



## DEPARTMENT OF NATURAL RESOURCES

John W. Hickenlooper, Governor  
1120 Lincoln St. Suite 801  
Denver, CO 80203  
Phone: (303) 894-2100  
FAX: (303) 894-2109  
[www.colorado.gov/cogcc](http://www.colorado.gov/cogcc)

October 14, 2013  
0000 8456 5502

Certified USPS Mail Receipt #7011 3500

Ms. Melba Farley  
PO Box 363  
Platteville, CO 80651

Re: Water Well Sampling Results  
Farley Water Well DWR Permit No. 286725  
COGCC Sample Facility ID 752814 (Project Facility ID 434043)

Dear Ms. Farley:

The Colorado Oil and Gas Conservation Commission (COGCC) is conducting an investigation of the potential presence of methane in water produced from domestic water wells in your area. You agreed to allow COGCC to collect a sample from your water well, and on September 5, 2013, COGCC Staff conducted a field visit to visually inspect the water well, purge water from the well and to collect a water sample. The water sample was analyzed for general organic and inorganic constituents, and dissolved gasses. This letter summarizes the water quality results.

### FIELD TESTING

The water sample was collected from a garden hose faucet in the machine shop. The valve on the faucet was turned on at approximately 2:55 p.m. and allowed to purge for 15 minutes at a rate of approximately 10 gallons per minute. The water was clear, odorless, with no discernible effervescence or sediment. The sample was collected in laboratory certified containers at 3:15 p.m. The containers were labeled, placed on ice in a cooler, and delivered to ALS Environmental in Fort Collins, Colorado with a chain-of-custody form.

### DISCUSSION OF ANALYTICAL RESULTS

The Water Quality Control Commission (WQCC) of the Colorado Department of Public Health and Environment (CDPHE) established "Domestic Use - Quality" Human Health Standards and Secondary Drinking Water Standards in Regulation 41 "The Basic Standards for Groundwater" (5CCR 1002-41). It is important to note that these standards were established for **municipal public drinking water supplies**, and that people often use and consume groundwater from private wells that exceeds these standards. The COGCC is an implementing agency of the groundwater standards for impacts associated with oil and gas exploration and production activities.

Analytical data for the sample from your water well was compared to the CDPHE Human Health Standards and Secondary Drinking Water Standards in the table provided as Attachment 1. The complete laboratory analytical report is provided as Attachment 2. None of the COGCC analyzed



parameters exceeded CDPHE Human Health Standards in the sample collected from your water well.

### METHANE GAS ANALYSIS

**Dissolved methane** was detected in the sample from your domestic water well at a concentration of 0.012 milligrams per liter (mg/l) (ppm).

*Methane gas alone is physiologically inert and non-toxic to humans. Normal breath exhalation contains methane at a ratio of 1 to 99 parts per million. Based on the results of extensive testing for methane gas in water wells throughout Colorado, concentrations of methane gas below 1 mg/l are considered harmless, with concern for possible hazards from the methane increasing at concentrations in well waters at or exceeding 7 mg/l. The sample collected from your domestic water well indicated the presence of methane at 6.9 mg/l, below the current accepted standard for methane. The presence of methane in drinking water does not present a known health hazard to humans or other animals via ingestion; however, methane in domestic water supplies can be associated with undesirable and potentially serious side effects. Methane gas dissolved in water "exsolves" when exposed to the atmosphere and dissipates rapidly because it is lighter than air. This is often responsible for the "fizzing" observed in water wells that contain methane gas. If the methane occurs at a high enough concentration and if it is allowed to accumulate in a confined space, such as a well pit, crawl space, closet, etc., an explosion hazard can be established. In addition, if methane concentrations in well water are high, bubbles of free gas form within the water and cause the well pump to cavitate and no longer bring water to the surface. Methane gas occurs naturally and is common in water wells in Colorado. Methane is commonly found as a gas in coal or black shale seams in the subsurface. Methane is also often found as a byproduct of the decay of organic matter, and the presence of bacteria in water wells can provide favorable conditions for the production of methane (either from the activity or decay of bacteria).*

### INORGANIC ANALYTICAL RESULTS

Concentrations of sulfate and total dissolved solids (TDS) exceeded the CDPHE Secondary Drinking Water Standards in the sample collected from your water well.

- **Total Dissolved Solids (TDS)** were detected in the sample from your domestic well at a concentration of 880 milligrams per liter (mg/l).  
*CDPHE has established a TDS standard for human drinking water of 500 mg/l. The standard is called the secondary drinking water standard and is based on the aesthetic quality of the water (such as taste and odor) and is intended as a guideline for public water supply systems and is not an enforceable standard. TDS concentrations are related to the presence of naturally occurring elements and chemical compounds such as chloride, sodium, potassium, calcium, magnesium, and sulfate.*
- **Sulfate** was detected in the sample from your domestic well at a concentration of 330 mg/l.



*The CDPHE sulfate ( $\text{SO}_4$ ) domestic supply drinking water standard for human drinking water is 250mg/l. Although CDPHE does not have an agricultural standard for sulfate, other agencies recommend a concentration below 1,500 mg/l for livestock watering. Waters containing high concentrations of sulfate, typically caused by the leaching of natural deposits of magnesium sulfate (Epsom salts) or sodium sulfate (Glauber's salt), may be undesirable because of their laxative effects.*

The sample from your well was also analyzed for boron, calcium, magnesium, phosphorus, potassium, sodium, strontium, bromide, alkalinity content, specific conductivity and sodium adsorption ratio. There are no CDPHE drinking water standards for these parameters. A sodium concentration of 20 milligrams per liter is often recommended by some physicians for patients on salt restricted diets or those suffering from hypertension or heart disease.

#### **VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS**

A target list of 69 volatile organic compounds (VOC) was utilized during analysis of water from your well. Certain VOCs (benzene, toluene, ethylbenzene, total xylenes, and naphthalene) can be one indication of contamination or impacts from oil and gas operations or other hydrocarbon sources. The VOCs were not detected above the detection limits in the sample collected from your water well.



### CONCLUSIONS

The concentration of total dissolved solids and sulfate detected in your well water were above the secondary drinking water standards established by the Water Quality Control Commission (WQCC) of the Colorado Department of Public Health and the Environment.

No volatile organic compounds were detected in the sample collected from your water well.


Of all the parameters analyzed in the sample from your water well, none exceeded the CDPHE human health based standards for domestic water supplies. The COGCC maintains a water quality database where the results from your water well sample will be recorded.

Based on the results of this sampling, it does not appear that your water well has been impacted by oil and gas activity at this time.

If you have any questions or would like to discuss these matters further, please contact me at 970-461-2970 or by email at rick.allison@state.co.us.

Sincerely,

Colorado Oil and Gas Conservation Commission



Ann C. Eckman, PG, *for*

Richard Allison, PG  
Environmental Protection Specialist – Northeast Colorado

Enclosures    Attachment 1 Analytical Summary Table  
                  Attachment 2 Laboratory Analytical Report  
                  Attachment 3 Well Permit

cc:     Matt Lepore, COGCC Director w/o attachments  
         Jim Milne, COGCC Environmental Manager w/o attachments  
         John Axelson, COGCC Environmental Supervisor w/o attachments





**TABLE 1**  
**ANALYTICAL SUMMARY**  
**Water Well Sample - Farley286725 Water Well**  
**Project Facility #434043**

Parameter	Water Well Sample			
	Sample Date		CDPHE Standards	
	September 5, 2013			
	Result	Domestic Water Supply - Human Health Standards	Agricultural Standards	Units
Arsenic	ND	0.05	0.1	mg/l
Barium	0.012	2.0	NS	mg/l
Cadmium	NA	0.005	0.01	mg/l
Chromium	ND	0.1	0.1	mg/l
Fluoride	1.6	4.0	2	mg/l
Lead	ND	0.05	0.1	mg/l
Nitrite	NA	1.0	10	mg/l
Nitrate	4.2	10.0	100	mg/l
Total Nitrite/Nitrate	4.2	10.0	100	mg/l
Selenium	0.0013	0.05	0.02	mg/l
Silver	NA	0.05	NS	mg/l
Strontium	1.4	NS	NS	mg/l
Uranium	NA	0.03	NS	mg/l
Benzene	ND	0.005	NS	mg/l
Toluene	ND	0.56	NS	mg/l
Ethylbenzene	ND	0.7	NS	mg/l
Total Xylenes	ND	1.4	NS	mg/l
	Result	Domestic Water Supply - Drinking Water (Secondary) Standards	Agricultural Standards	Units
Chloride	28	250	NS	mg/l
Copper	NA	1	0.2	mg/l
Iron	ND	0.3	5	mg/l
Manganese	0.011	0.05	0.2	mg/l
pH	7.63	6.5 - 8.5	6.5 - 8.5	No units
Sulfate	330	250	NS	mg/l
Total Dissolved Solids	880	500	*1500	mg/l
Boron	0.23	NS	0.75	mg/l
Calcium	73	NS	NS	mg/l
Magnesium	29	NS	NS	mg/l
Phosphorus	ND	NS	NS	mg/l
Potassium	4.1	NS	NS	mg/l
Sodium	190	NS	NS	mg/l
Bromide	0.32	NS	NS	mg/l
Carbonate	ND	NS	NS	mg/l
Bicarbonate	300	NS	NS	mg/l
Total Alkalinity	300	NS	NS	mg/l
Conductivity	1.335	NS	NS	mmhos/cm
Sodium Adsorption Ratio	4.8	NS	NS	No units
Methane	0.012	NS	NS	mg/l

**Notes**

<b>CDPHE Standards</b>	Water Quality Control Commission 5 CCR 1002-41, Regulation No. 41 - The Basic Standards For Gr
<b>mg/l</b>	Milligrams per liter (equals parts per million).
<b>mmhos/cm</b>	millimhos per centimeer
<b>NA</b>	Not analyzed.
<b>ND</b>	Not detected.
<b>NS</b>	No Standard.
<b>**</b>	Health Advisory.
	Human health standard.
	Secondary standard.





