Matrix:** WATER**% Moisture:** N/A**Prep Batch:** AK191024-1**QCBatchID:** AK191024-1-1**Run ID:** AK191024-1A1**Cleanup:** NONE**Basis:** N/A**Sample Aliquot:** 100 ml**Final Volume:** 100 ml**Result Units:** UG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK191024-1MB	10/24/2019	10/24/2019	N/A	1	5000	5000	U

Comments:

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

Data Package ID: AK1910445-1

HYDROXIDE AS CaCO3**Method SM2320BH****Method Blank****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Lab ID:** AK191024-1MB**Sample Matrix:** WATER**% Moisture:** N/A**Prep Batch:** AK191024-1**QCBatchID:** AK191024-1-1**Run ID:** AK191024-1A1**Cleanup:** NONE**Basis:** N/A**Sample Aliquot:** 100 ml**Final Volume:** 100 ml**Result Units:** UG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK191024-1MB	10/24/2019	10/24/2019	N/A	1	5000	5000	U

Comments:

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

Data Package ID: AK1910445-1

TOTAL ALKALINITY AS CaCO3

Method SM2320B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: AK191024-1MB

Sample Matrix: WATER
% Moisture: N/A

Prep Batch: AK191024-1
QCBatchID: AK191024-1-1
Run ID: AK191024-1A1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 100 ml
Final Volume: 100 ml
Result Units: UG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK191024-1MB	10/24/2019	10/24/2019	N/A	1	5000	5000	U

Comments:

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

Data Package ID: AK1910445-1

TOTAL ALKALINITY AS CaCO3

Method SM2320B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: AK191024-1LCS

Sample Matrix: WATER

Prep Batch: AK191024-1

Sample Aliquot: 100 ml

% Moisture: N/A

QCBatchID: AK191024-1-1

Final Volume: 100 ml

Date Collected: N/A

Run ID: AK191024-1A1

Result Units: UG/L

Date Extracted: 10/24/2019

Cleanup: NONE

Date Analyzed: 10/24/2019

Basis: N/A

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
3812-32-6	TOTAL ALKALINITY AS CaCO3	100000	107000	5000		107	85 - 115

Data Package ID: AK1910445-1

BICARBONATE AS CaCO3**Method SM2320B****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** UG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3RMV8	1910445-3D	10/24/2019	10/24/2019	1	203000		200000		20000	1	15

Comments:

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

Data Package ID: AK1910445-1**Date Printed:** Tuesday, November 05, 2019**ALS -- Fort Collins**

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LIMS Version: 6.915

CARBONATE AS CaCO₃**Method SM2320B****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** UG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3RMV8	1910445-3D	10/24/2019	10/24/2019	1	20000	U	20000	U	20000		15

Comments:

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

Data Package ID: AK1910445-1**Date Printed:** Tuesday, November 05, 2019**ALS -- Fort Collins**

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LIMS Version: 6.915

HYDROXIDE AS CaCO3**Method SM2320BH****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** UG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3RMV8	1910445-3D	10/24/2019	10/24/2019	1	20000	U	20000	U	20000		15

Comments:

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

Data Package ID: AK1910445-1

TOTAL ALKALINITY AS CaCO₃**Method SM2320B****Duplicate Sample Results****Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Reporting Basis:** As Received**Sample Aliquot:** 25 ml**Final Volume:** 100ml**Matrix:** WATER**Result Units:** UG/L

Client Sample ID	Lab ID	Date Prepared	Date Analyzed	Dilution Factor	Duplicate Result	Dup Qual	Sample Result	Samp Qual	Reporting Limit	RPD	RPD Limit
B3RMV8	1910445-3D	10/24/2019	10/24/2019	1	203000		200000		20000	1	15

Comments:

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

Data Package ID: AK1910445-1**Date Printed:** Tuesday, November 05, 2019**ALS -- Fort Collins**

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LIMS Version: 6.915

Prep Batch ID: AK191024-1

Start Date: 10/24/19	End Date: 10/24/19	Concentration Method: NONE	Batch Created By: lmc
Start Time: 11:44	End Time: 14:30	Extract Method: NONE	Date Created: 10/24/19
Prep Analyst: Lisa M. Champagne		Initial Volume Units: ml	Time Created: 14:26
Comments:		Final Volume Units: ml	Validated By: lmc
			Date Validated: 10/25/19
			Time Validated: 11:42

