

Anion / Cation Summary Report

Lab ID: **1410648-1**

QC Type: SMP

Field ID Ackerman 1

Analyte	Final Result	Report Units	mEq
BICARBONATE AS CaCO3	1001.052	MG/L	20.01
CARBONATE AS CaCO3	138.3442	MG/L	2.76
CHLORIDE	392.3659	MG/L	11.07
FLUORIDE	4.769831	MG/L	0.25
NITRATE/NITRITE AS N	0.012469	MG/L	0.00
SULFATE	5	MG/L	0.00

Anion Result Sum 1541.54

Analyte	Final Result	Report Units	mEq
CALCIUM	2.60153	MG/L	0.13
IRON	11.09815	MG/L	0.60
MAGNESIUM	0.68324	MG/L	0.06
MANGANESE	0.05268	MG/L	0.00
POTASSIUM	4.81905	MG/L	0.12
SODIUM	787.0485	MG/L	34.23

Cation Result Sum 806.30

Total Result: **2347.85** MG/L

TDS Result: **1834.000** MG/L

RPD: 24.58%

Anion mEq Sum: **34.09**

Cation mEq Sum: **35.14**

RPD: 3.04%

Below is a list of Lab IDs for this Order Number that were logged in for metals analyses. Note: if this area is empty then either no metals analyses were requested or the cations of interest were not requested.

1410648-1



Inorganics Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample.
2. The sample was received intact at 13.8° Celsius by ALS on 10/23/14.
3. Sample 1410648-1 was preserved with sulfuric acid to a pH less than 2 upon receipt
4. The sample was prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures and Environmental Monitoring Systems Laboratory (EMSL) Rev 2.1 procedures.
5. The sample was analyzed following MCAWW and EMSL procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	310.1	1106
Bicarbonate	310.1	1106
Carbonate	310.1	1106
Nitrate/nitrite as N	353.2 Revision 2.0	1127
pH	150.1	1126
Specific conductance	120.1	1128
Total phosphorus	365.2	1119
TDS	160.1	1101
Bromide	300.0 Revision 2.1	1113
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

6. All standards and solutions were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold time for each analysis.



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

8. General quality control procedures.

- n A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in each applicable preparation batch.
- n The method blank associated with each applicable batch was below the reporting limit for the requested analytes.
- n All laboratory control sample criteria were met.
- n All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- n All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.

9. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for each analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

10. Electrical conductivity screening indicated that the concentration of dissolved salts was high in the sample. Therefore, it was necessary to dilute the sample prior to injection into the ion chromatograph in order to minimize the amount of salts loaded into the analytical column.

It was necessary to further dilute the sample in order to bring the chloride concentration into the analytical range of the ion chromatograph (IC).

Reduced aliquots were taken of the sample for the alkalinity, bicarbonate, carbonate, and TDS analysis. Reporting limits were elevated accordingly.

11. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.



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

10/30/14
Date

[Signature]
Inorganics Final Data Reviewer

10/30/14
Date



Inorganic Data Reporting Qualifiers

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

- Concentration 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 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:
 - N - Spiked sample recovery not within control limits.
 - * - Duplicate analysis (relative percent difference) not within control limits.
 - Z - Calibration spike recovery not within control limits.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

*8 → see page 2

*14 → 1410648-1-1 through -1-9

*Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

BICARBONATE AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: COGCC
Client Project ID: Ackerman 1
Work Order Number: 1410648
Reporting Basis: As Received
Prep Method: NONE
Analyst: Kerry M. Petrie
Final Volume: 100 ml
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag	Sample Aliquot
Ackerman 1	1410648-1	10/23/2014	10/24/2014	10/24/2014	N/A	1	1000	20		25 ml

Comments:

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

Data Package ID: *ak1410648-1*

CARBONATE AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: COGCC
Client Project ID: Ackerman 1
Work Order Number: 1410648
Reporting Basis: As Received
Prep Method: NONE
Analyst: Kerry M. Petrie
Final Volume: 100 ml
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag	Sample Aliquot
Ackerman 1	1410648-1	10/23/2014	10/24/2014	10/24/2014	N/A	1	140	20		25 ml

Comments:

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

Data Package ID: *ak1410648-1*

TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: COGCC
Client Project ID: Ackerman 1
Work Order Number: 1410648
Reporting Basis: As Received
Prep Method: NONE
Analyst: Kerry M. Petrie
Final Volume: 100 ml
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag	Sample Aliquot
Ackerman 1	1410648-1	10/23/2014	10/24/2014	10/24/2014	N/A	1	1100	20		25 ml

