



Metals

Case Narrative

COGCC

Vondy #3

Work Order Number: 1607366

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 01/04/17.
3. The sample was analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than 2 prior to analysis.
4. The sample was prepared and analyzed based on Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures.

For analysis by Trace ICP and ICP-MS, the sample was digested following method 200.2 and the current revision of SOP 806.

5. Analysis by Trace ICP followed method 200.7 and the current revision of SOP 807.

Analysis by ICP-MS followed method 200.8 and the current revision of SOP 827.

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold times.

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

8. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the sample in this digestion batch.



- The preparation (method) blank associated with this 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 associated with Method 200.7 were within acceptance criteria.
- The interference check samples associated with Method 200.8 were analyzed.

9. Matrix specific quality control procedures.

Sample 1701016-1 was designated as the quality control sample for each analysis.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
- Matrix spike recoveries could not be evaluated for the following analytes:

<u>Analyte</u>	<u>Sample ID</u>
Barium	1701016-1
Boron	1701016-1
Silicon	1701016-1
Sodium (Trace ICP)	1701016-1
Sodium (ICP-MS)	1701016-1
Strontium	1701016-1

The concentrations of these analytes in the native sample were greater than four times the concentration of matrix spike added during the digestion. When sample concentration is that much greater than the spike added, spike recoveries may not be accurate. The laboratory control samples indicate that the digestion and analysis were in control.

- A sample duplicate and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
- A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.

10. The sample required a dilution to bring sodium into the analytical range of the Trace ICP.

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




11. Sodium Adsorption Ratio (SAR) was determined by calculation based on a reference from the client. Calcium, magnesium, and sodium concentrations were determined by ICP, Method 200.7.

$$\text{SAR} = \text{Na} / (((\text{Ca} + \text{Mg}) / 2)^{1/2})$$

The analyte results are the meq/L concentrations based on conversions from their mg/L concentrations. Please note that the SAR value is unitless.

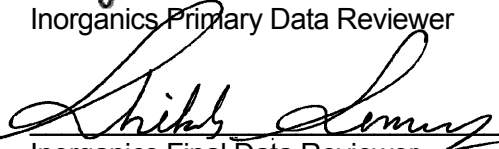
The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.



Jill Latelle
Inorganics Primary Data Reviewer

1/17/ 17

Date



Rick Lomax
Inorganics Final Data Reviewer

1/18/17

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.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1701016

Client Name: COGCC

Client Project Name: Vondy #3

Client Project Number:

Client PO Number: CT 2017-0221

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Vondy #3	1701016-1		WATER	30-Dec-16	12:30
TB	1701016-2		WATER	30-Dec-16	



ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 486-1511 FX: (970) 490-4522

Chain-of-Custody

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

ALS WORKORDER #	
1701016	
PROJECT NAME	Vondy #3
PROJECT NO.	
COMPANY NAME	COGCC
SEND REPORT TO	Robert Young
ADDRESS	
CITY / STATE / ZIP	
PHONE	303-252-0126
FAX	
E-MAIL	rob.young@state.co.us

TURNAROUND TIME	STO.	SAMPLER	Robert Young
SITE ID			
EDD FORMAT			
PURCHASE ORDER	CT 2017-0221		
BILL TO COMPANY			
INVOICE ATTN TO			
ADDRESS			
CITY / STATE / ZIP			
PHONE			
FAX			
E-MAIL			

PARAMETER/METHOD REQUEST FOR ANALYSIS																		
A Alkalinity/Conductivity/Anions/pH (1L amber glass)																		
B Dissolved metals/SAR (lab filtration)																		
C Nitrate/Nitrite																		
D 8260 - BTEX SS 11/5/17																		
E RSK-175																		
F 8015-GRO																		
G TDS																		
H 8015-DRO																		
I 8270 SIM SS 11/5/17																		
J TB																		
LAB ID	FIELD ID	MATRIX	SAMPLE DATE	SAMPLE TIME	# OF BOTTLES	PRESERVATIVE	QC	A	B	C	D	E	F	G	H	I	J	SEE NOTES SECTION
1	Vondy #3	Aq	12/30/16	1230	1	None		X										
2					1	None			X									
3					1	Sulfuric				X								
4					3	HCL					X							
5					3	HCL						X						
6					3	HCL							X					
7					1	None								X				
8					1	None									X			
9					1	None										X		
10					2	HCL											X	

