



Metals

Case Narrative

COGCC

Inspection 697601578

Work Order Number: 2109426

1. This report consists of 3 soil samples and 3 saturation extracts.
2. The samples were received cool and intact by ALS on 09/17/21.
3. 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 3050B and the current revision of SOP 806.

4. Analysis by Trace ICP followed method 6010D and the current revision of SOP 834.
5. Analysis by ICP-MS followed method 6020B 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, laboratory control sample and laboratory control sample duplicate were digested and analyzed with the samples in the ICPMS digestion batch.
 - The preparation (method) blank associated with the ICPMS digestion batch was below the reporting limit for the requested analytes.
 - 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.

9. Matrix specific quality control procedures.

Due to limited sample volume, a laboratory control sample duplicate (LCSD) was performed in place of matrix QC for the ICPMS analysis.

10. It is a standard practice that samples for ICP-MS are analyzed at 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.

Kath M. A.
Inorganics Final Data Reviewer

10/16/21
Date



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses:

- Result qualifier -- A “J” 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 “J” 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.

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Sample Number(s) Cross-Reference Table

OrderNum: 2109426

Client Name: COGCC

Client Project Name: Inspection 697601578

Client Project Number:

Client PO Number: GAE- PHAA 2021*056

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
118086 #3 0-6"	2109426-1		SOIL	16-Sep-21	8:35
118086 #4 0-6"	2109426-2		SOIL	16-Sep-21	8:42
118086 #5 0-6"	2109426-3		SOIL	16-Sep-21	8:48
118086 #3 0-6"	2109426-4		SatExtract	16-Sep-21	8:35
118086 #4 0-6"	2109426-5		SatExtract	16-Sep-21	8:42
118086 #5 0-6"	2109426-6		SatExtract	16-Sep-21	8:48



Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.

METALS = As, Ba, Cd, Cu, Pb, Ni, Se, Ag, Zn <div style="text-align: center;">5 of 13</div>	NOTES:	
	REPORT LEVEL / QC REQUIRED	
	Summary (Standard QC)	
	LEVEL II (Standard QC)	X
	LEVEL III (Std QC + 10ms)	
LEVEL IV (Std QC + forms + raw data)		
RESERVATION KEY	1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other	



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CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 2109426
 Project Manager: kmo Initials: CXT Date: 09/17/2021

	N/A	YES	NO
1. Are airbills / shipping documents present and/or removable?	X		
Tracking number:			
2. Are custody seals on shipping containers intact?	X		
3. Are custody seals on sample containers intact?	X		
4. Is there a COC (chain-of-custody) present?		X	
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		X	
6. Are short-hold samples present?			X
7. Are all samples within holding times for the requested analyses?		X	
8. Were all sample containers received intact? (not broken or leaking)		X	
9. Is there sufficient sample for the requested analyses?		X	
10. Are samples in proper containers for requested analyses? (form 250, <i>Sample Handling Guidelines</i>)		X	
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	X		
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)	X		
13. Were the samples shipped on ice?		X	
14. Were cooler temperatures measured at 0.1-6.0°C?	RAD ONLY	X	
IR gun used*: #5 Cooler #: <u>1</u> Temperature (°C): <u>0.8</u> # of custody seals on cooler: <u>0</u> External µR/hr reading: <u>NA</u> Background µR/hr reading: <u>11</u> Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES (If no, see Form 008.)			

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

Were unpreserved bottles pH checked? NA All client bottle ID's vs ALS lab ID's double-checked by: CT

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

Project Manager Signature / Date: [Signature] 9/20/21

Water Soluble BORON

Method SW6010D

Sample Results

Lab Name: ALS -- Fort Collins
Client Name: COGCC
Client Project ID: Inspection 697601578
Work Order Number: 2109426
Reporting Basis: As Received
Analyst: Steve Workman
Final Volume: 20 ml
Matrix: SatExtract
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
118086 #3 0-6"	2109426-4	9/16/2021	9/21/2021	09/22/2021	N/A	1	2.4	0.2			10 g
118086 #4 0-6"	2109426-5	9/16/2021	9/21/2021	09/22/2021	N/A	1	6.3	0.2			10.017 g
118086 #5 0-6"	2109426-6	9/16/2021	9/21/2021	09/22/2021	N/A	1	7.1	0.2			10.017 g

Comments:

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

Data Package ID: *IT2109426-1*

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Total ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Field ID: 118086 #3 0-6"

Lab ID: 2109426-1

Sample Matrix: SOIL

% Moisture: 3.7

Date Collected: 16-Sep-21

Date Extracted: 23-Sep-21

Date Analyzed: 26-Sep-21

Prep Method: SW3050 Rev B

Prep Batch: IP210923-10

QC Batch ID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: Dry Weight

File Name: 028SMPL.

Analyst: Jill M. Latelle

Sample Aliquot: 1.06 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

Analysis ReqCode: AsBaCdCrCuPb

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-38-2	ARSENIC	10	4300		200	48
7440-39-3	BARIUM	10	54000		490	230
7440-43-9	CADMIUM	10	470		200	22
7440-47-3	CHROMIUM	10	7900		980	540
7440-50-8	COPPER	10	14000		2000	280
7439-92-1	LEAD	10	18000		200	65
7440-02-0	NICKEL	10	7600		2000	430
7782-49-2	SELENIUM	10	990		980	200
7440-22-4	SILVER	10	150		49	8.1
7440-66-6	ZINC	10	44000		9800	4000

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Total ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Field ID: 118086 #4 0-6"

Lab ID: 2109426-2

Sample Matrix: SOIL

% Moisture: 5.6

Date Collected: 16-Sep-21

Date Extracted: 23-Sep-21

Date Analyzed: 26-Sep-21

Prep Method: SW3050 Rev B

Prep Batch: IP210923-10

QC Batch ID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: Dry Weight

File Name: 029SMPL.