Comments:

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

Data Package ID: *ak1410648-1*

Nitrate/Nitrite as N

Method EPA353.2 Revision 2.0

Sample Results

Lab Name: ALS Environmental -- FC
Work Order Number: 1410648
Client Name: COGCC
ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER	Prep Batch: NN141030-1	Analyst: Alex J. Devonald
% Moisture: N/A	QCBatchID: NN141030-1-1	Sample Aliquot: 5 ml
Date Collected: 23-Oct-14	Run ID: NN141030-1A2	Final Volume: 5 ml
Date Extracted: 30-Oct-14	Cleanup: NONE	Result Units: MG/L
Date Analyzed: 30-Oct-14	Basis: As Received	Clean DF: 1
Prep Method: NONE	File Name: 1030NOX.FDT	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
1-005	NITRATE/NITRITE AS N	1	0.012	0.01	0.003		

Data Package ID: *nn1410648-1*

pH

Method EPA150.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: NONE

Prep Batch: pH141024-1

QCBatchID: pH141024-1-2

Run ID: pH141024-1A1

Cleanup: NONE

Basis: As Received

File Name:

Analyst: Kerry M. Petrie

Sample Aliquot: 20 ML

Final Volume: 20 ML

Result Units: pH

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
10-29-7	PH AnalysisTime: 12:15	1	8.83	0.1		

Data Package ID: *ph1410648-1*

Specific Conductance in Water

Method EPA120.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: NONE

Prep Batch: SC141024-1

QCBatchID: SC141024-1-3

Run ID: SC141024-1A1

Cleanup: NONE

Basis: As Received

File Name:

Analyst: Kerry M. Petrie

Sample Aliquot: 45 ML

Final Volume: 45 ML

Result Units: umhos/cm

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
10-34-4	SPECIFIC CONDUCTIVITY AnalysisTime: 12:05	1	3090	1		

Data Package ID: sc1410648-1

Total Phosphorus as P

Method EPA365.2

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 29-Oct-14

Date Analyzed: 29-Oct-14

Prep Method: METHOD

Prep Batch: TP141029-1

QCBatchID: TP141029-1-1

Run ID: TP141029-1A3

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Analyst: Alex J. Devonald

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ	MDL/ LOD/DL	Result Qualifier	EPA Qualifier
7723-14-0	TOTAL PHOSPHORUS	1	0.31	0.05	0.015		

Data Package ID: *tp1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Total Dissolved Solids

Method EPA160.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 27-Oct-14

Date Analyzed: 28-Oct-14

Prep Method: METHOD

Prep Batch: TD141027-1

QCBatchID: TD141027-1-2

Run ID: TD141028-1A1

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Analyst: Kerry M. Petrie

Sample Aliquot: 50 ML

Final Volume: 50 ML

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	1800	40		

Data Package ID: *td1410648-1*

Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 23-Oct-14

Date Analyzed: 23-Oct-14

Prep Method: NONE

Prep Batch: IC141023-1

QCBatchID: IC141023-1-1

Run ID: IC141023-1A3

Cleanup: NONE

Basis: As Received

File Name: 41023_037.dxd

Analyst: Alex J. Devonald

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 21:42	5	4.8	0.5	0.15		
16887-00-6	CHLORIDE AnalysisTime: 21:56	50	390	10	3.1		
24959-67-9	BROMIDE AnalysisTime: 21:42	5	0.98	1	0.3	J	
14808-79-8	SULFATE AnalysisTime: 21:42	5	2.4	5	1.5	J	

Data Package ID: *ic1410648-1*

BICARBONATE AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: AK141024-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK141024-1

QCBatchID: AK141024-1-1

Run ID: AK141024-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK141024-1MB	10/24/2014	10/24/2014	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

CARBONATE AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: AK141024-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK141024-1

QCBatchID: AK141024-1-1

Run ID: AK141024-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK141024-1MB	10/24/2014	10/24/2014	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: AK141024-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK141024-1

QCBatchID: AK141024-1-1

Run ID: AK141024-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK141024-1MB	10/24/2014	10/24/2014	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: AK141024-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/24/2014