RELINQUISHED BY		SIGNATURE		PRINTED NAME		DATE		TIME	
RECEIVED BY		Robert Young		Robert Young		1-4-2017		1445	
RELINQUISHED BY		Joshua Nontia-Sua		Joshua Nontia-Sua		1-4-17		1450	
RECEIVED BY									
RELINQUISHED BY									
RECEIVED BY									
RELINQUISHED BY									
RECEIVED BY									

Form 2023

Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

REPORT LEVEL / QC REQUIRED	Summary (Standard QC)	LEVEL II (Standard QC)	LEVEL III (Std QC + forms)	LEVEL IV (Std QC + forms - raw data)

PRESERVATION KEY 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/H2O2/Aspirin 6-NaHSO4 7-4°C 8-Other



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC

Workorder No: COGCC1701016

Project Manager: SS

Initials: JWS Date: 1/5/17

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	<input checked="" type="radio"/> N/A	YES	NO
15. Do any water samples contain sediment? Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.7</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>-</u>			
Background µR/hr reading: <u>-</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / <input checked="" type="radio"/> NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

Handwriting on labels faded and hard to make out.

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

Project Manager Signature / Date: [Signature]

Dissolved Metals by 200.7

Method EPA200.7 Revision 4.4

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1701016

Client Name: COGCC

ClientProject ID: Vondy #3

Field ID: Vondy #3

Lab ID: 1701016-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 30-Dec-16

Date Extracted: 09-Jan-17

Date Analyzed: 11-Jan-17

Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2

QC Batch ID: IP170109-2-2

Run ID: IT170111A-1A2

Cleanup: NONE

Basis: As Received

File Name: 170111A.

Analyst: Steve Workman

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-41-7	BERYLLIUM	1	0.00048	0.002	0.00048	U	
7440-42-8	BORON	1	6.1	0.1	0.0099		
7440-70-2	CALCIUM	1	35	1	0.031		
7440-47-3	CHROMIUM	1	0.0014	0.01	0.0014	U	
7439-89-6	IRON	1	0.2	0.1	0.014		
7439-93-2	LITHIUM	1	0.38	0.01	0.0016		
7439-95-4	MAGNESIUM	1	11	1	0.019		
7440-02-0	NICKEL	1	0.0019	0.02	0.0019	U	
7440-09-7	POTASSIUM	1	12	1	0.25		
7440-21-3	SILICON	1	4.2	0.05	0.012		
7440-23-5	SODIUM	50	2200	50	1.9		
	SODIUM ADSORPTION RATIO	50	81	8.5	2.1		
7440-62-2	VANADIUM	1	0.0012	0.01	0.0012	U	