QC Batch ID: AK191024-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
AK191024-1	MB	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1910445
AK191024-1	LCS	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1910445
1910445-3	DUP	B3RMV8	WATER	10/15/2019	25	100	NONE	1	1910445
1910452-3	DUP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910445-3	SMP	B3RMV8	WATER	10/15/2019	25	100	NONE	1	1910445
1910451-1	SMP	XXXXXX	SLUDGE	XXXXXX	2.58	100	NONE	1	1910451
1910451-2	SMP	XXXXXX	SLUDGE	XXXXXX	2.64	100	NONE	1	1910451
1910451-3	SMP	XXXXXX	SLUDGE	XXXXXX	2.59	100	NONE	1	1910451
1910451-4	SMP	XXXXXX	SLUDGE	XXXXXX	2.65	100	NONE	1	1910451
1910452-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910452-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910452-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910452-4	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910452-5	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910452-6	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910452
1910500-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1910500

QC Types

CAR	Carrier reference sample		DLS	Detection Limit Standard	
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample	
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification	
LOQV	Limit of Quantitation Verification		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	



Metals

Case Narrative

CH2M HILL Plateau Remediation Company

CERCLA, OCTOBER 2019 -- I20-002

Work Order Number: 1910445

1. 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.

2. Analysis by ICP-MS followed method 6020B and the current revision of SOP 827.

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

3. All standards and solutions are NIST traceable and were used within their recommended shelf life.
4. The samples were prepared and analyzed within the established hold time.

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

5. 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 and are flagged as appropriate. Potassium, sodium and uranium were detected above the MDL.
 - 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 read-backs associated with Method 6010D were within acceptance criteria.
- The interference check samples associated with Method 6020B were analyzed.

6. Matrix specific quality control procedures.

Sample 1910446-1 was designated as the quality control sample for the 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 and precision were met.
- Matrix spike recoveries could not be evaluated for the following analyte:

<u>Analyte</u>	<u>Sample ID</u>
Manganese	1910446-1

The concentration of this analyte in the native sample was 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 sample indicates that the digestion and analysis were in control.

- A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.
7. 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.

Megan Johnstone
Megan Johnstone
Inorganics Primary Data Reviewer

11/19/19
Date

Kath M. W.
Inorganics Final Data Reviewer

11/19/19
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 ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RM15
Lab ID:	1910445-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 15-Oct-19
Date Extracted: 07-Nov-19
Date Analyzed: 08-Nov-19
Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
QCBatchID: IP191107-2-2
Run ID: IT191108-1A2
Cleanup: NONE
Basis: As Received
File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	200		50	36
7440-70-2	CALCIUM	1	98000		1000	210
7439-89-6	IRON	1	97		50	30
7439-95-4	MAGNESIUM	1	23000		750	89
7440-09-7	POTASSIUM	1	7900		1000	130
7440-23-5	SODIUM	1	36000		500	38
7440-62-2	VANADIUM	1	8.3	B	10	0.43

Data Package ID: *it1910445-1*

Total Recoverable ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RM11
Lab ID:	1910445-2

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	200		50	36
7440-70-2	CALCIUM	1	100000		1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	23000		750	89
7440-09-7	POTASSIUM	1	8200		1000	130
7440-23-5	SODIUM	1	36000		500	38
7440-62-2	VANADIUM	1	8.1	B	10	0.43

Data Package ID: *it1910445-1*

Total Recoverable ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RMW3
Lab ID:	1910445-4

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	58000		1000	210
7439-89-6	IRON	1	58		50	30
7439-95-4	MAGNESIUM	1	12000		750	89
7440-09-7	POTASSIUM	1	4800		1000	130
7440-23-5	SODIUM	1	20000		500	38
7440-62-2	VANADIUM	1	4.7	B	10	0.43

Data Package ID: *it1910445-1*

Dissolved ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID: B3RMW7

Lab ID: 1910445-5

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 15-Oct-19

Date Extracted: 07-Nov-19

Date Analyzed: 08-Nov-19

Prep Method: SW3005 Rev A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-2

Run ID: IT191108-1A2

Cleanup: NONE

Basis: As Received

File Name: 191108A.