# Total Extractable Petroleum Hydrocarbons (Diesel) Case Narrative

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## COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 09/06/2013.
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 reporting limit, but above the MDL for diesel range organics. No diesel or other fuel pattern was present in the method blank. Typically, small fluctuations in the detector baseline are responsible for this type of low level analytical result with no observable fuel pattern.
6. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs 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 acceptable limits with the following exceptions:

Surrogate	Sample	Direction
O-terphenyl	MB and LCSD	High

The sample was non-detect for TEPH/DRO. All spike recoveries in the batch were within limits. No further action was taken.

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

9/11/13  
Date

Joel Nage  
Organics Final Data Reviewer

9-11-13  
Date



**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**  
**Data Qualifier Flags**  
**Chromatography and Mass Spectrometry**

- 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 data indicate the presence of a compound that meets the 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 outside the control criteria.
- +:** This flag indicates that the relative percent difference (RPD) exceeds the control criteria.

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1309076  
**Client Name:** COGCC  
**Client Project Name:** Water Wells Sec23 3N 66W  
**Client Project Number:** 434043  
**Client PO Number:** PHA 14-22

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



2225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 202r8

[illegible]

**For metals or anions, please detail analytes below.**

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RICK ALLISON	9/6/13	130
RECEIVED BY	<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

<b>Comments:</b> Cations/ Dissolved Metals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se, Sr & Lab Filter Dissolved Metals COCCC will email Site ID to lab for EDD generation Email pdf report, EDD, and invoice to rick.allison@state.co.us		<b>QC PACKAGE (check below)</b> <table border="1"> <tr> <td><b>x</b></td> <td>LEVEL II (Standard QC)</td> </tr> <tr> <td></td> <td>LEVEL III (Std QC + forms)</td> </tr> <tr> <td></td> <td>LEVEL IV (Std QC + forms + raw data)</td> </tr> <tr> <td></td> <td></td> </tr> </table>		<b>x</b>	LEVEL II (Standard QC)		LEVEL III (Std QC + forms)		LEVEL IV (Std QC + forms + raw data)		
<b>x</b>	LEVEL II (Standard QC)										
	LEVEL III (Std QC + forms)										
	LEVEL IV (Std QC + forms + raw data)										
<b>Preservative Key:</b> 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other		8-4 degrees C 9-5035									





ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC  
Project Manager: ARW

Workorder No: 1309076  
Initials: LAS Date: 9/6/13

1. Does this project require any special handling in addition to standard ALS procedures?	YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?	<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?	<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)	<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: <u>    </u> < green pea <u>    </u> > green pea	N/A	<input checked="" type="radio"/> YES NO
15. Do any water samples contain sediment? Amount of sediment: <u>    </u> dusting <u>    </u> moderate <u>    </u> heavy	Amount N/A	YES <input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4 <input type="radio"/> RAD ONLY		<input checked="" type="radio"/> YES NO
Cooler #: <u>1</u>		
Temperature (°C): <u>5.4</u>		
No. of custody seals on cooler: <u>0</u>		
External µR/hr reading: <u>N/A</u>		
Background µR/hr reading: <u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)		

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

If applicable, was the client contacted? YES / NO / NA Contact: Swaff Date/Time: 9/9/13

Project Manager Signature / Date: Swaff 9/9/13

# Diesel Range Organics

Method SW8015MD

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: EX130909-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09-Sep-13

Date Analyzed: 10-Sep-13

Prep Method: METHOD

Prep Batch: EX130909-1

QCBatchID: EX130909-1-1

Run ID: HC130910-3A

Cleanup: NONE

Basis: N/A

File Name: F3F47274

Sample Aliquot: 160 ml

Final Volume: 4 ml

Result Units: MG/L

Clean DF: 1

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

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.25	*	1.25	100	51 - 97

Data Package ID: HCD1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Diesel Range Organics

Method SW8015M Revision D

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725	Sample Matrix: WATER	Prep Batch: EX130909-1	Analyst: Joel F. Nolle
Lab ID: 1309076-1	% Moisture: N/A	QCBatchID: EX130909-1-1	Sample Aliquot: 160 ML
	Date Collected: 05-Sep-13	Run ID: HC130910-3A	Final Volume: 4 ML
	Date Extracted: 09-Sep-13	Cleanup: NONE	Result Units: MG/L
	Date Analyzed: 11-Sep-13	Basis: As Received	Clean DF: 1
	Prep Method: METHOD	File Name: F3F47278	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.17		1.25	93	51 - 97

Data Package ID: HCD1309076-1

# Diesel Range Organics

## Method SW8015MD

### Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: EX130909-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2013

Date Analyzed: 09/10/2013

Prep Method: METHOD

Prep Batch: EX130909-1

QCBatchID: EX130909-1-1

Run ID: HC130910-3A

Cleanup: NONE

Basis: N/A

File Name: F3F47275

Sample Aliquot: 160 ml

Final Volume: 4 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	10	10.2	0.5		102	36 - 150%

Lab ID: EX130909-1LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2013

Date Analyzed: 09/11/2013

Prep Method: METHOD

Prep Batch: EX130909-1

QCBatchID: EX130909-1-1

Run ID: HC130910-3A

Cleanup: NONE

Basis: N/A

File Name: F3F47276

Sample Aliquot: 160 ml

Final Volume: 4 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
68334-30-5	Diesel Range Organics	10	10.4	0.5		104	20	3

### Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
84-15-1	O-TERPHENYL	1.25	97		100	*	51 - 97

Data Package ID: HCD1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1



# Total Volatile Petroleum Hydrocarbons (Gasoline) Case Narrative

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## COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 09/06/2013.

The water sample was free of 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. 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 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

9/11/13  
Date

Joel Norte  
Organics Final Data Reviewer

9-11-13  
Date



**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.
- 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-4  
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**  
**Data Qualifier Flags**  
**Chromatography and Mass Spectrometry**

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
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- 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 outside the control criteria.
- +:** This flag indicates that the relative percent difference (RPD) exceeds the control criteria.



# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1309076

**Client Name:** COGCC

**Client Project Name:** Water Wells Sec23 3N 66W

**Client Project Number:** 434043

**Client PO Number:** PHA 14-22

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



2225 Commerce Drive, Fort Collins, Colorado 80524  
 TEL: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 202r8

**ALS Environmental**  
225 Commerce Drive, Fort Collins, Colorado 80524  
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

**Chain-of-Custody**

Form 202-8

WORKORDER # 1309076									
PAGE 1 of 1									
DISPOSAL By Lab or Return to Client									
NITRATE-NITRITE as N									
CATIONS/ DISSOLVED METALS - see comments									
ANIONS - Br Cl F I SO4 P									
VOLATILE ORGANIC COMPOUNDS									
TEPH - GRO and DRO									
SODIUM ADSORPTION RATIO									
PH									
CONDUCTIVITY									
TOTAL DISSOLVED SOLIDS									
ALKALINE GROUP									
DISSOLVED GASES - Methane, Ethane, Prop									
DATE 9/5/13									
TURNAROUND STD									
SAMPLER R. Allison									
SITE ID									
EDD FORMAT COGCC									
PURCHASE ORDER PHA 14-22									
BILL TO COMPANY COGCC									
INVOICE ATTN TO Rick Allison									
ADDRESS 1120 Lincoln St, Ste 801									
CITY / STATE / ZIP Denver, CO 80203									
PHONE 970-461-2970									
FAX 970-461-4781									
E-MAIL rick.allison@state.co.us									
Matrix									
Sample Date 9/5/13									
Sample Time 3:15									
# Bottles									
Pres.									
QC									
Field ID									
Lab ID									
Farley 286725									

Wavelength (nm)	Intensity (a.u.)
200	0.00
210	0.00
220	0.00
230	0.00
240	0.00
250	0.00
260	0.00
270	0.00
280	0.00
290	0.00
300	0.00
310	0.00
320	0.00
330	0.00
340	0.00
350	0.00
360	0.00
370	0.00
380	0.00
390	0.00
400	0.00
410	0.00
420	0.00
430	0.00
440	0.00
450	0.00
460	0.00
470	0.00
480	0.00
490	0.00
500	0.00
510	0.00
520	0.00
530	0.00
540	0.00
550	0.00
560	0.00
570	0.00
580	0.00
590	0.00
600	0.00
610	0.00
620	0.00
630	0.00
640	0.00
650	0.00
660	0.00
670	0.00
680	0.00
690	0.00
700	0.00
710	0.00
720	0.00
730	0.00
740	0.00
750	0.00
760	0.00
770	0.00
780	0.00
790	0.00
800	0.00
810	0.00
820	0.00
830	0.00
840	0.00
850	0.00
860	0.00
870	0.00
880	0.00
890	0.00
900	0.00

**For metals or anions, please detail analytes below.**

SIGNATURE		PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RICK ALLEN	9/6/13	130
RECEIVED BY	<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

Comments:		QC PACKAGE (check below)	
Cations/ Dissolved Metals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se,		<input checked="" type="checkbox"/> LEVEL II (Standard QC)	
Sr $\phi$ Lab Filter Dissolved Metals		<input type="checkbox"/> LEVEL III (Std QC + forms)	
COGCC will email Site ID to lab for EDD generation		<input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)	
Email pdf report, EDD, and Invoice to rick.allison@state.co.us			
Preservative Key:		1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other	8-4 degrees C 9-5035



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC  
Project Manager: ARW

Workorder No: 1309076  
Initials: LAS Date: 9/6/13

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	YES NO
5. Are the COC and bottle labels complete and legible?	<input checked="" type="radio"/> YES	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	YES NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES NO
10. Is there sufficient sample for the requested analyses?	<input checked="" type="radio"/> YES	YES NO
11. Were all samples placed in the proper containers for the requested analyses?	<input checked="" type="radio"/> YES	YES NO
12. Are all samples within holding times for the requested analyses?	<input checked="" type="radio"/> YES	YES NO
13. Were all sample containers received intact? (not broken or leaking, etc.)	<input checked="" type="radio"/> YES	YES NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES NO
15. Do any water samples contain sediment? Amount of sediment: _____ dusting _____ moderate _____ heavy	Amount N/A	YES <input checked="" type="radio"/> NO
16. Were the samples shipped on ice?	<input checked="" type="radio"/> YES	YES NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY	<input checked="" type="radio"/> YES	YES NO
Cooler #: <u>1</u>		
Temperature (°C): <u>5.4</u>		
No. of custody seals on cooler: <u>0</u>		
External µR/hr reading: <u>N/A</u>		
Background µR/hr reading: <u>11</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.