Data Package ID: it1701016-1

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

LIMS Version: 6.837

Page 1 of 1

Dissolved Metals by 200.8

Method EPA200.8 Revision 5.4

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1701016

Client Name: COGCC

ClientProject ID: Vondy #3

Field ID: Vondy #3

Lab ID: 1701016-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 30-Dec-16

Date Extracted: 09-Jan-17

Date Analyzed: 11-Jan-17

Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2

QCBatchID: IP170109-2-4

Run ID: IM170111-10A6

Cleanup: NONE

Basis: As Received

File Name: 005SMPL_

Analyst: Brent A. Stanfield

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	0.098	0.05	0.014		
7440-36-0	ANTIMONY	10	0.00011	0.0003	0.00011	U	
7440-38-2	ARSENIC	10	0.00025	0.002	0.0002	J	
7440-39-3	BARIUM	10	1.4	0.001	0.00016		
7440-43-9	CADMIUM	10	0.000088	0.0003	0.000088	U	
7440-48-4	COBALT	10	0.00011	0.001	0.000083	J	
7440-50-8	COPPER	10	0.0012	0.01	0.0012	U	
7439-92-1	LEAD	10	0.00026	0.0005	0.00017	J	
7439-96-5	MANGANESE	10	0.035	0.002	0.00034		
7439-98-7	MOLYBDENUM	10	0.00082	0.001	0.00038	J	
7782-49-2	SELENIUM	10	0.00066	0.001	0.00066	U	
7440-22-4	SILVER	10	0.000041	0.0001	0.000041	U	
7440-23-5	SODIUM	10	2300000	1000	200		
7440-24-6	STRONTIUM	10	2.7	0.001	0.0003		
7440-28-0	THALLIUM	10	0.000018	0.0002	0.000018	U	
7440-29-1	THORIUM	10	0.11	0.2	0.023	J	
7440-61-1	URANIUM	10	0.00002	0.0001	0.00002	J	
7440-66-6	ZINC	10	0.0098	0.02	0.0098	U	

Data Package ID: im1701016-1

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

LIMS Version: 6.837

Page 1 of 1

Metals by 200.7

Method EPA200.7 Revision 4.4

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1701016

Client Name: COGCC

ClientProject ID: Vondy #3

Lab ID: IP170109-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09-Jan-17

Date Analyzed: 11-Jan-17

Prep Batch: IP170109-2

QCBatchID: IP170109-2-2

Run ID: IT170111A-1A2

Cleanup: NONE

Basis: N/A

File Name: 170111A.

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-41-7	BERYLLIUM	1	-0.00059	0.002	0.00048	J	
7440-42-8	BORON	1	0.0099	0.1	0.0099	U	
7440-70-2	CALCIUM	1	0.031	1	0.031	U	
7440-47-3	CHROMIUM	1	0.0014	0.01	0.0014	U	
7439-89-6	IRON	1	0.014	0.1	0.014	U	
7439-93-2	LITHIUM	1	0.003	0.01	0.0016	J	
7439-95-4	MAGNESIUM	1	0.019	1	0.019	U	
7440-02-0	NICKEL	1	0.0019	0.02	0.0019	U	
7440-09-7	POTASSIUM	1	0.25	1	0.25	U	
7440-21-3	SILICON	1	0.021	0.05	0.012	J	
7440-23-5	SODIUM	1	0.049	1	0.039	J	
7440-62-2	VANADIUM	1	0.0012	0.01	0.0012	U	

Data Package ID: *it1701016-1*

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

LIMS Version: 6.837

Page 1 of 1

Metals by 200.7

Method EPA200.7 Revision 4.4

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1701016

Client Name: COGCC

ClientProject ID: Vondy #3

Lab ID: IP170109-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 01/09/2017

Date Analyzed: 01/11/2017

Prep Method: EPA200.22.2

Prep Batch: IP170109-2

QCBatchID: IP170109-2-2

Run ID: IT170111A-1A2

Cleanup: NONE

Basis: N/A

File Name: 170111A.

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-41-7	BERYLLIUM	0.05	0.0505	0.002		101	85 - 115%
7440-42-8	BORON	1	1.04	0.1		104	85 - 115%
7440-70-2	CALCIUM	40	38.7	1		97	85 - 115%
7440-47-3	CHROMIUM	0.2	0.202	0.01		101	85 - 115%
7439-89-6	IRON	1	1.03	0.1		103	85 - 115%
7439-93-2	LITHIUM	0.5	0.504	0.01		101	85 - 115%
7439-95-4	MAGNESIUM	40	40.3	1		101	85 - 115%
7440-02-0	NICKEL	0.5	0.505	0.02		101	85 - 115%
7440-09-7	POTASSIUM	40	36.6	1		91	85 - 115%
7440-21-3	SILICON	1	1.09	0.05		109	85 - 115%
7440-23-5	SODIUM	40	38.8	1		97	85 - 115%
7440-62-2	VANADIUM	0.5	0.502	0.01		100	85 - 115%