Analyst: Steve Workman

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	60000		1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	12000		750	89
7440-09-7	POTASSIUM	1	5000		1000	130
7440-23-5	SODIUM	1	20000		500	38
7440-62-2	VANADIUM	1	4.5	B	10	0.43

Data Package ID: *it1910445-1*

Dissolved ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB6
Lab ID:	1910445-6

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	210	U	1000	210
7439-89-6	IRON	1	34	B	50	30
7439-95-4	MAGNESIUM	1	89	U	750	89
7440-09-7	POTASSIUM	1	160	BC	1000	130
7440-23-5	SODIUM	1	100	BC	500	38
7440-62-2	VANADIUM	1	0.43	U	10	0.43

Data Package ID: *it1910445-1*

Total Recoverable ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RL99
Lab ID:	1910445-7

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	210	U	1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	89	U	750	89
7440-09-7	POTASSIUM	1	130	BC	1000	130
7440-23-5	SODIUM	1	91	BC	500	38
7440-62-2	VANADIUM	1	0.43	U	10	0.43

Data Package ID: *it1910445-1*

Dissolved ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB7
Lab ID:	1910445-8

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	31000		1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	11000		750	89
7440-09-7	POTASSIUM	1	4000		1000	130
7440-23-5	SODIUM	1	6400		500	38
7440-62-2	VANADIUM	1	23		10	0.43

Data Package ID: *it1910445-1*

Total Recoverable ICP Metals

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB0
Lab ID:	1910445-9

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 08-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-2
 Run ID: IT191108-1A2
 Cleanup: NONE
 Basis: As Received
 File Name: 191108A.

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

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	31000		1000	210
7439-89-6	IRON	1	31	B	50	30
7439-95-4	MAGNESIUM	1	11000		750	89
7440-09-7	POTASSIUM	1	4000		1000	130
7440-23-5	SODIUM	1	6400		500	38
7440-62-2	VANADIUM	1	24		10	0.43

Data Package ID: *it1910445-1*

Dissolved ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID: B3RM15

Lab ID: 1910445-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 15-Oct-19

Date Extracted: 07-Nov-19

Date Analyzed: 13-Nov-19

Prep Method: SW3005 Rev A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-4

Run ID: IM191113-10A7

Cleanup: NONE

Basis: As Received

File Name: 053SMPL_

Analyst: Nicole C. Chirban

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
7440-47-3	CHROMIUM	10	19		10	0.46
7439-96-5	MANGANESE	10	0.4	B	5	0.36
7439-98-7	MOLYBDENUM	10	2.8		2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92

Data Package ID: *im1910445-1*

Date Printed: Thursday, November 14, 2019

ALS -- Fort Collins

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LIMS Version: 6.915

Total Recoverable ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RM11
Lab ID:	1910445-2

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 15-Oct-19

Date Extracted: 07-Nov-19

Date Analyzed: 13-Nov-19

Prep Method: SW3005 Rev A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-4

Run ID: IM191113-10A7

Cleanup: NONE

Basis: As Received

File Name: 054SMPL_

Analyst: Nicole C. Chirban

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
7440-47-3	CHROMIUM	10	19		10	0.46
7439-96-5	MANGANESE	10	0.36	U	5	0.36
7439-98-7	MOLYBDENUM	10	2.8		2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92

Data Package ID: *im1910445-1*

Total Recoverable ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RMW3
Lab ID:	1910445-4

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 13-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-4
 Run ID: IM191113-10A7
 Cleanup: NONE
 Basis: As Received
 File Name: 055SMPL_

Analyst: Nicole C. Chirban
 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
7440-47-3	CHROMIUM	10	7.4	B	10	0.46
7439-96-5	MANGANESE	10	1.4	B	5	0.36
7439-98-7	MOLYBDENUM	10	2.5		2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92

Data Package ID: *im1910445-1*

Dissolved ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID: B3RMW7

Lab ID: 1910445-5

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 15-Oct-19

Date Extracted: 07-Nov-19

Date Analyzed: 13-Nov-19

Prep Method: SW3005 Rev A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-4

Run ID: IM191113-10A7

Cleanup: NONE

Basis: As Received

File Name: 056SMPL_

Analyst: Nicole C. Chirban

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
7440-47-3	CHROMIUM	10	7.1	B	10	0.46
7439-96-5	MANGANESE	10	0.36	U	5	0.36
7439-98-7	MOLYBDENUM	10	2.6		2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92