Date Analyzed: 10/24/2014

Prep Batch: AK141024-1

QCBatchID: AK141024-1-1

Run ID: AK141024-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
	TOTAL ALKALINITY AS CaCO3	100	101	5		100	85 - 115

Data Package ID: ak1410648-1

Nitrate/Nitrite as N

Method EPA353.2 Revision 2.0

Method Blank

Lab Name: ALS Environmental -- FC
Work Order Number: 1410648
Client Name: COGCC
ClientProject ID: Ackerman 1

Lab ID: NN141030-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 30-Oct-14
Date Analyzed: 30-Oct-14

Prep Batch: NN141030-1
QCBatchID: NN141030-1-1
Run ID: NN141030-1A2
Cleanup: NONE
Basis: N/A
File Name: 1030NOX.FDT

Sample Aliquot: 5 ml
Final Volume: 5 ml
Result Units: MG/L
Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
1-005	NITRATE/NITRITE AS N	1	0.01	0.01	0.003	U	

Data Package ID: nn1410648-1

Nitrate/Nitrite as N

Method EPA353.2 Revision 2.0

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: NN141030-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/30/2014

Date Analyzed: 10/30/2014

Prep Method: NONE

Prep Batch: NN141030-1

QCBatchID: NN141030-1-1

Run ID: NN141030-1A2

Cleanup: NONE

Basis: N/A

File Name: 1030NOX.FDT

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
1-005	NITRATE/NITRITE AS N	0.5	0.508	0.01		102	90 - 110%

Data Package ID: *nn1410648-1*

Total Phosphorus as P

Method EPA365.2

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: TP141029-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 29-Oct-14

Date Analyzed: 29-Oct-14

Prep Batch: TP141029-1

QCBatchID: TP141029-1-1

Run ID: TP141029-1A3

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
7723-14-0	TOTAL PHOSPHORUS	1	0.05	0.05	0.015	U	

Data Package ID: *tp1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Total Phosphorus as P

Method EPA365.2

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: TP141029-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/29/2014

Date Analyzed: 10/29/2014

Prep Method: METHOD

Prep Batch: TP141029-1

QCBatchID: TP141029-1-1

Run ID: TP141029-1A3

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

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
7723-14-0	TOTAL PHOSPHORUS	0.5	0.495	0.05		99	80 - 120%

Data Package ID: *tp1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.723

Total Dissolved Solids

Method EPA160.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: TD141027-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 27-Oct-14

Date Analyzed: 28-Oct-14

Prep Method: METHOD

Prep Batch: TD141027-1

QCBatchID: TD141027-1-2

Run ID: TD141028-1A1

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	20	20	U	

Data Package ID: *td1410648-1*

Total Dissolved Solids

Method EPA160.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: TD141027-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/27/2014

Date Analyzed: 10/28/2014

Prep Method: METHOD

Prep Batch: TD141027-1

QCBatchID: TD141027-1-2

Run ID: TD141028-1A1

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
10-33-3	TOTAL DISSOLVED SOLIDS	400	406	20		102	85 - 115%

Data Package ID: *td1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.723

Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: IC141023-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 23-Oct-14

Date Analyzed: 23-Oct-14

Prep Batch: IC141023-1

QCBatchID: IC141023-1-1

Run ID: IC141023-1A3

Cleanup: NONE

Basis: N/A

File Name: 41023_014.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.1	0.1	0.03	U	
16887-00-6	CHLORIDE	1	0.2	0.2	0.062	U	
24959-67-9	BROMIDE	1	0.2	0.2	0.06	U	
14808-79-8	SULFATE	1	1	1	0.3	U	

Data Package ID: ic1410648-1

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Ion Chromatography

Method EPA300.0 Revision 2.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: IC141023-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/23/2014

Date Analyzed: 10/23/2014

Prep Method: NONE

Prep Batch: IC141023-1

QCBatchID: IC141023-1-1

Run ID: IC141023-1A3

Cleanup: NONE

Basis: N/A

File Name: 41023_013.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
16984-48-8	FLUORIDE	2	2	0.1		100	90 - 110%
16887-00-6	CHLORIDE	5	5.13	0.2		103	90 - 110%
24959-67-9	BROMIDE	5	5.26	0.2		105	90 - 110%
14808-79-8	SULFATE	20	20	1		100	90 - 110%

Data Package ID: *ic1410648-1*

Date Printed: Thursday, October 30, 2014

ALS Environmental -- FC

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LIMS Version: 6.723



Metals

Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample.
2. The sample was received intact at 13.8°C by ALS on 10/23/14.
3. The sample was to be 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 ICP-MS, the sample was digested following method 200.2 and the current revision of SOP 806.