Data Package ID: *it1701016-1*

Metals by 200.7

Method EPA200.7 Revision 4.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1701016
Client Name: COGCC
ClientProject ID: Vondy #3

Field ID: Vondy #3
LabID: 1701016-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Dec-16
Date Extracted: 09-Jan-17
Date Analyzed: 11-Jan-17
Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2
QCBatchID: IP170109-2-2
Run ID: IT170111A-1A2
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: MG/L
File Name: 170111A.

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-41-7	BERYLLIUM	0.00048	U	0.0443		0.002	0.05	89	70 - 130%
7440-42-8	BORON	6.1		7.01		0.1	1	90	70 - 130%
7440-70-2	CALCIUM	35		68.5		1	40	83	70 - 130%
7440-47-3	CHROMIUM	0.0014	U	0.177		0.01	0.2	89	70 - 130%
7439-89-6	IRON	0.2		1.1		0.1	1	89	70 - 130%
7439-93-2	LITHIUM	0.38		0.832		0.01	0.5	90	70 - 130%
7439-95-4	MAGNESIUM	11		44.2		1	40	83	70 - 130%
7440-02-0	NICKEL	0.0019	U	0.443		0.02	0.5	89	70 - 130%
7440-09-7	POTASSIUM	12		51.6		1	40	98	70 - 130%
7440-21-3	SILICON	4.2		5.25		0.05	1	101	70 - 130%
7440-23-5	SODIUM	2200		2130		50	40	-65	70 - 130%
7440-62-2	VANADIUM	0.0012	U	0.448		0.01	0.5	90	70 - 130%

Data Package ID: *it1701016-1*

Metals by 200.7

Method EPA200.7 Revision 4.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1701016
Client Name: COGCC
ClientProject ID: Vondy #3

Field ID: Vondy #3

LabID: 1701016-1MSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 30-Dec-16

Date Extracted: 09-Jan-17

Date Analyzed: 11-Jan-17

Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2

QCBatchID: IP170109-2-2

Run ID: IT170111A-1A2

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

File Name: 170111A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-41-7	BERYLLIUM	0.0443		0.05	89	0.002	20	0
7440-42-8	BORON	6.94		1	84	0.1	20	1
7440-70-2	CALCIUM	68.4		40	83	1	20	0
7440-47-3	CHROMIUM	0.177		0.2	88	0.01	20	0
7439-89-6	IRON	1.32		1	112	0.1	20	19
7439-93-2	LITHIUM	0.824		0.5	88	0.01	20	1
7439-95-4	MAGNESIUM	44.1		40	83	1	20	0
7440-02-0	NICKEL	0.443		0.5	89	0.02	20	0
7440-09-7	POTASSIUM	51		40	97	1	20	1
7440-21-3	SILICON	5.21		1	97	0.05	20	1
7440-23-5	SODIUM	2090		40	-156	50	20	2
7440-62-2	VANADIUM	0.448		0.5	90	0.01	20	0