Data Package ID: *im1910445-1*

Dissolved ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB6
Lab ID:	1910445-6

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 15-Oct-19

Date Extracted: 07-Nov-19

Date Analyzed: 13-Nov-19

Prep Method: SW3005 Rev A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-5

Run ID: IM191113-10A7

Cleanup: NONE

Basis: As Received

File Name: 057SMPL_

Analyst: Nicole C. Chirban

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
7440-47-3	CHROMIUM	10	0.63	B	10	0.46
7440-61-1	URANIUM	10	0.01	BC	0.1	0.0049

Data Package ID: *im1910445-1*

Total Recoverable ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RL99
Lab ID:	1910445-7

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 13-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-5
 Run ID: IM191113-10A7
 Cleanup: NONE
 Basis: As Received
 File Name: 060SMPL_

Analyst: Nicole C. Chirban
 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
7440-47-3	CHROMIUM	10	0.85	B	10	0.46
7440-61-1	URANIUM	10	0.0049	U	0.1	0.0049

Data Package ID: *im1910445-1*

Dissolved ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB7
Lab ID:	1910445-8

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 13-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-5
 Run ID: IM191113-10A7
 Cleanup: NONE
 Basis: As Received
 File Name: 061SMPL_

Analyst: Nicole C. Chirban
 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
7440-47-3	CHROMIUM	10	86		10	0.46
7440-61-1	URANIUM	10	1.1		0.1	0.0049

Data Package ID: *im1910445-1*

Total Recoverable ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB0
Lab ID:	1910445-9

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 15-Oct-19
 Date Extracted: 07-Nov-19
 Date Analyzed: 13-Nov-19
 Prep Method: SW3005 Rev A

Prep Batch: IP191107-2
 QCBatchID: IP191107-2-5
 Run ID: IM191113-10A7
 Cleanup: NONE
 Basis: As Received
 File Name: 062SMPL_

Analyst: Nicole C. Chirban
 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
7440-47-3	CHROMIUM	10	87		10	0.46
7440-61-1	URANIUM	10	1.1		0.1	0.0049

Data Package ID: *im1910445-1*

ICP Metals

Method SW6010D

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: IP191107-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Nov-19

Date Analyzed: 08-Nov-19

Prep Batch: IP191107-2

QCBatchID: IP191107-2-2

Run ID: IT191108-1A2

Cleanup: NONE

Basis: N/A

File Name: 191108A.

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
7440-42-8	BORON	1	36	U	50	36
7440-70-2	CALCIUM	1	210	U	1000	210
7439-89-6	IRON	1	30	U	50	30
7439-95-4	MAGNESIUM	1	89	U	750	89
7440-09-7	POTASSIUM	1	170	B	1000	130
7440-23-5	SODIUM	1	92	B	500	38
7440-62-2	VANADIUM	1	0.43	U	10	0.43

Data Package ID: *it1910445-1*

ICP Metals

Method SW6010D

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: IP191107-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 11/07/2019

Date Analyzed: 11/08/2019

Prep Method: SW3005A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-2

Run ID: IT191108-1A2

Cleanup: NONE

Basis: N/A

File Name: 191108A.

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	1010	50		101	80 - 120%
7440-70-2	CALCIUM	40000	36900	1000		92	80 - 120%
7439-89-6	IRON	1000	938	50		94	80 - 120%
7439-95-4	MAGNESIUM	40000	38600	750		97	80 - 120%
7440-09-7	POTASSIUM	40000	36800	1000		92	80 - 120%
7440-23-5	SODIUM	40000	40100	500		100	80 - 120%
7440-62-2	VANADIUM	500	496	10		99	80 - 120%

Data Package ID: *it1910445-1*

ICP Metals

Method SW6010D

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP191107-2	Sample Aliquot: 50 ml
LabID: 1910446-1MS	% Moisture: N/A	QCBatchID: IP191107-2-2	Final Volume: 50 ml
	Date Collected: 15-Oct-19	Run ID: IT191108-1A2	Result Units: UG/L
	Date Extracted: 07-Nov-19	Cleanup: NONE	File Name: 191108A.
	Date Analyzed: 08-Nov-19	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
7440-42-8	BORON	36	U	1020		50	1000	102	80 - 120%
7440-70-2	CALCIUM	37000		74500		1000	40000	93	80 - 120%
7439-89-6	IRON	350		1220		50	1000	87	80 - 120%
7439-95-4	MAGNESIUM	6400		45000		750	40000	97	80 - 120%
7440-09-7	POTASSIUM	2200	C	39700		1000	40000	94	80 - 120%
7440-23-5	SODIUM	6200		45900		500	40000	99	80 - 120%
7440-62-2	VANADIUM	0.43	U	494		10	500	99	80 - 120%