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

Project Manager Signature / Date: [Signature] 9/9/13

# Gasoline Range Organics

Method SW8015D

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: HC130909-6MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09-Sep-13

Date Analyzed: 09-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: HC130909-6

QCBatchID: HC130909-6-1

Run ID: HC130909-6A

Cleanup: NONE

Basis: N/A

File Name: 09939.dat

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

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

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0808		0.1	81	74 - 129

Data Package ID: HCG1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Gasoline Range Organics

Method SW8015 Revision D

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 09-Sep-13

Date Analyzed: 09-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: HC130909-6

QCBatchID: HC130909-6-1

Run ID: HC130909-6A

Cleanup: NONE

Basis: As Received

File Name: 09959.dat

Analyst: Tyler Knaebel

Sample Aliquot: 5 ML

Final Volume: 5 ML

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
8006-61-9	GASOLINE RANGE ORGANICS	1	0.1	0.1	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0858		0.1	86	74 - 129

Data Package ID: HCG1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.658

# Gasoline Range Organics

Method SW8015D

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: HC130909-6LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2013

Date Analyzed: 09/09/2013

Prep Method: SW5030C

Prep Batch: HC130909-6

QCBatchID: HC130909-6-1

Run ID: HC130909-6A

Cleanup: NONE

Basis: N/A

File Name: 09949.dat

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
8006-61-9	GASOLINE RANGE ORGANICS	1	1.02	0.1		102	79 - 118%

Lab ID: HC130909-6LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2013

Date Analyzed: 09/09/2013

Prep Method: SW5030C

Prep Batch: HC130909-6

QCBatchID: HC130909-6-1

Run ID: HC130909-6A

Cleanup: NONE

Basis: N/A

File Name: 09960.dat

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
8006-61-9	GASOLINE RANGE ORGANICS	1	0.973	0.1		97	20	4

## 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	92		91		74 - 129

Data Package ID: HCG1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1



## Inorganics Case Narrative

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### COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 09/06/13.
3. The sample had been correctly preserved for the requested analyses.
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
Total phosphorus	365.2	1119
Specific conductance	120.1	1128
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.

- A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in each applicable preparation batch.
- The method blank associated with each applicable 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.

9. Matrix specific quality control procedures.

Sample 1309076-1 was designated as the quality control sample for the pH, specific conductance, bromide, chloride, fluoride, and sulfate analyses. Per method requirements, matrix QC was performed for the remaining analyses. 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.

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

- A matrix spike (MS) and matrix spike duplicate (MSD) were prepared and analyzed with the bromide, chloride, fluoride, and sulfate batches. All guidance criteria for precision and accuracy were met.
- Matrix spike recoveries could not be evaluated for the following analytes:

<u>Analyte</u>	<u>Sample ID</u>
Chloride	1309076-1MS & MSD
Sulfate	1309076-1MS & MSD

The chloride and sulfate concentrations in the native sample were above the analytical range; therefore accurate quantitation of MS/MSD recoveries were not possible. The LCS, ICV, and CCV results indicate the procedure was in control for these analytes.

- A sample duplicate was prepared and analyzed with the pH and specific conductance batches. All guidance criteria for precision were met.

For pH, the difference between the pH of the sample and its duplicate must be less than or equal to 0.2 pH units to be in control. RPD is not calculated for this analysis.

10. It was necessary to dilute the sample in order to bring the chloride and sulfate concentrations into the analytical range of the ion chromatograph (IC).





It was necessary to dilute the sample in order to bring the nitrate/nitrite as N concentration into the analytical range of the flow injection analyzer (FIA).

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

Reduced aliquots were taken of the sample for the 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  
Inorganics Primary Data Reviewer

9/16/13

Date



Inorganics Final Data Reviewer

9/16/13

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 Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1309076

**Client Name:** COGCC

**Client Project Name:** Water Wells Sec23 3N 66W

**Client Project Number:** 434043

**Client PO Number:** PHA 14-22

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



2225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 2021-18

1309076

[illegible]

For metals or anions, please detail analytes below.

SIGNATURE		PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RICK ALLISON	9/6/13	130
RECEIVED BY	<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

Comments:		QC PACKAGE (check below)							
<p>Cations/ Dissolved Metals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se, Sr, Pb, Lab Filter Dissolved Metals</p> <p>COCCC will email Site ID to lab for EDD generation</p> <p>Email pdf report, EDD, and Invoice to rick.allison@state.co.us</p>	x	LEVEL II (Standard QC)							
		LEVEL III (Std QC + forms)							
		LEVEL IV (Std QC + forms + raw data)							
Preservative Key:		1-HCl	2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 degrees C	9-5035



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC

Workorder No: 1309076

Project Manager: ARW

Initials: LAS Date: 9/6/13

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	<input checked="" type="radio"/> NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	<input checked="" type="radio"/> NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> 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	<input checked="" type="radio"/> NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	<input checked="" type="radio"/> 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	<input checked="" type="radio"/> NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount of sediment: _____ dusting _____ moderate _____ heavy	Amount N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4 <input type="radio"/> RAD ONLY		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>5.4</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>N/A</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)			

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

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

Project Manager Signature / Date: [Signature] 9/9/13

# BICARBONATE AS CaCO3

Method EPA310.1

## Sample Results

Lab Name: ALS Environmental -- FC  
Client Name: COGCC  
Client Project ID: Water Wells Sec23 3N 66W 434043  
Work Order Number: 1309076 Final Volume: 100 ml  
Reporting Basis: As Received Matrix: WATER  
Prep Method: METHOD Result Units: MG/L  
Analyst: Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
Farley 286725	1309076-1	09/05/2013	09/11/2013	09/11/2013	N/A	1	300	20		25 ml

### Comments:

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

Data Package ID: *ak1309076-1*

# CARBONATE AS CaCO3

## Method EPA310.1

### Sample Results

Lab Name: ALS Environmental -- FC

Client Name: COGCC

Client Project ID: Water Wells Sec23 3N 66W 434043

Work Order Number: 1309076

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: METHOD

Result Units: MG/L

Analyst: Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
Farley 286725	1309076-1	09/05/2013	09/11/2013	09/11/2013	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: *ak1309076-1*

# TOTAL ALKALINITY AS CaCO3

Method EPA310.1

## Sample Results

Lab Name: ALS Environmental -- FC  
Client Name: COGCC  
Client Project ID: Water Wells Sec23 3N 66W 434043  
Work Order Number: 1309076 Final Volume: 100 ml  
Reporting Basis: As Received Matrix: WATER  
Prep Method: METHOD Result Units: MG/L  
Analyst: Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
Farley 286725	1309076-1	09/05/2013	09/11/2013	09/11/2013	N/A	1	300	20		25 ml

### Comments:

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

Data Package ID: ak1309076-1



# Nitrate/Nitrite as N

## Method EPA353.2 Revision 2.0

### Sample Results

Lab Name: ALS Environmental -- FC  
Work Order Number: 1309076  
Client Name: COGCC  
ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725	Sample Matrix: WATER	Prep Batch: NN130909-1	Analyst: Peter Workman
Lab ID: 1309076-1	% Moisture: N/A	QCBatchID: NN130909-1-1	Sample Aliquot: 5 ML
	Date Collected: 05-Sep-13	Run ID: NN130909-1A1	Final Volume: 5 ML
	Date Extracted: 09-Sep-13	Cleanup: NONE	Result Units: MG/L
	Date Analyzed: 09-Sep-13	Basis: As Received	Clean DF: 1
	Prep Method: NONE	File Name: 0909NOX.FDT	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
1-005	NITRATE/NITRITE AS N	5	4.2	0.05		

Data Package ID: nn1309076-1

# pH

## Method EPA150.1

### Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725	Sample Matrix: WATER	Prep Batch: PH130910-2	Analyst: Kristin L. Ratajczak
Lab ID: 1309076-1	% Moisture: N/A	QCBatchID: PH130910-2-1	Sample Aliquot: 20 ML
	Date Collected: 05-Sep-13	Run ID: PH130910-1A	Final Volume: 20 ML
	Date Extracted: 10-Sep-13	Cleanup: NONE	Result Units: pH
	Date Analyzed: 10-Sep-13	Basis: As Received	Clean DF: 1
	Prep Method: NONE	File Name:	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
10-29-7	PH AnalysisTime: 13:10	1	7.63	0.1		

Data Package ID: ph1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.658

# Total Phosphorus as P

Method EPA365.2

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

<b>Field ID:</b> Farley 286725	<b>Sample Matrix:</b> WATER	<b>Prep Batch:</b> TP130912-1	<b>Analyst:</b> Tyler Knaebel
<b>Lab ID:</b> 1309076-1	<b>% Moisture:</b> N/A	<b>QCBatchID:</b> TP130912-1-1	<b>Sample Allquot:</b> 50 ML
	<b>Date Collected:</b> 05-Sep-13	<b>Run ID:</b> TP130912-1A	<b>Final Volume:</b> 50 ML
	<b>Date Extracted:</b> 12-Sep-13	<b>Cleanup:</b> NONE	<b>Result Units:</b> MG/L
	<b>Date Analyzed:</b> 12-Sep-13	<b>Basis:</b> As Received	<b>Clean DF:</b> 1
	<b>Prep Method:</b> METHOD	<b>File Name:</b> Manual Entry	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
7723-14-0	TOTAL PHOSPHORUS	1	0.05	0.05	U	

Data Package ID: tp1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

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LIMS Version: 6.658

# Specific Conductance in Water

Method EPA120.1

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725	Sample Matrix: WATER	Prep Batch: SC130910-1	Analyst: Kristen A. Middleton
Lab ID: 1309076-1	% Moisture: N/A	QCBatchID: SC130910-1-1	Sample Aliquot: 45 ML
	Date Collected: 05-Sep-13	Run ID: SC130910-1A	Final Volume: 45 ML
	Date Extracted: 10-Sep-13	Cleanup: NONE	Result Units: umhos/cm
	Date Analyzed: 10-Sep-13	Basis: As Received	Clean DF: 1
	Prep Method: METHOD	File Name:	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
10-34-4	SPECIFIC CONDUCTIVITY AnalysisTime: 12:15	1	1335	1		