Analyst: Jill M. Latelle

Sample Aliquot: 1.085 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

Analysis ReqCode: AsBaCdCrCuPb

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-38-2	ARSENIC	10	4100		200	48
7440-39-3	BARIUM	10	100000		490	220
7440-43-9	CADMIUM	10	220		200	21
7440-47-3	CHROMIUM	10	8300		980	540
7440-50-8	COPPER	10	20000		2000	280
7439-92-1	LEAD	10	24000		200	64
7440-02-0	NICKEL	10	7800		2000	430
7782-49-2	SELENIUM	10	870	J	980	200
7440-22-4	SILVER	10	61		49	8.1
7440-66-6	ZINC	10	50000		9800	4000

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Total ICPMS Metals

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Field ID: 118086 #5 0-6"

Lab ID: 2109426-3

Sample Matrix: SOIL

% Moisture: 2.0

Date Collected: 16-Sep-21

Date Extracted: 23-Sep-21

Date Analyzed: 26-Sep-21

Prep Method: SW3050 Rev B

Prep Batch: IP210923-10

QCBatchID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: Dry Weight

File Name: 030SMPL.

Analyst: Jill M. Latelle

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

Analysis ReqCode: AsBaCdCrCuPb

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7440-38-2	ARSENIC	10	3700		200	50
7440-39-3	BARIUM	10	240000		510	230
7440-43-9	CADMIUM	10	270		200	22
7440-47-3	CHROMIUM	10	10000		1000	560
7440-50-8	COPPER	10	14000		2000	300
7439-92-1	LEAD	10	15000		200	67
7440-02-0	NICKEL	10	10000		2000	450
7782-49-2	SELENIUM	10	880	J	1000	200
7440-22-4	SILVER	10	160		51	8.5
7440-66-6	ZINC	10	41000		10000	4200

Data Package ID: IM2109426-1

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ICPMS Metals

Method SW6020B

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Lab ID: IP210923-10MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 23-Sep-21

Date Analyzed: 26-Sep-21

Prep Batch: IP210923-10

QCBatchID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: N/A

File Name: 0106CCB.

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7440-38-2	ARSENIC	10	49	U	200	49
7440-39-3	BARIUM	10	230	U	500	230
7440-43-9	CADMIUM	10	22	U	200	22
7440-47-3	CHROMIUM	10	550	U	1000	550
7440-50-8	COPPER	10	290	U	2000	290
7439-92-1	LEAD	10	66	U	200	66
7440-02-0	NICKEL	10	440	U	2000	440
7782-49-2	SELENIUM	10	200	U	1000	200
7440-22-4	SILVER	10	8.3	U	50	8.3
7440-66-6	ZINC	10	4100	U	10000	4100

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ICPMS Metals

Method SW6020B

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Lab ID: IM210923-10LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/23/2021

Date Analyzed: 09/26/2021

Prep Method: SW3050B

Prep Batch: IP210923-10

QCBatchID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: N/A

File Name: 011_LCS.

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-38-2	ARSENIC	10000	9440	200		94	80 - 120%
7440-39-3	BARIUM	10000	9150	500		91	80 - 120%
7440-43-9	CADMIUM	3000	2890	200		96	80 - 120%
7440-47-3	CHROMIUM	50000	51400	1000		103	80 - 120%
7440-50-8	COPPER	100000	98700	2000		99	80 - 120%
7439-92-1	LEAD	5000	4830	200		97	80 - 120%
7440-02-0	NICKEL	50000	50900	2000		102	80 - 120%
7782-49-2	SELENIUM	10000	8820	1000		88	80 - 120%
7440-22-4	SILVER	1000	1000	50		100	80 - 120%
7440-66-6	ZINC	200000	181000	10000		90	80 - 120%

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ICPMS Metals

Method SW6020B

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 2109426

Client Name: COGCC

ClientProject ID: Inspection 697601578

Lab ID: IM210923-10LCSD

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/23/2021

Date Analyzed: 09/26/2021

Prep Method: SW3050B

Prep Batch: IP210923-10

QC Batch ID: IP210923-10-1

Run ID: IM210926-10A5

Cleanup: NONE

Basis: N/A

File Name: 012_LCS.

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
7440-38-2	ARSENIC	10000	9130	200		91	20	3
7440-39-3	BARIUM	10000	8680	500		87	20	5
7440-43-9	CADMIUM	3000	2910	200		97	20	1
7440-47-3	CHROMIUM	50000	51000	1000		102	20	1
7440-50-8	COPPER	100000	98000	2000		98	20	1
7439-92-1	LEAD	5000	4830	200		97	20	0
7440-02-0	NICKEL	50000	50600	2000		101	20	1
7782-49-2	SELENIUM	10000	9310	1000		93	20	5
7440-22-4	SILVER	1000	997	50		100	20	1
7440-66-6	ZINC	200000	189000	10000		95	20	4

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