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP191107-2	Sample Aliquot: 50 ml
LabID: 1910446-1MSD	% Moisture: N/A	QCBatchID: IP191107-2-2	Final Volume: 50 ml
	Date Collected: 15-Oct-19	Run ID: IT191108-1A2	Result Units: UG/L
	Date Extracted: 07-Nov-19	Cleanup: NONE	File Name: 191108A.
	Date Analyzed: 08-Nov-19	Basis: As Received	
	Prep Method: SW3005 Rev A		

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-42-8	BORON	1010		1000	101	50	20	0
7440-70-2	CALCIUM	74000		40000	91	1000	20	1
7439-89-6	IRON	1210		1000	87	50	20	0
7439-95-4	MAGNESIUM	44800		40000	96	750	20	1
7440-09-7	POTASSIUM	39600		40000	93	1000	20	0
7440-23-5	SODIUM	45700		40000	99	500	20	1
7440-62-2	VANADIUM	491		500	98	10	20	1

Data Package ID: *it1910445-1*

Prep Batch ID: IP191107-2

Start Date: 11/07/19	End Date: 11/07/19	Concentration Method: NONE	Batch Created By: jml
Start Time: 10:00	End Time: 18:00	Extract Method: SW3005A	Date Created: 11/07/19
Prep Analyst: Jill M. Latelle		Initial Volume Units: ml	Time Created: 10:01
Comments:		Final Volume Units: ml	Validated By: jml
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 11/07/19
			Time Validated: 10:56

QC Batch ID: IP191107-2-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP191107-2	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
IP191107-2	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910445-1	SMP	B3RM15	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-2	SMP	B3RM11	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-4	SMP	B3RMW3	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-5	SMP	B3RMW7	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-6	SMP	B3RLB6	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-7	SMP	B3RL99	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-8	SMP	B3RLB7	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-9	SMP	B3RLB0	WATER	10/15/2019	50	50	NONE	1	1910445
1910446-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-2	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446

QC Types

CAR	Carrier reference sample	DLS	Detection Limit Standard
DUP	Laboratory Duplicate	LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat	LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification	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

ICPMS Metals

Method SW6020B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: IP191107-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Nov-19

Date Analyzed: 13-Nov-19

Prep Batch: IP191107-2

QCBatchID: IP191107-2-4

Run ID: IM191113-10A7

Cleanup: NONE

Basis: N/A

File Name: 048SMPL_

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
7440-47-3	CHROMIUM	10	0.46	U	10	0.46
7439-96-5	MANGANESE	10	0.36	U	5	0.36
7439-98-7	MOLYBDENUM	10	0.079	U	2	0.079
7440-02-0	NICKEL	10	0.92	U	20	0.92
7440-61-1	URANIUM	10	0.01	B	0.1	0.0049

Data Package ID: *im1910445-1*

ICPMS Metals

Method SW6020B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: IM191107-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 11/07/2019

Date Analyzed: 11/13/2019

Prep Method: SW3005A

Prep Batch: IP191107-2

QCBatchID: IP191107-2-4

Run ID: IM191113-10A7

Cleanup: NONE

Basis: N/A

File Name: 049SMPL_

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	485	10		97	80 - 120%
7439-96-5	MANGANESE	100	100	5		100	80 - 120%
7439-98-7	MOLYBDENUM	100	97.5	2		97	80 - 120%
7440-02-0	NICKEL	500	475	20		95	80 - 120%
7440-61-1	URANIUM	10	9.54	0.1		95	80 - 120%