Data Package ID: sc1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

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LIMS Version: 6.658

# Total Dissolved Solids

Method EPA160.1

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 10-Sep-13

Date Analyzed: 11-Sep-13

Prep Method: METHOD

Prep Batch: TD130910-1

QCBatchID: TD130910-1-2

Run ID: TD130911-1A

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Analyst: Kristen A. Middleton

Sample Aliquot: 50 ML

Final Volume: 50 ML

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	880	40		

Data Package ID: td1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Ion Chromatography

Method EPA300.0 Revision 2.1

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 10-Sep-13

Date Analyzed: 10-Sep-13

Prep Method: NONE

Prep Batch: IC130910-1

QCBatchID: IC130910-1-1

Run ID: IC130910-1A1

Cleanup: NONE

Basis: As Received

File Name: 30910\_026.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\ LOD\LOQ	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 18:07	1	1.6	0.1		
16887-00-6	CHLORIDE AnalysisTime: 20:28	20	28	4		
24959-67-9	BROMIDE AnalysisTime: 18:07	1	0.32	0.2		
14808-79-8	SULFATE AnalysisTime: 20:28	20	330	20		

Data Package ID: ic1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

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LIMS Version: 6.658

# BICARBONATE AS CaCO<sub>3</sub>

## Method EPA310.1

### Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: AK130911-2MB

Sample Matrix: WATER  
% Moisture: N/A

Prep Batch: AK130911-2  
QCBatchID: AK130911-2-1  
Run ID: AK130911-1A  
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	RptLimit LOD/LOQ	Flag
AK130911-2MB	9/11/2013	09/11/2013	N/A	1	5	5	U

#### Comments:

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

Data Package ID: *ak1309076-1*

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 3

# CARBONATE AS CaCO3

## Method EPA310.1

### Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: AK130911-2MB

Sample Matrix: WATER  
% Moisture: N/A

Prep Batch: AK130911-2  
QCBatchID: AK130911-2-1  
Run ID: AK130911-1A  
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	RptLimit LOD/LOQ	Flag
AK130911-2MB	9/11/2013	09/11/2013	N/A	1	5	5	U

#### Comments:

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

Data Package ID: ak1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# TOTAL ALKALINITY AS CaCO<sub>3</sub>

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: AK130911-2MB

Sample Matrix: WATER  
% Moisture: N/A

Prep Batch: AK130911-2  
QCBatchID: AK130911-2-1  
Run ID: AK130911-1A  
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	RptLimit LOD/LOQ	Flag
AK130911-2MB	9/11/2013	09/11/2013	N/A	1	5	5	U

## Comments:

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

Data Package ID: ak1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# TOTAL ALKALINITY AS CaCO<sub>3</sub>

Method EPA310.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: AK130911-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/11/2013

Date Analyzed: 09/11/2013

Prep Batch: AK130911-2

QCBatchID: AK130911-2-1

Run ID: AK130911-1A

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 CaCO <sub>3</sub>	100	97.1	5		97	85 - 115

Data Package ID: ak1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

**Nitrate/Nitrite as N**  
**Method EPA353.2 Revision 2.0**  
**Method Blank**

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: NN130909-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09-Sep-13

Date Analyzed: 09-Sep-13

Prep Method: NONE

Prep Batch: NN130909-1

QCBatchID: NN130909-1-1

Run ID: NN130909-1A1

Cleanup: NONE

Basis: N/A

File Name: 0909NOX.FDT

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

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

Data Package ID: nn1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# Nitrate/Nitrite as N

Method EPA353.2 Revision 2.0

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: NN130909-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/09/2013

Date Analyzed: 09/09/2013

Prep Method: NONE

Prep Batch: NN130909-1

QCBatchID: NN130909-1-1

Run ID: NN130909-1A1

Cleanup: NONE

Basis: N/A

File Name: 0909NOX.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	0.512	0.01		102	90 - 110%

Data Package ID: nn1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

**pH**  
**Method EPA150.1**  
**Duplicate Sample Results**

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725
Lab ID: 1309076-1D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09/05/2013

Date Extracted: 09/10/2013

Date Analyzed: 09/10/2013

Prep Batch: PH130910-2

QCBatchID: PH130910-2-1

Run ID: PH130910-1A

Cleanup: NONE

Basis: As Received

File Name:

Sample Aliquot: 20 ml

Final Volume: 20 ml

Result Units: pH

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-29-7	PH	7.63		7.63		0.1	1		0.2

Data Package ID: *ph1309076-1*

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Total Phosphorus as P

Method EPA365.2

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: TP130912-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Sep-13

Date Analyzed: 12-Sep-13

Prep Method: METHOD

Prep Batch: TP130912-1

QCBatchID: TP130912-1-1

Run ID: TP130912-1A

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 LOD/LOQ	Result Qualifier	EPA Qualifier
7723-14-0	TOTAL PHOSPHORUS	1	0.05	0.05	U	

Data Package ID: tp1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# Total Phosphorus as P

Method EPA365.2

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: TP130912-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/12/2013

Date Analyzed: 09/12/2013

Prep Method: METHOD

Prep Batch: TP130912-1

QCBatchID: TP130912-1-1

Run ID: TP130912-1A

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	0.521	0.05		104	80 - 120%

Data Package ID: tp1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Specific Conductance in Water

Method EPA120.1

## Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09/05/2013

Date Extracted: 09/10/2013

Date Analyzed: 09/10/2013

Prep Batch: SC130910-1

QCBatchID: SC130910-1-1

Run ID: SC130910-1A

Cleanup: NONE

Basis: As Received

File Name:

Sample Allquot: 45 ml

Final Volume: 45 ml

Result Units: umhos/cm

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-34-4	SPECIFIC CONDUCTIVITY	1335		1330		1	1	1	10

Data Package ID: sc1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# Total Dissolved Solids

Method EPA160.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: TD130910-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10-Sep-13

Date Analyzed: 11-Sep-13

Prep Method: METHOD

Prep Batch: TD130910-1

QCBatchID: TD130910-1-2

Run ID: TD130911-1A

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Allquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

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

Data Package ID: td1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Total Dissolved Solids

Method EPA160.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: TD130910-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/10/2013

Date Analyzed: 09/11/2013

Prep Method: METHOD

Prep Batch: TD130910-1

QCBatchID: TD130910-1-2

Run ID: TD130911-1A

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	400	20		100	85 - 115%

Data Package ID: *td1309076-1*

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: IC130910-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 10-Sep-13

Date Analyzed: 10-Sep-13

Prep Method: NONE

Prep Batch: IC130910-1

QCBatchID: IC130910-1-1

Run ID: IC130910-1A1

Cleanup: NONE

Basis: N/A

File Name: 30910\_014.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

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

Data Package ID: ic1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Ion Chromatography

Method EPA300.0 Revision 2.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: IC130910-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/10/2013

Date Analyzed: 09/10/2013

Prep Method: NONE

Prep Batch: IC130910-1

QCBatchID: IC130910-1-1

Run ID: IC130910-1A1

Cleanup: NONE

Basis: N/A

File Name: 30910\_013.dxd

Sample Allquot: 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	2.05	0.1		103	90 - 110%
16887-00-6	CHLORIDE	5	5.06	0.2		101	90 - 110%
24959-67-9	BROMIDE	5	5.37	0.2		107	90 - 110%
14808-79-8	SULFATE	20 ,	20	1		100	90 - 110%

Data Package ID: ic1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1

# Ion Chromatography

## Method EPA300.0 Revision 2.1

### Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC  
Work Order Number: 1309076  
Client Name: COGCC  
ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725  
LabID: 1309076-1MS

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 05-Sep-13  
Date Extracted: 10-Sep-13  
Date Analyzed: 10-Sep-13  
Prep Method: NONE

Prep Batch: IC130910-1  
QCBatchID: IC130910-1-1  
Run ID: IC130910-1A1  
Cleanup: NONE  
Basis: As Received

Sample Aliquot: 5 ml  
Final Volume: 5 ml  
Result Units: MG/L  
File Name: 30910\_017.dxd

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
16984-48-8	FLUORIDE	1.6		3.72		0.1	2	106	85 - 115%
24959-67-9	BROMIDE	0.32		5.5		0.2	5	104	85 - 115%

Field ID: Farley 286725  
LabID: 1309076-1MSD

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: 05-Sep-13  
Date Extracted: 10-Sep-13  
Date Analyzed: 10-Sep-13  
Prep Method: NONE

Prep Batch: IC130910-1  
QCBatchID: IC130910-1-1  
Run ID: IC130910-1A1  
Cleanup: NONE  
Basis: As Received

Sample Aliquot: 5 ml  
Final Volume: 5 ml  
Result Units: MG/L  
File Name: 30910\_018.dxd

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
16984-48-8	FLUORIDE	3.76		2	107	0.1	15	1
24959-67-9	BROMIDE	5.49		5	103	0.2	15	0

Data Package ID: ic1309076-1





# Metals

## Case Narrative

---

### COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 09/06/13.
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 time.

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

8. General quality control procedures.
  - A filter (method) blank and laboratory control sample were filtered, preserved, and digested at the same time as the sample.
  - 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, with the exception of CCB2 for strontium. The samples bracketed by this CCB contained more than ten times the concentration of strontium that was detected in the CCB.
- 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 ICPMS, Method 200.8.

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

The analyte results are the me/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.