Data Package ID: *it1701016-1*

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

Page 2 of 2

LIMS Version: 6.837

Metals by 200.8

Method EPA200.8 Revision 5.4

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1701016

Client Name: COGCC

ClientProject ID: Vondy #3

Lab ID: IP170109-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09-Jan-17

Date Analyzed: 11-Jan-17

Prep Batch: IP170109-2

QCBatchID: IP170109-2-4

Run ID: IM170111-10A6

Cleanup: NONE

Basis: N/A

File Name: 002SMPL_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	14	50	14	U	
7440-36-0	ANTIMONY	10	0.11	0.3	0.11	U	
7440-38-2	ARSENIC	10	0.2	2	0.2	U	
7440-39-3	BARIUM	10	0.21	1	0.16	J	
7440-43-9	CADMIUM	10	0.088	0.3	0.088	U	
7440-48-4	COBALT	10	0.083	1	0.083	U	
7440-50-8	COPPER	10	1.2	10	1.2	U	
7439-92-1	LEAD	10	0.25	0.5	0.17	J	
7439-96-5	MANGANESE	10	0.34	2	0.34	U	
7439-98-7	MOLYBDENUM	10	0.38	1	0.38	U	
7782-49-2	SELENIUM	10	0.66	1	0.66	U	
7440-22-4	SILVER	10	0.041	0.1	0.041	U	
7440-23-5	SODIUM	10	200	1000	200	U	
7440-24-6	STRONTIUM	10	0.3	1	0.3	U	
7440-28-0	THALLIUM	10	0.018	0.2	0.018	U	
7440-29-1	THORIUM	10	0.023	0.2	0.023	U	
7440-61-1	URANIUM	10	0.02	0.1	0.02	U	
7440-66-6	ZINC	10	9.8	20	9.8	U	

Data Package ID: im1701016-1

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

Page 1 of 1

LIMS Version: 6.837

Metals by 200.8

Method EPA200.8 Revision 5.4

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
 Work Order Number: 1701016
 Client Name: COGCC
 ClientProject ID: Vondy #3

Lab ID: IM170109-2LCS

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 01/09/2017
 Date Analyzed: 01/11/2017
 Prep Method: EPA200.22.2

Prep Batch: IP170109-2
 QCBatchID: IP170109-2-4
 Run ID: IM170111-10A6
 Cleanup: NONE
 Basis: N/A
 File Name: 004SMPL_

Sample Aliquot: 50 ml
 Final Volume: 50 ml
 Result Units: MG/L
 Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7429-90-5	ALUMINUM	5000	4680	50		94	85 - 115%
7440-36-0	ANTIMONY	30	29.2	0.3		97	85 - 115%
7440-38-2	ARSENIC	100	97.3	2		97	85 - 115%
7440-39-3	BARIUM	100	101	1		101	85 - 115%
7440-43-9	CADMIUM	30	29.9	0.3		100	85 - 115%
7440-48-4	COBALT	100	95.5	1		96	85 - 115%
7440-50-8	COPPER	1000	1000	10		100	85 - 115%
7439-92-1	LEAD	50	49.6	0.5		99	85 - 115%
7439-96-5	MANGANESE	100	95.3	2		95	85 - 115%
7439-98-7	MOLYBDENUM	100	94.2	1		94	85 - 115%
7782-49-2	SELENIUM	100	96.3	1		96	85 - 115%
7440-22-4	SILVER	10	10.1	0.1		101	85 - 115%
7440-23-5	SODIUM	10000	9520	1000		95	85 - 115%
7440-24-6	STRONTIUM	100	92.3	1		92	85 - 115%
7440-28-0	THALLIUM	0.002	0.0023	0.0002		115	85 - 115%
7440-29-1	THORIUM	10	10	0.2		100	85 - 115%
7440-61-1	URANIUM	10	9.96	0.1		100	85 - 115%
7440-66-6	ZINC	2000	1910	20		95	85 - 115%

Data Package ID: im1701016-1

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

LIMS Version: 6.837

Page 1 of 1

Metals by 200.8

Method EPA200.8 Revision 5.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1701016
Client Name: COGCC
ClientProject ID: Vondy #3