Data Package ID: *im1910445-1*

ICPMS Metals

Method SW6020B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP191107-2	Sample Aliquot: 50 ml
LabID: 1910446-1MS	% Moisture: N/A	QCBatchID: IP191107-2-4	Final Volume: 50 ml
	Date Collected: 15-Oct-19	Run ID: IM191113-10A7	Result Units: UG/L
	Date Extracted: 07-Nov-19	Cleanup: NONE	File Name: 065SMPL_
	Date Analyzed: 13-Nov-19	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	0.46	U	484		10	500	97	75 - 125%
7439-96-5	MANGANESE	6000		6240		5	100	258	75 - 125%
7439-98-7	MOLYBDENUM	0.62	B	98.4		2	100	98	75 - 125%
7440-02-0	NICKEL	0.92	U	471		20	500	94	75 - 125%
7440-61-1	URANIUM	0.13	C	9.82		0.1	10	97	75 - 125%

Field ID: SHARED QC	Sample Matrix: WATER	Prep Batch: IP191107-2	Sample Aliquot: 50 ml
LabID: 1910446-1MSD	% Moisture: N/A	QCBatchID: IP191107-2-4	Final Volume: 50 ml
	Date Collected: 15-Oct-19	Run ID: IM191113-10A7	Result Units: UG/L
	Date Extracted: 07-Nov-19	Cleanup: NONE	File Name: 066SMPL_
	Date Analyzed: 13-Nov-19	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	489		500	98	10	20	1
7439-96-5	MANGANESE	6180		100	199	5	20	1
7439-98-7	MOLYBDENUM	99.6		100	99	2	20	1
7440-02-0	NICKEL	464		500	93	20	20	1
7440-61-1	URANIUM	9.85		10	97	0.1	20	0

Data Package ID: *im1910445-1*

Prep Batch ID: IP191107-2

Start Date: 11/07/19	End Date: 11/07/19	Concentration Method: NONE	Batch Created By: jml
Start Time: 10:00	End Time: 18:00	Extract Method: SW3005A	Date Created: 11/07/19
Prep Analyst: Jill M. Latelle		Initial Volume Units: ml	Time Created: 10:01
Comments:		Final Volume Units: ml	Validated By: jml
			Date Validated: 11/07/19
			Time Validated: 10:56

QC Batch ID: IP191107-2-4

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP191107-2	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
IM191107-2	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910445-1	SMP	B3RM15	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-2	SMP	B3RM11	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-4	SMP	B3RMW3	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-5	SMP	B3RMW7	WATER	10/15/2019	50	50	NONE	1	1910445
1910446-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446

QC Types

CAR	Carrier reference sample		DLS	Detection Limit Standard	
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample	
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification	
LOQV	Limit of Quantitation Verification		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	

Prep Batch ID: IP191107-2

Start Date: 11/07/19	End Date: 11/07/19	Concentration Method: NONE	Batch Created By: jml
Start Time: 10:00	End Time: 18:00	Extract Method: SW3005A	Date Created: 11/07/19
Prep Analyst: Jill M. Latelle		Initial Volume Units: ml	Time Created: 10:01
Comments:		Final Volume Units: ml	Validated By: jml
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 11/07/19
			Time Validated: 10:56

QC Batch ID: IP191107-2-5

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP191107-2	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
IM191107-2	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910446-1	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446
1910445-6	SMP	B3RLB6	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-7	SMP	B3RL99	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-8	SMP	B3RLB7	WATER	10/15/2019	50	50	NONE	1	1910445
1910445-9	SMP	B3RLB0	WATER	10/15/2019	50	50	NONE	1	1910445
1910446-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1910446

QC Types

CAR	Carrier reference sample	DLS	Detection Limit Standard
DUP	Laboratory Duplicate	LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat	LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification	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



Strontium-90

Case Narrative

CH2M HILL Plateau Remediation Company

CERCLA, OCTOBER 2019 – I20-002

Work Order Number: 1910445

1. The samples were prepared according to the current revision of SOP 707.
2. The samples were analyzed for the presence of ⁹⁰Sr according to the current revision of SOP 724. The analyses were completed on 10/30/2019.
3. Total radio-strontium is reported as ⁹⁰Sr. The presence of other radioisotopes of strontium may cause positive bias in the measured strontium concentration.
4. The analysis results for these samples are reported in units of pCi/L. The samples were not filtered prior to analysis.
5. Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate.
6. In accordance with project specific instructions, the evaluation threshold for Relative Percent Difference (RPD) has been set at 20%. RPD is defined as:

$$RPD = \frac{|S - D|}{(S + D)/2} * 100$$

Where: S = sample activity result and D = duplicate activity result.

7. No anomalous situations were encountered during the preparation and analysis of these samples. All quality control criteria were met.