  
Emily Knodel  
Inorganics Primary Data Reviewer

9/19/13  
Date

  
Inorganics Final Data Reviewer

9/19/13  
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:** 1309076

**Client Name:** COGCC

**Client Project Name:** Water Wells Sec23 3N 66W

**Client Project Number:** 434043

**Client PO Number:** PHA 14-22

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



2225 Commerce Drive, Fort Collins, Colorado 80524  
TE (800) 443-1511 PH (970) 490-1511 FX (970) 490-1522

## Chain-of-Custody

Form 2024r8

[illegible]

	NIS = non self solid	W = water	E = liquid	F = filter
C = oil				
O = oil				
S = soap				
T = tank				
V = valve				
X = extra				

**For metals or anions, please detail analytes below.**

Comments:

Cations/ Dissolved Metals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se,

## Str Lab Filter Dissolved Metals

5 CNECC will email Site ID to lab for EDD generation

Send self report EDI and invoice to [rick.allison@state.co.us](mailto:rick.allison@state.co.us)

**Preservative Key:**

Chemical	1-HCl	2-HNO <sub>3</sub>	3-H <sub>2</sub> SO <sub>4</sub>	4-NaOH	5-NaHSO <sub>4</sub>	7-Other	8-4 degrees C	9-5035
Chemical								

SIGNATURE		PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RICK ALLISON	9/6/13	130
RECEIVED BY	<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC  
Project Manager: ARW

Workorder No: 1309076  
Initials: LAS Date: 9/6/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: _____ dusting _____ moderate _____ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>5.4</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>N/A</u>			
Background µR/hr reading: <u>11</u>			
If external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)			

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

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

Project Manager Signature / Date: [Signature] 9/9/13

# Dissolved Metals by 200.8

Method EPA200.8 Revision 5.4

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 17-Sep-13

Date Analyzed: 18-Sep-13

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP130917-6

QCBatchID: IP130917-6-3

Run ID: IM130918-10A2

Cleanup: NONE

Basis: As Received

File Name: 007SMPL.

Analyst: Ross Miller

Sample Aliquot: 50 G

Final Volume: 50 G

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	10	0.002	0.002	U	
7440-39-3	BARIUM	10	0.012	0.001		
7440-42-8	BORON	10	0.23	0.05		
7440-70-2	CALCIUM	10	73	1		
7440-47-3	CHROMIUM	10	0.01	0.01	U	
7439-89-6	IRON	10	0.1	0.1	U	
7439-92-1	LEAD	10	0.0005	0.0005	U	
7439-95-4	MAGNESIUM	10	29	0.1		
7439-96-5	MANGANESE	10	0.011	0.002		
7440-09-7	POTASSIUM	10	4.1	1		
7782-49-2	SELENIUM	10	0.0013	0.001		
7440-23-5	SODIUM	10	190	1		
	SODIUM ADSORPTION RATIO	10	4.8	0.26		
7440-24-6	STRONTIUM	10	1.4	0.001		

Data Package ID: im1309076-1

Date Printed: Thursday, September 26, 2013

ALS Environmental -- FC

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LIMS Version: 6.670

# Metals by 200.8

## Method EPA200.8 Revision 5.4

### Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

Client/Project ID: Water Wells Sec23 3N 66W 434043

Lab ID: F130912-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 17-Sep-13

Date Analyzed: 18-Sep-13

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP130917-6

QCBatchID: IP130917-6-3

Run ID: IM130918-10A2

Cleanup: NONE

Basis: N/A

File Name: 002SMPL.

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/LOQ	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	10	0.002	0.002	U	
7440-39-3	BARIUM	10	0.001	0.001	U	
7440-42-8	BORON	10	0.05	0.05	U	
7440-70-2	CALCIUM	10	1	1	U	
7440-47-3	CHROMIUM	10	0.01	0.01	U	
7439-89-6	IRON	10	0.1	0.1	U	
7439-92-1	LEAD	10	0.0005	0.0005	U	
7439-95-4	MAGNESIUM	10	0.1	0.1	U	
7439-96-5	MANGANESE	10	0.002	0.002	U	
7440-09-7	POTASSIUM	10	1	1	U	
7782-49-2	SELENIUM	10	0.001	0.001	U	
7440-23-5	SODIUM	10	1	1	U	
7440-24-6	STRONTIUM	10	0.001	0.001	U	

Data Package ID: im1309076-1

Date Printed: Thursday, September 26, 2013

ALS Environmental -- FC

LIMS Version: 6.670

Page 1 of 1

# Metals by 200.8

Method EPA200.8 Revision 5.4

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: FM130912-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/17/2013

Date Analyzed: 09/18/2013

Prep Method: EPA200.22.8

Prep Batch: IP130917-6

QCBatchID: IP130917-6-3

Run ID: IM130918-10A2

Cleanup: NONE

Basis: N/A

File Name: 003SMPL.

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-38-2	ARSENIC	0.1	0.0924	0.002		92	85 - 115%
7440-39-3	BARIUM	0.1	0.0953	0.001		95	85 - 115%
7440-42-8	BORON	1	0.895	0.05		89	85 - 115%
7440-70-2	CALCIUM	10	9.03	1		90	85 - 115%
7440-47-3	CHROMIUM	0.5	0.459	0.01		92	85 - 115%
7439-89-6	IRON	5	4.87	0.1		97	85 - 115%
7439-92-1	LEAD	0.05	0.0493	0.0005		99	85 - 115%
7439-95-4	MAGNESIUM	10	9.14	0.1		91	85 - 115%
7439-96-5	MANGANESE	0.2	0.185	0.002		92	85 - 115%
7440-09-7	POTASSIUM	5	4.91	1		98	85 - 115%
7782-49-2	SELENIUM	0.1	0.0886	0.001		89	85 - 115%
7440-23-5	SODIUM	10	9.67	1		97	85 - 115%
7440-24-6	STRONTIUM	0.1	0.104	0.001		104	85 - 115%

Data Package ID: im1309076-1

Date Printed: Thursday, September 26, 2013

ALS Environmental -- FC

LIMS Version: 6.670

Page 1 of 1







# Dissolved Gasses

## Case Narrative

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### COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 09/06/2013.

The sample was free of 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

9/16/13

Date

Joel Nade

Organics Final Data Reviewer

9-16-13

Date



**ALS**  
**Data Qualifier Flags**  
**Chromatography and Mass Spectrometry**

- 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 data indicate the presence of a compound that meets the 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 outside the control criteria.
- ±:** This flag indicates that the relative percent difference (RPD) exceeds the control criteria.

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

---

**OrderNum:** 1309076

**Client Name:** COGCC

**Client Project Name:** Water Wells Sec23 3N 66W

**Client Project Number:** 434043

**Client PO Number:** PHA 14-22

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



225 Commerce Drive, Fort Collins, Colorado 80524  
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 20218

[illegible]

**For metals or anions, please detail analytes below.**

EXTRACT F = filter		SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		<i>[Signature]</i>	RICK ALLISON	9/6/13	130
RECEIVED BY		<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY					
RECEIVED BY					
RELINQUISHED BY					
RECEIVED BY					

<p><b>Comments:</b></p> <p>Cations/ DissolvedMetals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se, Sr Lab Filter Dissolved Metals</p> <p>COGCC will email Site ID to lab for EDD generation</p> <p>Email pdf report, EDD, and invoice to rick.allison@state.co.us</p>		<p><b>QC PACKAGE (check below)</b></p> <table border="1"> <tr> <td><b>x</b></td> <td>LEVEL II (Standard QC)</td> </tr> <tr> <td></td> <td>LEVEL III (Std QC + forms)</td> </tr> <tr> <td></td> <td>LEVEL IV (Std QC + forms + raw data)</td> </tr> </table>		<b>x</b>	LEVEL II (Standard QC)		LEVEL III (Std QC + forms)		LEVEL IV (Std QC + forms + raw data)
<b>x</b>	LEVEL II (Standard QC)								
	LEVEL III (Std QC + forms)								
	LEVEL IV (Std QC + forms + raw data)								
<p><b>Preservative Key:</b></p>		<p>1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035</p>							



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CDGCC  
Project Manager: ARW

Workorder No: 1309076  
Initials: LAS Date: 9/6/13

1. Does this project require any special handling in addition to standard ALS procedures?	YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?	<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?	<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)	<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES NO
10. Is there sufficient sample for the requested analyses?	<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?	<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?	<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)	<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES NO
15. Do any water samples contain sediment? Amount Amount of sediment: _____ dusting _____ moderate _____ heavy	N/A	YES <input checked="" type="radio"/> NO
16. Were the samples shipped on ice?	<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>		
Temperature (°C): <u>5.4</u>		
No. of custody seals on cooler: <u>0</u>		
External µR/hr reading: <u>N/A</u>		
Background µR/hr reading: <u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)		

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

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

Project Manager Signature / Date: [Signature] 9/9/13

# Dissolved Gasses

Method RSK175

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: HC130911-9MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 11-Sep-13

Date Analyzed: 11-Sep-13

Prep Method: METHOD

Prep Batch: HC130911-9

QCBatchID: HC130911-9-1

Run ID: HC130911-9A

Cleanup: NONE

Basis: N/A

File Name: 06096.dat

Sample Aliquot: 38.5 ml

Final Volume: 38.5 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/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: MEE1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# Dissolved Gasses

Method RSK175

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 11-Sep-13

Date Analyzed: 11-Sep-13

Prep Method: METHOD

Prep Batch: HC130911-9

QCBatchID: HC130911-9-1

Run ID: HC130911-9A

Cleanup: NONE

Basis: As Received

File Name: 06107.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\ LOD\LOQ	Result Qualifier	EPA Qualifier
74-82-8	METHANE	1	12	1		
74-84-0	ETHANE	1	2	2	U	
74-98-6	PROPANE	1	1	1	U	

Data Package ID: MEE1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# Dissolved Gasses

## Method RSK175

### Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: HC130911-9LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/11/2013

Date Analyzed: 09/11/2013

Prep Method: METHOD

Prep Batch: HC130911-9

QCBatchID: HC130911-9-1

Run ID: HC130911-9A

Cleanup: NONE

Basis: N/A

File Name: 06095.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	131	1		92	80 - 120%
74-84-0	ETHANE	267	249	2		93	80 - 120%
74-98-6	PROPANE	391	366	1		94	80 - 120%

Lab ID: HC130911-9LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/11/2013

Date Analyzed: 09/11/2013

Prep Method: METHOD

Prep Batch: HC130911-9

QCBatchID: HC130911-9-1

Run ID: HC130911-9A

Cleanup: NONE

Basis: N/A

File Name: 06118.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	148	1		104	25	12
74-84-0	ETHANE	267	261	2		98	25	5
74-98-6	PROPANE	391	379	1		97	25	4

Data Package ID: MEE1309076-1

Date Printed: Monday, September 16, 2013

ALS Environmental -- FC

LIMS Version: 6.658

Page 1 of 1





## GC/MS Volatiles Case Narrative

---

### COGCC

Water Wells Sec23 3N 66W -- 434043

Work Order Number: 1309076

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 09/06/13. The water sample was free of headspace 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.