5. 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 200.8 were analyzed.

9. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

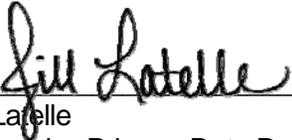
10. It is a standard practice that samples for ICP-MS are analyzed at a dilution.

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 200.8.

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

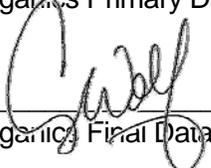
The analyte results are the meq/L concentrations based on conversions from their mg/L concentrations. Please note that the SAR value is unitless.

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

10/29/14
Date



[unclear]
Inorganics Final Data Reviewer

10/30/14
Date



Inorganic Data Reporting Qualifiers

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

- Result qualifier -- 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.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

* 8 → see page 2
* 14 → 1410648-1-1 through -1-9
* Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

Dissolved Metals by 200.8

Method EPA200.8 Revision 5.4

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID: Ackerman 1

Lab ID: 1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 27-Oct-14

Date Analyzed: 28-Oct-14

Prep Method: EPA200.2 Rev 2.2

Prep Batch: IP141027-1

QCBatchID: IP141027-1-3

Run ID: IM141028-10A2

Cleanup: NONE

Basis: As Received

File Name: 031SMPL_

Analyst: Ross Miller

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	0.7	10	0.7	U	
7439-92-1	LEAD	10	18	0.5	0.29		
7440-39-3	BARIUM	10	110	1	0.35		
7440-42-8	BORON	10	3800	50	8		
7440-70-2	CALCIUM	10	2600	1000	76		
7439-89-6	IRON	10	11000	100	12		
7439-95-4	MAGNESIUM	10	680	100	35		
7439-96-5	MANGANESE	10	53	2	0.52		
7440-09-7	POTASSIUM	10	4800	1000	150		
7782-49-2	SELENIUM	10	0.68	1	0.68	U	
7440-23-5	SODIUM	10	790000	1000	130		
7440-24-6	STRONTIUM	10	260	1	0.36		
	SODIUM ADSORPTION RATIO	10	110	0.26	0.097		

Data Package ID: im1410648-1

Date Printed: Wednesday, October 29, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Metals by 200.8

Method EPA200.8 Revision 5.4

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: IP141027-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 27-Oct-14

Date Analyzed: 28-Oct-14

Prep Batch: IP141027-1

QCBatchID: IP141027-1-3

Run ID: IM141028-10A2

Cleanup: NONE

Basis: N/A

File Name: 013SMPL_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	10	10	0.7	U	
7439-92-1	LEAD	10	0.5	0.5	0.29	U	
7440-39-3	BARIUM	10	1	1	0.35	U	
7440-42-8	BORON	10	50	50	8	U	
7440-70-2	CALCIUM	10	1000	1000	76	U	
7439-89-6	IRON	10	100	100	12	U	
7439-95-4	MAGNESIUM	10	100	100	35	U	
7439-96-5	MANGANESE	10	2	2	0.52	U	
7440-09-7	POTASSIUM	10	1000	1000	150	U	
7782-49-2	SELENIUM	10	1	1	0.68	U	
7440-23-5	SODIUM	10	1000	1000	130	U	
7440-24-6	STRONTIUM	10	1	1	0.36	U	

Data Package ID: *im1410648-1*

Metals by 200.8

Method EPA200.8 Revision 5.4

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: IP141027-1LCS

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 10/27/2014
 Date Analyzed: 10/28/2014
 Prep Method: EPA200.22.2

Prep Batch: IP141027-1
 QCBatchID: IP141027-1-3
 Run ID: IM141028-10A2
 Cleanup: NONE
 Basis: N/A
 File Name: 016SMPL_

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	496	10		99	85 - 115%
7439-92-1	LEAD	50	45.9	0.5		92	85 - 115%
7440-39-3	BARIUM	100	100	1		100	85 - 115%
7440-42-8	BORON	1000	897	50		90	85 - 115%
7440-70-2	CALCIUM	10000	9990	1000		100	85 - 115%
7439-89-6	IRON	5000	5150	100		103	85 - 115%
7439-95-4	MAGNESIUM	10000	9900	100		99	85 - 115%
7439-96-5	MANGANESE	100	103	2		103	85 - 115%
7440-09-7	POTASSIUM	5000	5010	1000		100	85 - 115%
7782-49-2	SELENIUM	100	103	1		103	85 - 115%
7440-23-5	SODIUM	10000	9730	1000		97	85 - 115%
7440-24-6	STRONTIUM	100	99.1	1		99	85 - 115%

Data Package ID: *im1410648-1*

Dissolved Gasses

Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample. The sample was received intact by ALS on 10/23/2014. The sample was received at 13.8° Celsius.