Field ID: Vondy #3
LabID: 1701016-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Dec-16
Date Extracted: 09-Jan-17
Date Analyzed: 11-Jan-17
Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2
QCBatchID: IP170109-2-4
Run ID: IM170111-10A6
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: MG/L
File Name: 008SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7429-90-5	ALUMINUM	0.098		5.08		0.05	5	100	70 - 130%
7440-36-0	ANTIMONY	0.00011	U	0.0298		0.0003	0.03	99	70 - 130%
7440-38-2	ARSENIC	0.00025	J	0.099		0.002	0.1	99	70 - 130%
7440-39-3	BARIUM	1.4		1.51		0.001	0.1	142	70 - 130%
7440-43-9	CADMIUM	0.000088	U	0.0302		0.0003	0.03	101	70 - 130%
7440-48-4	COBALT	0.00011	J	0.0992		0.001	0.1	99	70 - 130%
7440-50-8	COPPER	0.0012	U	1.03		0.01	1	103	70 - 130%
7439-92-1	LEAD	0.00026	J	0.0517		0.0005	0.05	103	70 - 130%
7439-96-5	MANGANESE	0.035		0.135		0.002	0.1	100	70 - 130%
7439-98-7	MOLYBDENUM	0.00082	J	0.0997		0.001	0.1	99	70 - 130%
7782-49-2	SELENIUM	0.00066	U	0.0987		0.001	0.1	99	70 - 130%
7440-22-4	SILVER	0.000041	U	0.01		0.0001	0.01	100	70 - 130%
7440-23-5	SODIUM	2300000		2320000		1000	10000	692	70 - 130%
7440-24-6	STRONTIUM	2.7		2.88		0.001	0.1	167	70 - 130%
7440-28-0	THALLIUM	0.000018	U	0.00256		0.0002	0.002	128	70 - 130%
7440-29-1	THORIUM	0.11	J	10.6		0.2	10	105	70 - 130%
7440-61-1	URANIUM	0.00002	J	0.0106		0.0001	0.01	105	70 - 130%
7440-66-6	ZINC	0.0098	U	1.97		0.02	2	98	70 - 130%

Data Package ID: *im1701016-1*

Metals by 200.8

Method EPA200.8 Revision 5.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1701016
Client Name: COGCC
ClientProject ID: Vondy #3

Field ID: Vondy #3
LabID: 1701016-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 30-Dec-16
Date Extracted: 09-Jan-17
Date Analyzed: 11-Jan-17
Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP170109-2
QCBatchID: IP170109-2-4
Run ID: IM170111-10A6
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: MG/L
File Name: 009SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7429-90-5	ALUMINUM	5.11		5	100	0.05	20	0
7440-36-0	ANTIMONY	0.0298		0.03	99	0.0003	20	0
7440-38-2	ARSENIC	0.0988		0.1	99	0.002	20	0
7440-39-3	BARIUM	1.44		0.1	76	0.001	20	4
7440-43-9	CADMIUM	0.0298		0.03	100	0.0003	20	1
7440-48-4	COBALT	0.0989		0.1	99	0.001	20	0
7440-50-8	COPPER	1.02		1	102	0.01	20	1
7439-92-1	LEAD	0.0507		0.05	101	0.0005	20	2
7439-96-5	MANGANESE	0.132		0.1	98	0.002	20	2
7439-98-7	MOLYBDENUM	0.0992		0.1	98	0.001	20	0
7782-49-2	SELENIUM	0.0987		0.1	99	0.001	20	0
7440-22-4	SILVER	0.01		0.01	100	0.0001	20	0
7440-23-5	SODIUM	2310000		10000	612	1000	20	0
7440-24-6	STRONTIUM	2.86		0.1	149	0.001	20	1
7440-28-0	THALLIUM	0.00246		0.002	123	0.0002	20	4
7440-29-1	THORIUM	10.1		10	100	0.2	20	4
7440-61-1	URANIUM	0.0101		0.01	100	0.0001	20	5
7440-66-6	ZINC	1.94		2	97	0.02	20	1

Data Package ID: *im1701016-1*

Date Printed: Tuesday, January 17, 2017

ALS -- Fort Collins

Page 2 of 2

LIMS Version: 6.837