The method blank VL130907-4MB acetone and chloroform detected below the reporting limit. These compounds were not detected in the associated sample.



8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. 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. 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  
Emily Lyons  
Organics Primary Data Reviewer

9/11/13  
Date

Tyler H. H. H.  
Organics Final Data Reviewer

9/11/13  
Date



**ALS**  
**Data Qualifier Flags**  
**Chromatography and Mass Spectrometry**

- 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:** 1309076

**Client Name:** COGCC

**Client Project Name:** Water Wells Sec23 3N 66W

**Client Project Number:** 434043

**Client PO Number:** PHA 14-22

---

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Farley 286725	1309076-1		WATER	05-Sep-13	15:15



2225 Commerce Drive, Fort Collins, Colorado 80524  
 TEL: (800) 443-1511 PH: (870) 490-1511 FX: (870) 490-1522

## Chain-of-Custody

Form 202r8

[illegible]

**For metals or anions, please detail analytes below.**

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RICK ALLISON	9/6/13	130
RECEIVED BY	<i>[Signature]</i>	C TRIMBLE	9-6-13	1335
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

<p>Comments:</p> <p>Cations/ Dissolved Metals - Ca, Fe, Mg, Mn, K, Na, Ba, B, Cr, Se, Sr Lab Filter Dissolved Metals</p> <p>COGCC will email Site ID to lab for EDD generation</p> <p>Email pdf report, EDD, and invoice to <a href="mailto:rick.allison@state.co.us">rick.allison@state.co.us</a></p>		<p>QC PACKAGE (check below)</p> <p><input checked="" type="checkbox"/> LEVEL II (Standard QC)</p> <p><input type="checkbox"/> LEVEL III (Std QC + forms)</p> <p><input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)</p>
<p>Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035</p>		



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC  
Project Manager: ARW

Workorder No: 1309076  
Initials: LAS Date: 9/6/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES	NO
15. Do any water samples contain sediment? Amount of sediment: _____ dusting _____ moderate _____ heavy	Amount N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>5.4</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>N/A</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / <input checked="" type="radio"/> NO / NA (If no, see Form 008.)			

DOT Survey  
Acceptance  
Information

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

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

Project Manager Signature / Date: Curey 9/9/13



# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44054

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/LOQ	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	1	1	U	
74-87-3	CHLOROMETHANE	1	1	1	U	
75-01-4	VINYL CHLORIDE	1	1	1	U	
74-83-9	BROMOMETHANE	1	1	1	U	
75-00-3	CHLOROETHANE	1	1	1	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	1	1	U	
75-35-4	1,1-DICHLOROETHENE	1	1	1	U	
76-13-1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROET	1	1	1	U	
67-64-1	ACETONE	1	4.6	10	J	
74-88-4	IODOMETHANE	1	1	1	U	
75-15-0	CARBON DISULFIDE	1	1	1	U	
75-09-2	METHYLENE CHLORIDE	1	1	1	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	1	1	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	1	1	U	
75-34-3	1,1-DICHLOROETHANE	1	1	1	U	
108-05-4	VINYL ACETATE	1	2	2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	1	1	U	
78-93-3	2-BUTANONE	1	10	10	U	
74-97-5	BROMOCHLOROMETHANE	1	1	1	U	
67-66-3	CHLOROFORM	1	0.51	1	J	
71-55-6	1,1,1-TRICHLOROETHANE	1	1	1	U	
594-20-7	2,2-DICHLOROPROPANE	1	1	1	U	
56-23-5	CARBON TETRACHLORIDE	1	1	1	U	
563-58-6	1,1-DICHLOROPROPENE	1	1	1	U	
107-06-2	1,2-DICHLOROETHANE	1	1	1	U	
71-43-2	BENZENE	1	1	1	U	
79-01-6	TRICHLOROETHENE	1	1	1	U	

Data Package ID: VL1309076-1

# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44054

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

78-87-5	1,2-DICHLOROPROPANE	1	1	1	U	
74-95-3	DIBROMOMETHANE	1	1	1	U	
75-27-4	BROMODICHLOROMETHANE	1	1	1	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	1	1	U	
108-10-1	4-METHYL-2-PENTANONE	1	10	10	U	
108-88-3	TOLUENE	1	1	1	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	1	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	1	1	U	
591-78-6	2-HEXANONE	1	10	10	U	
127-18-4	TETRACHLOROETHENE	1	1	1	U	
142-28-9	1,3-DICHLOROPROPANE	1	1	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	1	1	U	
106-93-4	1,2-DIBROMOETHANE	1	1	1	U	
544-10-5	1-CHLOROHEXANE	1	1	1	U	
108-90-7	CHLOROBENZENE	1	1	1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	1	1	U	
100-41-4	ETHYLBENZENE	1	1	1	U	
136777-61-2	M+P-XYLENE	1	1	1	U	
95-47-6	O-XYLENE	1	1	1	U	
100-42-5	STYRENE	1	1	1	U	
75-25-2	BROMOFORM	1	1	1	U	
98-82-8	ISOPROPYLBENZENE	1	1	1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	1	1	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	1	1	U	
108-86-1	BROMOBENZENE	1	1	1	U	
103-65-1	N-PROPYLBENZENE	1	1	1	U	
95-49-8	2-CHLOROTOLUENE	1	1	1	U	
108-67-8	1,3,5-TRIMETHYLBENZENE	1	1	1	U	
106-43-4	4-CHLOROTOLUENE	1	1	1	U	

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44054

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

98-06-6	TERT-BUTYLBENZENE	1	1	1	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	1	1	U	
135-98-8	SEC-BUTYLBENZENE	1	1	1	U	
541-73-1	1,3-DICHLOROBENZENE	1	1	1	U	
99-87-6	P-ISOPROPYLTOLUENE	1	1	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	1	1	U	
104-51-8	N-BUTYLBENZENE	1	1	1	U	
95-50-1	1,2-DICHLOROBENZENE	1	1	1	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	2	2	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	1	1	U	
87-68-3	HEXACHLOROBUTADIENE	1	1	1	U	
91-20-3	NAPHTHALENE	1	1	1	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	1	1	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	26.3		25	105	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.3		25	97	84 - 118
2037-26-5	TOLUENE-D8	24.6		25	98	85 - 115

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

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**GC/MS Volatiles**  
**Method SW8260\_25**  
**Tentatively Identified Compounds**

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

<div style="border: 1px solid black; padding: 2px;"><b>Field ID:</b> <span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span> <b>Lab ID:</b> VL130907-4MB</div>	<b>Sample Matrix:</b> WATER <b>% Moisture:</b> N/A <b>Date Collected:</b> N/A <b>Date Extracted:</b> 07-Sep-13 <b>Date Analyzed:</b> 07-Sep-13	<b>Prep Batch:</b> VL130907-4 <b>QCBatchID:</b> VL130907-4-3 <b>Run ID:</b> VL130907-4A <b>Cleanup:</b> NONE <b>Basis:</b> As Received	<b>Sample Aliquot:</b> 10 ml <b>Final Volume:</b> 10 ml <b>Clean DF:</b> 1 <b>File Name:</b> D44054
--	--	--	--

CASNO	Retention Time	Target Analyte	Dilution Factor	Result	Units	Qualifier
		NONE DETECTED	1			U

Data Package ID: VL1309076-1

# GC/MS Volatiles

Method SW8260\_25 Revision C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: As Received

File Name: D44065

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/ LOD/LOQ	Result Qualifier	EPA Qualifier
75-71-8	DICHLORODIFLUOROMETHANE	1	1	1	U	
74-87-3	CHLOROMETHANE	1	1	1	U	
75-01-4	VINYL CHLORIDE	1	1	1	U	
74-83-9	BROMOMETHANE	1	1	1	U	
75-00-3	CHLOROETHANE	1	1	1	U	
75-69-4	TRICHLOROFLUOROMETHANE	1	1	1	U	
75-35-4	1,1-DICHLOROETHENE	1	1	1	U	
76-13-1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	1	1	1	U	
67-64-1	ACETONE	1	10	10	U	
74-88-4	IODOMETHANE	1	1	1	U	
75-15-0	CARBON DISULFIDE	1	1	1	U	
75-09-2	METHYLENE CHLORIDE	1	1	1	U	
156-60-5	TRANS-1,2-DICHLOROETHENE	1	1	1	U	
1634-04-4	METHYL TERTIARY BUTYL ETHER	1	1	1	U	
75-34-3	1,1-DICHLOROETHANE	1	1	1	U	
108-05-4	VINYL ACETATE	1	2	2	U	
156-59-2	CIS-1,2-DICHLOROETHENE	1	1	1	U	
78-93-3	2-BUTANONE	1	10	10	U	
74-97-5	BROMOCHLOROMETHANE	1	1	1	U	
67-66-3	CHLOROFORM	1	1	1	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	1	1	U	
594-20-7	2,2-DICHLOROPROPANE	1	1	1	U	
56-23-5	CARBON TETRACHLORIDE	1	1	1	U	
563-58-6	1,1-DICHLOROPROPENE	1	1	1	U	
107-06-2	1,2-DICHLOROETHANE	1	1	1	U	
71-43-2	BENZENE	1	1	1	U	
79-01-6	TRICHLOROETHENE	1	1	1	U	

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# GC/MS Volatiles

Method SW8260\_25 Revision C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Method: SW5030 Rev C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: As Received