The vial for sample -1 contained headspace prior to analysis.

The sample had a pH < 2 at the time of analysis.

2. The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.
3. The preparation batch included a method blank, laboratory control sample, laboratory control sample duplicate, sample duplicate, and matrix spike. Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

All preparation QC were within the acceptance criteria.

4. The sample was associated with one or more of the following analytical QC: initial calibrations, initial calibration verifications (ICV), and continuing calibration verifications (CCV).
5. All analytical QC were within the acceptance criteria.
6. Sample dilutions were not required for the requested analysis.
7. The sample was prepared and analyzed within the established holding time.
8. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.



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.

Mindy Norton

Mindy Norton
Organics Primary Data Reviewer

10/28/14

Date

C. Wolf

Organics Final Data Reviewer

10/30/14

Date



ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

* 8 → see page 2
* 14 → 1410648-1-1 through -1-9
* Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

Dissolved Gasses

Method RSK175

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: HC141024-9MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: METHOD

Prep Batch: HC141024-9

QCBatchID: HC141024-9-1

Run ID: HC141024-9A

Cleanup: NONE

Basis: N/A

File Name: 07850.dat

Sample Aliquot: 38.5 ml

Final Volume: 38.5 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
74-82-8	METHANE	1	1	1	U	
74-84-0	ETHANE	1	2	2	U	
74-98-6	PROPANE	1	1	1	U	

Data Package ID: MEE1410648-1

Dissolved Gasses

Method RSK175

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: METHOD

Prep Batch: HC141024-9

QC Batch ID: HC141024-9-1

Run ID: HC141024-9A

Cleanup: NONE

Basis: As Received

File Name: 07859.dat

Analyst: Joel F. Nolte

Sample Aliquot: 38.5 ML

Final Volume: 38.5 ML

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ	Result Qualifier	EPA Qualifier
74-82-8	METHANE	1	13000	1		
74-84-0	ETHANE	1	120	2		
74-98-6	PROPANE	1	9	1		

Data Package ID: MEE1410648-1

Dissolved Gasses

Method RSK175

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: HC141024-9LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/24/2014

Date Analyzed: 10/24/2014

Prep Method: METHOD

Prep Batch: HC141024-9

QCBatchID: HC141024-9-1

Run ID: HC141024-9A

Cleanup: NONE

Basis: N/A

File Name: 07849.dat

Sample Aliquot: 38.5 ml

Final Volume: 38.5 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
74-82-8	METHANE	142	129	1		91	80 - 120%
74-84-0	ETHANE	267	252	2		94	80 - 120%
74-98-6	PROPANE	391	361	1		92	80 - 120%

Lab ID: HC141024-9LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/24/2014

Date Analyzed: 10/24/2014

Prep Method: METHOD

Prep Batch: HC141024-9

QCBatchID: HC141024-9-1

Run ID: HC141024-9A

Cleanup: NONE

Basis: N/A

File Name: 07867.dat

Sample Aliquot: 38.5 ml

Final Volume: 38.5 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
74-82-8	METHANE	142	132	1		93	25	2
74-84-0	ETHANE	267	258	2		97	25	3
74-98-6	PROPANE	391	369	1		94	25	2

Data Package ID: MEE1410648-1



GC/MS Volatiles

Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample. The sample was received intact at 13.8°C by ALS on 10/23/14.

The water sample was free of headspace prior to analysis and had a pH < 2 at the time of analysis.

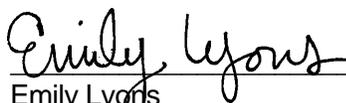
2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared using purge and trap procedures based on Method 5030C.
3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to the current revision of SOP 525 based on SW-846 Method 8260. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.
4. All initial calibration criteria were met.
5. All initial calibrations are verified by comparing a second source standard calibration verification (ICV) against the calibration curve. All criteria for initial calibration verification were met.
6. All compounds in the continuing calibration verification had a %D of less than 20%.
7. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, ALS has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. Due to fluctuations in ambient laboratory conditions, reported sample values for common laboratory contaminants may be due to lab contamination even if the compound in question is not detected in the associated method blank.



