



Environmental Division
Fort Collins, Colorado

Inorganics

Case Narrative

Colorado Oil & Gas Conservation Commission

Complaint 200241120

Work Order Number: 1005024

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 05/05/10.
3. The samples were 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.
4. The samples were analyzed following MCAWW and EMSL procedures for the following methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	310.1	1106 Rev 7
Bicarbonate	310.1	1106 Rev 8
Carbonate	310.1	1106 Rev 8
pH	150.1	1126 Rev 17
Specific conductance	120.1	1128 Rev 9
TDS	160.1	1101 Rev 10
Bromide	300.0 Revision 2.1	1113 Rev 11
Chloride	300.0 Revision 2.1	1113 Rev 11
Fluoride	300.0 Revision 2.1	1113 Rev 11
Nitrate as N	300.0 Revision 2.1	1113 Rev 11
Nitrite as N	300.0 Revision 2.1	1113 Rev 11
Sulfate	300.0 Revision 2.1	1113 Rev 11

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

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



7. 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. There were not more than 20 samples in each preparation batch.
- n The method blank associated with each applicable batch was below the reporting limit for the requested analytes. This indicates that no contaminants were introduced to the samples during preparation and analysis.
- n The LCS was within the acceptance limits for each applicable analysis.
- n All initial and continuing calibration blanks (ICB/CCB) associated with each applicable analytical batch were below the reporting limit for the requested analytes with the exception of CCB3 for chloride. The sample bracketed by this CCB contained more than ten times the concentration of chloride that was detected in the CCB.
- n All initial and continuing calibration verifications (ICV/CCV) associated with each applicable analytical batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.

8. 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.

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

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

10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 3.



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 Johnson
Megan Johnson
Inorganics Primary Data Reviewer

5/18/10
Date

Q.A. [Signature]
Inorganics Final Data Reviewer

5/18/10
Date



Inorganic Data Reporting Qualifiers

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

- Concentration qualifier -- 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 Laboratory Group -- FC

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name: Complaint 200241120

Client Project Number:

Client PO Number: OE PHA 10-41

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Lizardy WW	1005024-1		WATER	04-May-10	14:07
Trip Blank	1005024-2		WATER	04-May-10	7:00



CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC
Project Manager: ARW

Workorder No: 1005024
Initials: LAS Date: 5/5/10

1. Does this project require any special handling in addition to standard Paragon procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> 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?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> 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: <input checked="" type="checkbox"/> < green pea <input type="checkbox"/> > green pea	N/A	YES	<input checked="" type="radio"/> NO *
15. Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	<input checked="" type="radio"/> N/A	YES	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES	NO
17. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
18. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4 RAD ONLY <input checked="" type="radio"/> YES <input type="radio"/> NO			
Cooler #: <u>1</u>			
Temperature (°C): <u>4.6</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>13</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES <input type="radio"/> NO <input 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 Metals - filter and preserve prior to analysis.

#14 1005024-1-3 (Lizardy WW voc) had headspace < pea size

If applicable, was the client contacted? YES / NO / NA Contact: Peter Cointantas Date/Time: 5/6/10
e-mail

Project Manager Signature / Date: ARW 5/6/10

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

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

BICARBONATE AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200241120

Work Order Number: 1005024

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Lizardy WW	1005024-1	05/04/2010	05/14/2010	05/14/2010	N/A	1	340	20		25 ml

Comments:

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

Data Package ID: *ak1005024-1*

Date Printed: Monday, May 17, 2010

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CARBONATE AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200241120

Work Order Number: 1005024

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Lizardy WW	1005024-1	05/04/2010	05/14/2010	05/14/2010	N/A	1	20	20	U	25 ml

Comments:

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

Data Package ID: *ak1005024-1*

Date Printed: Monday, May 17, 2010

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TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200241120

Work Order Number: 1005024

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Lizardy WW	1005024-1	05/04/2010	05/14/2010	05/14/2010	N/A	1	340	20		25 ml

Comments:

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

Data Package ID: *ak1005024-1*

Date Printed: Monday, May 17, 2010

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pH

Method EPA150.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Field ID:	Lizardy WW
Lab ID:	1005024-1

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 04-May-10
 Date Extracted: 06-May-10
 Date Analyzed: 06-May-10
 Prep Method: NONE

Prep Batch: PH100506-1
 QCBatchID: PH100506-1-1
 Run ID: pH100506-1a
 Cleanup: NONE
 Basis: As Received
 File Name:

Sample Aliquot: 20 ml
 Final Volume: 20 ml
 Result Units: pH
 Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
10-29-7	PH	1	7.5	0.1		

Data Package ID: *ph1005024-1*

Specific Conductance in Water

Method EPA120.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Field ID:	Lizardy WW
Lab ID:	1005024-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 04-May-10

Date Extracted: 06-May-10

Date Analyzed: 06-May-10

Prep Method: NONE

Prep Batch: SC100506-1

QCBatchID: SC100506-1-1

Run ID: sc100506-1a

Cleanup: NONE

Basis: As Received

File Name:

Sample Aliquot: 45 ml

Final Volume: 45 ml

Result Units: umhos/cm

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
10-34-4	SPECIFIC CONDUCTIVITY	1	1080	1		

Data Package ID: sc1005024-1

Total Dissolved Solids

Method EPA160.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Field ID:	Lizardy WW
Lab ID:	1005024-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 04-May-10

Date Extracted: 07-May-10

Date Analyzed: 10-May-10

Prep Method: METHOD

Prep Batch: TD100507-1

QCBatchID: TD100507-1-1

Run ID: td100510-1a

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	720	20		

Data Package ID: *td1005024-1*

Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Field ID:	Lizardy WW
Lab ID:	1005024-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 04-May-10

Date Extracted: 05-May-10

Date Analyzed: 05-May-10

Prep Method: NONE

Prep Batch: IC100505-1

QCBatchID: IC100505-1-1

Run ID: ic100505-1a

Cleanup: NONE

Basis: As Received

File Name: 00505_037.DXD

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.22	0.1		
16887-00-6	CHLORIDE	1	18	0.2		
14797-65-0	NITRITE AS N	1	0.1	0.1	U	
24959-67-9	BROMIDE	1	0.2	0.2	U	
14797-55-8	NITRATE AS N	1	0.2	0.2	U	
14808-79-8	SULFATE	20	240	20		

Data Package ID: *ic1005024-1*

BICARBONATE AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: AK100514-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK100514-1

QCBatchID: AK100514-1-1

Run ID: ak100514-1a

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	Reporting Limit	Flag
AK100514-1MB	5/14/2010	05/14/2010	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1005024-1*

Date Printed: Monday, May 17, 2010

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CARBONATE AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: AK100514-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK100514-1

QCBatchID: AK100514-1-1

Run ID: ak100514-1a

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	Reporting Limit	Flag
AK100514-1MB	5/14/2010	05/14/2010	N/A	1	5	5	U

Comments:

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

Data Package ID: ak1005024-1

Date Printed: Monday, May 17, 2010

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TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: AK100514-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK100514-1

QCBatchID: AK100514-1-1

Run ID: ak100514-1a

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	Reporting Limit	Flag
AK100514-1MB	5/14/2010	05/14/2010	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1005024-1*

Date Printed: Monday, May 17, 2010

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TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Laboratory Control Sample

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: AK100514-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05/14/2010

Date Analyzed: 05/14/2010

Prep Batch: AK100514-1

QCBatchID: AK100514-1-1

Run ID: ak100514-1a

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	99.5	5		99	85 - 115

Data Package ID: ak1005024-1

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Total Dissolved Solids

Method EPA160.1

Method Blank

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: TD100507-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-May-10

Date Analyzed: 10-May-10

Prep Method: METHOD

Prep Batch: TD100507-1

QCBatchID: TD100507-1-1

Run ID: td100510-1a

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	Reporting Limit	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	20	20	U	

Data Package ID: *td1005024-1*

Date Printed: Monday, May 17, 2010

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Total Dissolved Solids

Method EPA160.1

Laboratory Control Sample

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: TD100507-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05/07/2010

Date Analyzed: 05/10/2010

Prep Method: METHOD

Prep Batch: TD100507-1

QCBatchID: TD100507-1-1

Run ID: td100510-1a

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	403	20		101	85 - 115%

Data Package ID: *td1005024-1*

Date Printed: Monday, May 17, 2010

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Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: IC100505-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05-May-10

Date Analyzed: 05-May-10

Prep Method: NONE

Prep Batch: IC100505-1

QCBatchID: IC100505-1-1

Run ID: ic100505-1a

Cleanup: NONE

Basis: N/A

File Name: 00505_011.DXD

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.1	0.1	U	
16887-00-6	CHLORIDE	1	0.2	0.2	U	
14797-65-0	NITRITE AS N	1	0.1	0.1	U	
24959-67-9	BROMIDE	1	0.2	0.2	U	
14797-55-8	NITRATE AS N	1	0.2	0.2	U	
14808-79-8	SULFATE	1	1	1	U	

Data Package ID: ic1005024-1

Date Printed: Monday, May 17, 2010

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Ion Chromatography

Method EPA300.0 Revision 2.1

Laboratory Control Sample

Lab Name: ALS Laboratory Group -- FC

Work Order Number: 1005024

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200241120

Lab ID: IC100505-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05/05/2010

Date Analyzed: 05/05/2010

Prep Method: NONE

Prep Batch: IC100505-1

QC Batch ID: IC100505-1-1

Run ID: ic100505-1a

Cleanup: NONE

Basis: N/A

File Name: 00505_012.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	2.5	2.4	0.1		96	90 - 110%
16887-00-6	CHLORIDE	5	4.76	0.2		95	90 - 110%
14797-65-0	NITRITE AS N	2	1.94	0.1		97	90 - 110%
24959-67-9	BROMIDE	5	4.93	0.2		99	90 - 110%
14797-55-8	NITRATE AS N	5	4.82	0.2		96	90 - 110%
14808-79-8	SULFATE	25	23.5	1		94	90 - 110%

Data Package ID: *ic1005024-1*

Date Printed: Monday, May 17, 2010

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