File Name: D44065

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\ LOD\LOQ	Result Qualifier	EPA Qualifier
78-87-5	1,2-DICHLOROPROPANE	1	1	1	U	
74-95-3	DIBROMOMETHANE	1	1	1	U	
75-27-4	BROMODICHLOROMETHANE	1	1	1	U	
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	1	1	U	
108-10-1	4-METHYL-2-PENTANONE	1	10	10	U	
108-88-3	TOLUENE	1	1	1	U	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	1	1	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	1	1	U	
591-78-6	2-HEXANONE	1	10	10	U	
127-18-4	TETRACHLOROETHENE	1	1	1	U	
142-28-9	1,3-DICHLOROPROPANE	1	1	1	U	
124-48-1	DIBROMOCHLOROMETHANE	1	1	1	U	
106-93-4	1,2-DIBROMOETHANE	1	1	1	U	
544-10-5	1-CHLOROHEXANE	1	1	1	U	
108-90-7	CHLOROBENZENE	1	1	1	U	
630-20-6	1,1,1,2-TETRACHLOROETHANE	1	1	1	U	
100-41-4	ETHYLBENZENE	1	1	1	U	
136777-61-2	M+P-XYLENE	1	1	1	U	
95-47-6	O-XYLENE	1	1	1	U	
100-42-5	STYRENE	1	1	1	U	
75-25-2	BROMOFORM	1	1	1	U	
98-82-8	ISOPROPYLBENZENE	1	1	1	U	
96-18-4	1,2,3-TRICHLOROPROPANE	1	1	1	U	
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	1	1	U	
108-86-1	BROMOBENZENE	1	1	1	U	
103-65-1	N-PROPYLBENZENE	1	1	1	U	
95-49-8	2-CHLOROTOLUENE	1	1	1	U	

Data Package ID: VL1309076-1

# GC/MS Volatiles

Method SW8260\_25 Revision C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725	Sample Matrix: WATER	Prep Batch: VL130907-4	Analyst: Steven D. White
Lab ID: 1309076-1	% Moisture: N/A	QCBatchID: VL130907-4-3	Sample Aliquot: 10 ML
	Date Collected: 05-Sep-13	Run ID: VL130907-4A	Final Volume: 10 ML
	Date Extracted: 07-Sep-13	Cleanup: NONE	Result Units: UG/L
	Date Analyzed: 07-Sep-13	Basis: As Received	Clean DF: 1
	Prep Method: SW5030 Rev C	File Name: D44065	

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
108-67-8	1,3,5-TRIMETHYLBENZENE	1	1	1	U	
106-43-4	4-CHLOROTOLUENE	1	1	1	U	
98-06-6	TERT-BUTYLBENZENE	1	1	1	U	
95-63-6	1,2,4-TRIMETHYLBENZENE	1	1	1	U	
135-98-8	SEC-BUTYLBENZENE	1	1	1	U	
541-73-1	1,3-DICHLOROBENZENE	1	1	1	U	
99-87-6	P-ISOPROPYLTOLUENE	1	1	1	U	
106-46-7	1,4-DICHLOROBENZENE	1	1	1	U	
104-51-8	N-BUTYLBENZENE	1	1	1	U	
95-50-1	1,2-DICHLOROBENZENE	1	1	1	U	
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	2	2	U	
120-82-1	1,2,4-TRICHLOROBENZENE	1	1	1	U	
87-68-3	HEXACHLOROBUTADIENE	1	1	1	U	
91-20-3	NAPHTHALENE	1	1	1	U	
87-61-6	1,2,3-TRICHLOROBENZENE	1	1	1	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.8		25	103	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.4		25	98	84 - 118
2037-26-5	TOLUENE-D8	24.3		25	97	85 - 115

Data Package ID: VL1309076-1

**GC/MS Volatiles**  
**Method SW8260\_25**  
**Tentatively Identified Compounds**

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Field ID: Farley 286725

Lab ID: 1309076-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 05-Sep-13

Date Extracted: 07-Sep-13

Date Analyzed: 07-Sep-13

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 10 ml

Final Volume: 10 ml

Clean DF: 1

File Name: D44065

CASNO	Retention Time	Target Analyte	Dilution Factor	Result	Units	Qualifier
		NONE DETECTED	1			U

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

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# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44052

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
75-71-8	DICHLORODIFLUOROMETHANE	10	8.17	1		82	63 - 125%
74-87-3	CHLOROMETHANE	10	8.78	1		88	73 - 122%
75-01-4	VINYL CHLORIDE	10	8.72	1		87	72 - 123%
74-83-9	BROMOMETHANE	10	8.97	1		90	68 - 123%
75-00-3	CHLOROETHANE	10	10	1		100	74 - 124%
75-69-4	TRICHLOROFLUOROMETHANE	10	9.85	1		99	74 - 124%
75-35-4	1,1-DICHLOROETHENE	10	10.8	1		108	77 - 119%
76-13-1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETH	10	10.3	1		103	79 - 122%
67-64-1	ACETONE	40	41.8	10		104	62 - 142%
74-88-4	IODOMETHANE	10	8.98	1		90	72 - 126%
75-15-0	CARBON DISULFIDE	10	10.5	1		105	76 - 121%
75-09-2	METHYLENE CHLORIDE	10	10.6	1		106	71 - 130%
156-60-5	TRANS-1,2-DICHLOROETHENE	10	10.6	1		106	82 - 117%
1634-04-4	METHYL TERTIARY BUTYL ETHER	20	21.2	1		106	77 - 119%
75-34-3	1,1-DICHLOROETHANE	10	10.8	1		108	83 - 119%
108-05-4	VINYL ACETATE	10	10.4	2		104	76 - 121%
156-59-2	CIS-1,2-DICHLOROETHENE	10	10.9	1		109	83 - 117%
78-93-3	2-BUTANONE	40	42.6	10		106	70 - 135%
74-97-5	BROMOCHLOROMETHANE	10	10.8	1		108	83 - 121%
67-66-3	CHLOROFORM	10	11	1		110	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	10	10.5	1		105	80 - 120%
594-20-7	2,2-DICHLOROPROPANE	10	11.2	1		112	83 - 125%
56-23-5	CARBON TETRACHLORIDE	10	11	1		110	77 - 122%
563-58-6	1,1-DICHLOROPROPENE	10	11	1		110	84 - 118%
107-06-2	1,2-DICHLOROETHANE	10	10.5	1		105	74 - 128%
71-43-2	BENZENE	10	10.7	1		107	83 - 117%

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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LIMS Version: 6.658

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44052

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
79-01-6	TRICHLOROETHENE	10	10.8	1		108	83 - 117%
78-87-5	1,2-DICHLOROPROPANE	10	11	1		110	84 - 120%
74-95-3	DIBROMOMETHANE	10	10.7	1		107	79 - 122%
75-27-4	BROMODICHLOROMETHANE	10	10.9	1		109	76 - 122%
10061-01-5	CIS-1,3-DICHLOROPROPENE	10	11	1		110	81 - 120%
108-10-1	4-METHYL-2-PENTANONE	40	46.8	10		117	73 - 125%
108-88-3	TOLUENE	10	10.9	1		109	82 - 113%
10061-02-6	TRANS-1,3-DICHLOROPROPENE	10	10.7	1		107	81 - 114%
79-00-5	1,1,2-TRICHLOROETHANE	10	10.9	1		109	78 - 116%
591-78-6	2-HEXANONE	40	43.3	10		108	71 - 124%
127-18-4	TETRACHLOROETHENE	10	10.5	1		105	84 - 117%
142-28-9	1,3-DICHLOROPROPANE	10	10.8	1		108	80 - 115%
124-48-1	DIBROMOCHLOROMETHANE	10	11.3	1		113	82 - 118%
106-93-4	1,2-DIBROMOETHANE	10	10.7	1		107	79 - 114%
544-10-5	1-CHLOROHEXANE	10	9.52	1		95	80 - 117%
108-90-7	CHLOROBENZENE	10	10.9	1		109	81 - 113%
630-20-6	1,1,1,2-TETRACHLOROETHANE	10	11.2	1		112	78 - 113%
100-41-4	ETHYLBENZENE	10	10.6	1		106	81 - 113%
136777-61-	M+P-XYLENE	20	21.7	1		109	82 - 115%
95-47-6	O-XYLENE	10	11.2	1		112	81 - 115%
100-42-5	STYRENE	10	11.1	1		111	78 - 118%
75-25-2	BROMOFORM	10	11.2	1		112	70 - 120%
98-82-8	ISOPROPYLBENZENE	10	10.4	1		104	80 - 113%
96-18-4	1,2,3-TRICHLOROPROPANE	10	11.1	1		111	78 - 117%
79-34-5	1,1,2,2-TETRACHLOROETHANE	10	10.6	1		106	75 - 121%
108-86-1	BROMOBENZENE	10	10.9	1		109	81 - 114%
103-65-1	N-PROPYLBENZENE	10	9.95	1		100	79 - 116%

Data Package ID: VL1309076-1

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44052

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
95-49-8	2-CHLOROTOLUENE	10	10.5	1		105	79 - 116%
108-67-8	1,3,5-TRIMETHYLBENZENE	10	10.2	1		102	78 - 116%
106-43-4	4-CHLOROTOLUENE	10	10.9	1		109	78 - 115%
98-06-6	TERT-BUTYLBENZENE	10	10.2	1		102	76 - 120%
95-63-6	1,2,4-TRIMETHYLBENZENE	10	10.3	1		103	80 - 117%
135-98-8	SEC-BUTYLBENZENE	10	9.59	1		96	78 - 115%
541-73-1	1,3-DICHLOROBENZENE	10	10.7	1		107	79 - 115%
99-87-6	P-ISOPROPYLTOLUENE	10	9.68	1		97	77 - 116%
106-46-7	1,4-DICHLOROBENZENE	10	10.8	1		108	82 - 114%
104-51-8	N-BUTYLBENZENE	10	9.62	1		96	79 - 117%
95-50-1	1,2-DICHLOROBENZENE	10	10.8	1		108	82 - 114%
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10	10.3	2		103	73 - 125%
120-82-1	1,2,4-TRICHLOROBENZENE	10	10.3	1		103	75 - 120%
87-68-3	HEXACHLOROBUTADIENE	10	11.1	1		111	71 - 124%
91-20-3	NAPHTHALENE	10	10.5	1		105	71 - 131%
87-61-6	1,2,3-TRICHLOROBENZENE	10	10.4	1		104	70 - 131%