All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. A matrix spike and matrix spike duplicate were not performed because of insufficient sample. A laboratory control sample and laboratory control sample duplicate were performed instead.
10. The sample was analyzed within the established holding time.
11. All surrogate recoveries were within acceptance criteria.
12. All internal standard recoveries were within acceptance criteria.
13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

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.



Emily Lyons
Organics Primary Data Reviewer

10/29/14
Date



Organics Final Data Reviewer

10/30/14
Date



ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

*8 → see page 2
*14 → 1410648-1-1 through -1-9
*Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: VL141023-7MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 23-Oct-14

Date Analyzed: 23-Oct-14

Prep Batch: VL141023-7

QCBatchID: VL141023-7-1

Run ID: VL141023-7A

Cleanup: NONE

Basis: N/A

File Name: D50181

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
71-43-2	BENZENE	1	1	1	0.3	U	
100-41-4	ETHYLBENZENE	1	1	1	0.3	U	
136777-61-2	M+P-XYLENE	1	1	1	0.3	U	
95-47-6	O-XYLENE	1	1	1	0.3	U	
108-88-3	TOLUENE	1	1	1	0.3	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.4		25	98	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.4		25	98	84 - 118
2037-26-5	TOLUENE-D8	25.2		25	101	85 - 115

Data Package ID: VL1410648-1

Date Printed: Wednesday, October 29, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 23-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: SW5030 Rev C

Prep Batch: VL141023-7

QCBatchID: VL141023-7-1

Run ID: VL141023-7A

Cleanup: NONE

Basis: As Received

File Name: D50203

Analyst: Steven D. White

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
71-43-2	BENZENE	1	0.44	1	0.3	J	
100-41-4	ETHYLBENZENE	1	1	1	0.3	U	
136777-61-2	M+P-XYLENE	1	0.61	1	0.3	J	
95-47-6	O-XYLENE	1	0.38	1	0.3	J	
108-88-3	TOLUENE	1	0.83	1	0.3	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.5		25	98	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25		25	100	84 - 118
2037-26-5	TOLUENE-D8	25.3		25	101	85 - 115

Data Package ID: VL1410648-1

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: VL141023-7LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 10/23/2014
Date Analyzed: 10/23/2014
Prep Method: SW5030C

Prep Batch: VL141023-7
QCBatchID: VL141023-7-1
Run ID: VL141023-7A
Cleanup: NONE
Basis: N/A
File Name: D50179

Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
71-43-2	BENZENE	10	10.3	1		103	83 - 117%
100-41-4	ETHYLBENZENE	10	9.91	1		99	81 - 113%
136777-61-	M+P-XYLENE	20	19.6	1		98	82 - 115%
95-47-6	O-XYLENE	10	9.65	1		97	81 - 115%
108-88-3	TOLUENE	10	10.1	1		101	82 - 113%

Lab ID: VL141023-7LCSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 10/23/2014
Date Analyzed: 10/23/2014
Prep Method: SW5030C

Prep Batch: VL141023-7
QCBatchID: VL141023-7-1
Run ID: VL141023-7A
Cleanup: NONE
Basis: N/A
File Name: D50180

Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
71-43-2	BENZENE	10	10	1		100	20	2
100-41-4	ETHYLBENZENE	10	9.68	1		97	20	2
136777-61-	M+P-XYLENE	20	18.9	1		94	20	4
95-47-6	O-XYLENE	10	9.62	1		96	20	0
108-88-3	TOLUENE	10	9.77	1		98	20	4

Data Package ID: VL1410648-1

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25	99		100		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	100		99		84 - 118
2037-26-5	TOLUENE-D8	25	99		101		85 - 115

Data Package ID: VL1410648-1



Total Extractable Petroleum Hydrocarbons (Diesel)

Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample. The sample was received intact by ALS on 10/23/2014. The sample was received at 13.8° Celsius.
2. The water sample was extracted by adding hexane to the water sample and shaking the resulting two phase solution according to the current revision of SOP 603, which was developed at ALS. The hydrocarbons partition into the hexane layer, which is then removed for analysis.
3. The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for diesel range organics.
6. All laboratory control sample recoveries were within the acceptance criteria.
7. Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.
8. The sample was extracted and analyzed within the established holding time.
9. All surrogate recoveries were within the acceptance criteria.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.