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.

Jean Anderson
Jean Anderson
Radiochemistry Primary Data Reviewer

11/1/19
Date

Kath M. W.
Radiochemistry Final Data Reviewer

11/12/19
Date

Strontium-90 by GFPC

PAI 724 Rev 13

Method Blank Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1910445

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Lab ID: SR191024-2MB	Sample Matrix: WATER	Prep Batch: SR191024-2	Final Aliquot: 994 ml
	Prep SOP: PAI 707 Rev 15	QCBatchID: SR191024-2-1	Result Units: pCi/l
	Date Collected: 24-Oct-19	Run ID: SR191024-2A	File Name: SRA1030B
	Date Prepared: 24-Oct-19	Count Time: 60 minutes	
	Date Analyzed: 30-Oct-19		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	2.84E-01 +/- 3.92E-01	8.61E-01	1.00E+00	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1.020E+03	9.16E+02	ug	89.6	40 - 110 %	

Comments:**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

DL - Decision Level

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Laboratory Control Sample(s)**Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Lab ID:** SR191024-2LCS

Sample Matrix: WATER
Prep SOP: PAI 707 Rev 15
Date Collected: 24-Oct-19
Date Prepared: 24-Oct-19
Date Analyzed: 30-Oct-19

Prep Batch: SR191024-2
QCBatchID: SR191024-2-1
Run ID: SR191024-2A
Count Time: 60 minutes

Final Aliquot: 994 ml
Result Units: pCi/l
File Name: SRA1030B

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	1.13E+01 +/- 2.80E+00	7.78E-01	1.150E+01	97.7	75 - 125	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1.020E+03	9.04E+02	ug	88.4	40 - 110 %	

Comments:**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS Recovery within control limits.
M - The requested MDC was not met.
M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty
MDC - Minimum Detectable Concentration

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Laboratory Control Sample(s)**Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002**Lab ID:** SR191024-2LCSD**Sample Matrix:** WATER**Prep Batch:** SR191024-2**Final Aliquot:** 994 ml**Prep SOP:** PAI 707 Rev 15**QC Batch ID:** SR191024-2-1**Result Units:** pCi/l**Date Collected:** 24-Oct-19**Run ID:** SR191024-2A**File Name:** SRA1030B**Date Prepared:** 24-Oct-19**Count Time:** 60 minutes**Date Analyzed:** 30-Oct-19

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
10098-97-2	Sr-90	1.24E+01 +/- 3.08E+00	8.86E-01	1.150E+01	108	75 - 125	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1.020E+03	9.16E+02	ug	89.6	40 - 110 %	

Comments:**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.
 Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
 Y2 - Chemical Yield outside default limits.
 L - LCS Recovery below lower control limit.
 H - LCS Recovery above upper control limit.
 P - LCS Recovery within control limits.
 M - The requested MDC was not met.
 M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty
 MDC - Minimum Detectable Concentration

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins
Work Order Number: 1910445
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	
Lab ID:	SR191024-2LCSD

Sample Matrix: WATER
Prep SOP: PAI 707 Rev 15
Date Collected: 24-Oct-19
Date Prepared: 24-Oct-19
Date Analyzed: 30-Oct-19

Prep Batch: SR191024-2
QCBatchID: SR191024-2-1
Run ID: SR191024-2A
Count Time: 60 minutes

Final Aliquot: 994 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: SRA1030B

CASNO	Analyte	Sample				Duplicate				DER	DER Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
10098-97-2	Sr-90	1.13E+01 +/- 2.80E+00		7.78E-01		1.24E+01 +/- 3.08E+00		8.86E-01		0.564	3

Comments:

Duplicate Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- D - DER is greater than Control Limit of 3
- LT - Result is less than Request MDC, greater than sample specific MDC
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits

Abbreviations:

- TPU - Total Propagated Uncertainty
- DER - Duplicate Error Ratio
- BDL - Below Detection Limit
- NR - Not Reported

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Duplicate Sample Results (RPD)

Lab Name: ALS -- Fort Collins
Work Order Number: 1910445
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, OCTOBER 2019 I20-002

Field ID:	
Lab ID:	SR191024-2LCSD

Sample Matrix: WATER
Prep SOP: PAI 707 Rev 15
Date Collected: 24-Oct-19
Date Prepared: 24-Oct-19
Date Analyzed: 30-Oct-19