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.

Mindy Norton

Mindy Norton
Organics Primary Data Reviewer

10/29/14

Date

Carol

Organics Final Data Reviewer

10/30/14

Date



ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.



ALS
Data Qualifier Flags
Fuels

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z:** This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
gasoline
JP-8
diesel
mineral spirits
motor oil
Stoddard solvent
bunker C

Multiple flags may be used to indicate the presence of more than one product or component.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

*8 → see page 2
*14 → 1410648-1-1 through -1-9
*Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

Diesel Range Organics

Method SW8015MD

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: EX141027-6MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 27-Oct-14

Date Analyzed: 27-Oct-14

Prep Batch: EX141027-6

QCBatchID: EX141027-6-1

Run ID: HC141027-77A

Cleanup: NONE

Basis: N/A

File Name: 07363.dat

Sample Aliquot: 36.1 ml

Final Volume: 1 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	0.15	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.22		1.39	88	54 - 123

Data Package ID: HCD1410648-1

Date Printed: Wednesday, October 29, 2014

ALS Environmental -- FC

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Diesel Range Organics

Method SW8015MD

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 27-Oct-14

Date Analyzed: 27-Oct-14

Prep Method: METHOD

Prep Batch: EX141027-6

QC Batch ID: EX141027-6-1

Run ID: HC141027-77A

Cleanup: NONE

Basis: As Received

File Name: 07366.dat

Analyst: Joel F. Nolte

Sample Aliquot: 36.1 ml

Final Volume: 1 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.52	0.5	0.15	D	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.23		1.39	89	54 - 123

The chromatogram for Diesel Range Organics indicates the presence of hydrocarbons in the range of C10-C24.

Data Package ID: HCD1410648-1

Date Printed: Wednesday, October 29, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Diesel Range Organics

Method SW8015MD

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: EX141027-6LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10/27/2014

Date Analyzed: 10/27/2014

Prep Method: METHOD

Prep Batch: EX141027-6

QCBatchID: EX141027-6-1

Run ID: HC141027-77A

Cleanup: NONE

Basis: N/A

File Name: 07365.dat

Sample Aliquot: 35.5 ml

Final Volume: 1 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
68334-30-5	Diesel Range Organics	14.1	14.7	0.507		104	36 - 150%

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.36		1.41	96	54 - 123

Data Package ID: HCD1410648-1

Date Printed: Wednesday, October 29, 2014

ALS Environmental -- FC

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LIMS Version: 6.723



Total Volatile Petroleum Hydrocarbons (Gasoline) Case Narrative

COGCC

Ackerman 1

Work Order Number: 1410648

1. This report consists of 1 water sample. The sample was received intact by ALS on 10/23/2014. The sample was received at 13.8° Celsius.

The vial for samples -1 and -1MS/MSD contained head space prior to analysis.

The sample had a pH < 2 at the time of analysis.

2. The sample was prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared by heating and purging 5ml using purge and trap procedures based on Method 5030C. The calibration curve was also prepared using the heated purge.
3. The sample was analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for gasoline range organics.
6. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
7. Sample 1410648-1 was designated as the quality control sample for this analysis.



All matrix spike and matrix spike duplicate recoveries and RPDs were within the acceptance criteria.

8. The sample was extracted and analyzed within the established holding time.
9. All surrogate recoveries were within acceptance criteria.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

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.

Mindy Norton
Mindy Norton
Organics Primary Data Reviewer

10/27/14
Date

C. Wolf
Organics Final Data Reviewer

10/30/14
Date



ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.



ALS
Data Qualifier Flags
Fuels

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z:** This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
gasoline
JP-8
diesel
mineral spirits
motor oil
Stoddard solvent
bunker C

Multiple flags may be used to indicate the presence of more than one product or component.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1410648

Client Name: COGCC

Client Project Name: Ackerman 1

Client Project Number:

Client PO Number: PHAA061114PHA-04

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Ackerman 1	1410648-1		WATER	23-Oct-14	14:10



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1410648
Project Manager: ARW Initials: JLR Date: 10/27/14

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	YES	<input checked="" type="radio"/> 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: <u>X</u> < green pea ___ > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: <u>X</u> dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	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*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>13.8°</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>13</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.

*8 → see page 2

*14 → 1410648-1-1 through -1-9

*Temp → sampled same day

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

Project Manager Signature / Date: Cowley 10/23/14

Gasoline Range Organics

Method SW8015D

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: HC141024-6MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Batch: HC141024-6

QCBatchID: HC141024-6-1

Run ID: HC141024-6A

Cleanup: NONE

Basis: N/A

File Name: 14291.dat

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ	MDL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.1	0.1	0.01	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0917		0.1	92	74 - 129

Data Package ID: HCG1410648-1

Date Printed: Monday, October 27, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Gasoline Range Organics

Method SW8015D

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID:	Ackerman 1
Lab ID:	1410648-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 23-Oct-14

Date Extracted: 24-Oct-14

Date Analyzed: 24-Oct-14

Prep Method: SW5030 Rev C

Prep Batch: HC141024-6

QC Batch ID: HC141024-6-1

Run ID: HC141024-6A

Cleanup: NONE

Basis: As Received

File Name: 14301.dat

Analyst: Joel F. Nolte

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ	MDL/LOD/DL	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.067	0.1	0.01	J	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0949		0.1	95	74 - 129

Data Package ID: HCG1410648-1

Date Printed: Monday, October 27, 2014

ALS Environmental -- FC

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LIMS Version: 6.723

Gasoline Range Organics

Method SW8015D

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Lab ID: HC141024-6LCS	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 10/24/2014 Date Analyzed: 10/24/2014 Prep Method: SW5030C	Prep Batch: HC141024-6 QCBatchID: HC141024-6-1 Run ID: HC141024-6A Cleanup: NONE Basis: N/A File Name: 14290.dat	Sample Aliquot: 5 ml Final Volume: 5 ml Result Units: MG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
8006-61-9	GASOLINE RANGE ORGANICS	0.5	0.449	0.1		90	79 - 118%

Lab ID: HC141024-6LCSD	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 10/24/2014 Date Analyzed: 10/24/2014 Prep Method: SW5030C	Prep Batch: HC141024-6 QCBatchID: HC141024-6-1 Run ID: HC141024-6A Cleanup: NONE Basis: N/A File Name: 14304.dat	Sample Aliquot: 5 ml Final Volume: 5 ml Result Units: MG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
8006-61-9	GASOLINE RANGE ORGANICS	0.5	0.479	0.1		96	20	7

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
193533-92-	2,3,4-TRIFLUOROTOLUENE	0.1	96		102		74 - 129

Data Package ID: HCG1410648-1

Gasoline Range Organics

Method SW8015D

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1410648

Client Name: COGCC

ClientProject ID: Ackerman 1

Field ID: Ackerman 1	Sample Matrix: WATER	Prep Batch: HC141024-6	Sample Aliquot: 5 ml
LabID: 1410648-1MS	% Moisture: N/A	QCBatchID: HC141024-6-1	Final Volume: 5 ml
	Date Collected: 23-Oct-14	Run ID: HC141024-6A	Result Units: MG/L
	Date Extracted: 24-Oct-14	Cleanup: NONE	File Name: 14302.dat
	Date Analyzed: 24-Oct-14	Basis: As Received	
	Prep Method: SW5030 Rev C		

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
8006-61-9	GASOLINE RANGE ORGANICS	0.067	J	0.475		0.1	0.5	82	79 - 118%

Field ID: Ackerman 1	Sample Matrix: WATER	Prep Batch: HC141024-6	Sample Aliquot: 5 ml
LabID: 1410648-1MSD	% Moisture: N/A	QCBatchID: HC141024-6-1	Final Volume: 5 ml
	Date Collected: 23-Oct-14	Run ID: HC141024-6A	Result Units: MG/L
	Date Extracted: 24-Oct-14	Cleanup: NONE	File Name: 14303.dat
	Date Analyzed: 24-Oct-14	Basis: As Received	
	Prep Method: SW5030 Rev C		

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
8006-61-9	GASOLINE RANGE ORGANICS	0.473		0.5	81	0.1	30	0

Surrogate Recovery MS/MSD

CASNO	Target Analyte	Spike Added	MS % Rec.	MS Flag	MSD % Rec.	MSD Flag	Control Limits
193533-92-	2,3,4-TRIFLUOROTOLUENE	0.1	101		99		74 - 129

Data Package ID: HCG1410648-1