Prep Batch: SR191024-2
QCBatchID: SR191024-2-1
Run ID: SR191024-2A
Count Time: 60 minutes

Final Aliquot: 994 ml
Prep Basis: Unfiltered
Moisture(%): NA
Result Units: pCi/l
File Name: SRA1030B

CASNO	Analyte	Sample				Duplicate				RPD	RPD Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
10098-97-2	Sr-90	1.13E+01 +/-	2.80E+00	7.78E-01		1.24E+01 +/-	3.08E+00	8.86E-01		10.00	20

Comments:

Qualifiers/Flags:

- + - Duplicate RPD not within limits.
- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC

Abbreviations:

- TPU - Total Propagated Uncertainty
- BDL - Below Detection Limit
- NR - Not Reported

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Sample Results**Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RL99
Lab ID:	1910445-7

Sample Matrix: WATER**Prep SOP:** PAI 707 Rev 15**Date Collected:** 15-Oct-19**Date Prepared:** 24-Oct-19**Date Analyzed:** 30-Oct-19**Prep Batch:** SR191024-2**QC Batch ID:** SR191024-2-1**Run ID:** SR191024-2A**Count Time:** 60 minutes**Report Basis:** Unfiltered**Final Aliquot:** 994 ml**Prep Basis:** Unfiltered**Moisture(%):** NA**Result Units:** pCi/l**File Name:** SRA1030A**Analysis ReqCode:** SRISO_SEP_PR

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	-2.38E-02 +/- 3.31E-01	7.99E-01	1E+00	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1.020E+03	8.86E+02	ug	86.7	40 - 110 %	

Comments:**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1910445-1

Strontium-90 by GFPC

PAI 724 Rev 13

Sample Results**Lab Name:** ALS -- Fort Collins**Work Order Number:** 1910445**Client Name:** CH2M HILL Plateau Remediation Company**ClientProject ID:** CERCLA, OCTOBER 2019 I20-002

Field ID:	B3RLB0
Lab ID:	1910445-9

Sample Matrix: WATER**Prep SOP:** PAI 707 Rev 15**Date Collected:** 15-Oct-19**Date Prepared:** 24-Oct-19**Date Analyzed:** 30-Oct-19**Prep Batch:** SR191024-2**QC Batch ID:** SR191024-2-1**Run ID:** SR191024-2A**Count Time:** 60 minutes**Report Basis:** Unfiltered**Final Aliquot:** 994 ml**Prep Basis:** Unfiltered**Moisture(%):** NA**Result Units:** pCi/l**File Name:** SRA1030A**Analysis ReqCode:** SRISO_SEP_PR

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
10098-97-2	Sr-90	1.48E-01 +/- 3.77E-01	8.61E-01	1E+00	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
STRONTIUM	1.290E+03	1.20E+03	ug	92.8	40 - 110 %	

Comments:**Qualifiers/Flags:**

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: SR1910445-1

Prep Batch ID: SR191024-2

Start Date: 10/24/19	End Date: 10/24/19	Concentration Method: NONE	Batch Created By: jxh
Start Time: 15:03	End Time: 15:03	Extract Method: PAI 70715	Date Created: 10/24/19
Prep Analyst: Jirushaya Hantula		Initial Volume Units: ml	Time Created: 15:03
Comments:		Final Volume Units: ml	Validated By: jxh
			Date Validated: 10/31/19
			Time Validated: 9:49

QC Batch ID: SR191024-2-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
SR191024-2	CAR	XXXXXX	WATER	XXXXXX	1000	1000	NONE	1	1910343
SR191024-2	MB	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910343
SR191024-2	LCS	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910343
SR191024-2	LCSD	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910401
1910343-2	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910343
1910343-3	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910343
1910401-1	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910401
1910401-2	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910401
1910401-4	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910401
1910402-1	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910402
1910444-1	SMP	XXXXXX	WATER	XXXXXX	1000	994.01	NONE	1	1910444
1910445-7	SMP	B3RL99	WATER	10/15/2019	1000	994.01	NONE	1	1910445
1910445-9	SMP	B3RLB0	WATER	10/15/2019	1000	994.01	NONE	1	1910445

QC Types

CAR	Carrier reference sample		DLS	Detection Limit Standard	
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample	
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification	
LOQV	Limit of Quantitation Verification		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	