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44053

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
75-71-8	DICHLORODIFLUOROMETHANE	10	7.75	1		78	20	5
74-87-3	CHLOROMETHANE	10	8.22	1		82	20	7
75-01-4	VINYL CHLORIDE	10	8.36	1		84	20	4
74-83-9	BROMOMETHANE	10	8.64	1		86	20	4
75-00-3	CHLOROETHANE	10	9.18	1		92	20	9
75-69-4	TRICHLOROFLUOROMETHANE	10	9.38	1		94	20	5
75-35-4	1,1-DICHLOROETHENE	10	9.63	1		96	20	11
76-13-1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETH	10	9.47	1		95	20	8
67-64-1	ACETONE	40	43.5	10		109	30	4
74-88-4	IODOMETHANE	10	8.19	1		82	20	9
75-15-0	CARBON DISULFIDE	10	9.68	1		97	20	8
75-09-2	METHYLENE CHLORIDE	10	10.3	1		103	20	3
156-60-5	TRANS-1,2-DICHLOROETHENE	10	10	1		100	20	6
1634-04-4	METHYL TERTIARY BUTYL ETHER	20	20.2	1		101	20	5
75-34-3	1,1-DICHLOROETHANE	10	10.1	1		101	20	6
108-05-4	VINYL ACETATE	10	10.4	2		104	20	0
156-59-2	CIS-1,2-DICHLOROETHENE	10	10	1		100	20	8
78-93-3	2-BUTANONE	40	42.2	10		106	30	1
74-97-5	BROMOCHLOROMETHANE	10	9.84	1		98	20	10
67-66-3	CHLOROFORM	10	10.6	1		106	20	4
71-55-6	1,1,1-TRICHLOROETHANE	10	10	1		100	20	5
594-20-7	2,2-DICHLOROPROPANE	10	10.6	1		106	20	6
56-23-5	CARBON TETRACHLORIDE	10	10.4	1		104	20	6
563-58-6	1,1-DICHLOROPROPENE	10	10.3	1		103	20	7
107-06-2	1,2-DICHLOROETHANE	10	10.1	1		101	20	4
71-43-2	BENZENE	10	10.1	1		101	20	6
79-01-6	TRICHLOROETHENE	10	10.1	1		101	20	6

Data Package ID: VL1309076-1

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44053

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
78-87-5	1,2-DICHLOROPROPANE	10	10.4	1		104	20	6
74-95-3	DIBROMOMETHANE	10	10.2	1		102	20	5
75-27-4	BROMODICHLOROMETHANE	10	10.4	1		104	20	4
10061-01-5	CIS-1,3-DICHLOROPROPENE	10	10.2	1		102	20	7
108-10-1	4-METHYL-2-PENTANONE	40	45.6	10		114	30	2
108-88-3	TOLUENE	10	10	1		100	20	9
10061-02-6	TRANS-1,3-DICHLOROPROPENE	10	10.3	1		103	20	4
79-00-5	1,1,2-TRICHLOROETHANE	10	9.95	1		100	20	10
591-78-6	2-HEXANONE	40	41.1	10		103	30	5
127-18-4	TETRACHLOROETHENE	10	10.1	1		101	20	4
142-28-9	1,3-DICHLOROPROPANE	10	10.1	1		101	20	7
124-48-1	DIBROMOCHLOROMETHANE	10	10.7	1		107	20	6
106-93-4	1,2-DIBROMOETHANE	10	10.5	1		105	20	2
544-10-5	1-CHLOROHEXANE	10	8.63	1		86	20	10
108-90-7	CHLOROBENZENE	10	10.1	1		101	20	7
630-20-6	1,1,1,2-TETRACHLOROETHANE	10	10.3	1		103	20	8
100-41-4	ETHYLBENZENE	10	9.87	1		99	20	7
136777-61-	M+P-XYLENE	20	20.1	1		101	20	8
95-47-6	O-XYLENE	10	10.1	1		101	20	11
100-42-5	STYRENE	10	10.2	1		102	20	9
75-25-2	BROMOFORM	10	11.1	1		111	20	1
98-82-8	ISOPROPYLBENZENE	10	9.56	1		96	20	8
96-18-4	1,2,3-TRICHLOROPROPANE	10	10.6	1		106	20	5
79-34-5	1,1,2,2-TETRACHLOROETHANE	10	10	1		100	20	5
108-86-1	BROMOBENZENE	10	10.1	1		101	20	8
103-65-1	N-PROPYLBENZENE	10	9.26	1		93	20	7
95-49-8	2-CHLOROTOLUENE	10	9.54	1		95	20	10

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1309076

Client Name: COGCC

ClientProject ID: Water Wells Sec23 3N 66W 434043

Lab ID: VL130907-4LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/07/2013

Date Analyzed: 09/07/2013

Prep Method: SW5030C

Prep Batch: VL130907-4

QCBatchID: VL130907-4-3

Run ID: VL130907-4A

Cleanup: NONE

Basis: N/A

File Name: D44053

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
108-67-8	1,3,5-TRIMETHYLBENZENE	10	9.43	1		94	20	8
106-43-4	4-CHLOROTOLUENE	10	9.91	1		99	20	10
98-06-6	TERT-BUTYLBENZENE	10	9.16	1		92	20	11
95-63-6	1,2,4-TRIMETHYLBENZENE	10	9.36	1		94	20	10
135-98-8	SEC-BUTYLBENZENE	10	8.71	1		87	20	10
541-73-1	1,3-DICHLOROBENZENE	10	9.8	1		98	20	9
99-87-6	P-ISOPROPYLTOLUENE	10	9.02	1		90	20	7
106-46-7	1,4-DICHLOROBENZENE	10	9.87	1		99	20	9
104-51-8	N-BUTYLBENZENE	10	8.67	1		87	20	10
95-50-1	1,2-DICHLOROBENZENE	10	10.1	1		101	20	6
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10	9.21	2		92	20	11
120-82-1	1,2,4-TRICHLOROBENZENE	10	9.85	1		98	20	5
87-68-3	HEXACHLOROBUTADIENE	10	9.93	1		99	20	12
91-20-3	NAPHTHALENE	10	9.88	1		99	20	6
87-61-6	1,2,3-TRICHLOROBENZENE	10	9.79	1		98	20	6

## 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	101		100		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	97		100		84 - 118
2037-26-5	TOLUENE-D8	25	98		97		85 - 115

Data Package ID: VL1309076-1

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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Form No.  
GWS-25

**OFFICE OF THE STATE ENGINEER**  
**COLORADO DIVISION OF WATER RESOURCES**  
818 Centennial Bldg., 1313 Sherman St., Denver, Colorado 80203  
(303) 866-3581

EXST

WELL PERMIT NUMBER 286725 - -  
DIV. 1 WD 2 DES. BASIN MD

APPLICANT

DAVID FARLEY FAMILY TRUST  
1812 56TH AVENUE  
GREELEY, CO 80634-

(970) 330-6700

APPROVED WELL LOCATION

WELD COUNTY  
SE 1/4 NW 1/4 Section 23  
Township 3 N Range 66 W Sixth P.M.

DISTANCES FROM SECTION LINES

1420 Ft. from North Section Line  
1470 Ft. from West Section Line

UTM COORDINATES (Meters, Zone: 13, NAD83)

Easting: Northing:

CHANGE/EXPANSION OF USE OF AN EXISTING WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- 2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) and the policy of the State Engineer for the appropriation of ground water tributary to South Platte River system.
- 4) This is a change of use of an existing well constructed under permit no. 239959. The issuance of this permit hereby cancels permit no. 239959.
- 5) Approved as the only well on a tract of land of 82.22 acre(s) described as Parcel 1, Subdivision Exemption No. 1190, Weld County, more completely described on the attached exhibit "A".
- 6) The use of ground water from this well is limited to drinking and sanitary facilities as described in CRS 37-92-602(1)(c), for a commercial business (including a caretaker's house). Water from this well shall not be used for lawn or landscape irrigation or for any other purpose outside the business building structure.
- 7) The pumping rate of this well shall not exceed 15 GPM.
- 8) The annual amount of ground water to be diverted by this well shall not exceed 1/3 acre-foot (108,600 gallons).
- 9) Production is limited to the alluvium. The depth of this well shall not exceed 60 feet or the depth at which sandstone or shale is first encountered, whichever comes first.
- 10) The return flow from the use of this well must be through an individual waste water disposal system of the non-evaporative type where the water is returned to the same stream system in which the well is located.
- 11) A totalizing flow meter must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (recorded at least annually) and submitted to the Division Engineer upon request.
- 12) This well shall be not more than 200 feet from the location specified on this permit.

APPROVED  
SKR

State Engineer

DATE ISSUED 09-26-2011

By

EXPIRATION DATE NA

Receipt No. 3651930

COLORADO DIVISION OF WATER RESOURCES  
DEPARTMENT OF NATURAL RESOURCES  
1313 SHERMAN ST, RM 818, DENVER, CO 80203  
phone - info: (303) 866-3587 main: (303) 866-3581  
fax: (303) 866-3589 http://www.water.state.co.us

## GENERAL PURPOSE

### Water Well Permit Application

Review instructions on reverse side prior to completing form.  
The form must be completed in black or blue ink or typed.

#### 1. Applicant Information

Name of applicant

David Farley Family Trust

Mailing address

1812 56<sup>th</sup> Avenue

City  
Greeley

State

CO

Zip code

80634

Telephone #

(703) 330-6700

E-mail (Optional)

flotis@nocollegal.com

#### 2. Type Of Application (check applicable boxes)

- ☐ Construct new well  
☐ Replace existing well  
☐ Use existing well  
☒ Change or increase use  
☐ Change source (aquifer)  
☐ Reapplication (expired permit)  
☐ COGCC well  
☐ Other:

#### 3. Refer To (if applicable)

Well permit #

239959

Water Court case #

Designated Basin Determination #

Well name or #

#### 4. Location Of Proposed Well (Important! See Instructions)

County

Weld

SE

1/4 of the

NW

1/4

Section

23

Township

3

N or S

☒ N ☐ S

Range

66

E or W

☐ E ☒ W

Principal Meridian

6 P.M.

Distance of well from section lines (section lines are typically not property lines)

1420

Ft. from

☒ N ☐ S

1470

Ft. from

☐ E ☒ W

For replacement wells only - distance and direction from old well to new well

feet

direction

Well location address (Include City, State, Zip)

☐ Check if well address is same as in Item 1.

16184 WCR 32, Platteville, CO 80651

Optional: GPS well location information in UTM format. You must check GPS unit for required settings as follows:

Format must be UTM

☐ Zone 12 or ☐ Zone 13

Units must be Meters

Datum must be NAD83

Unit must be set to true north

Was GPS unit checked for above? ☐ YES

Easting

Northing

Remember to set Datum to NAD83

#### 5. Parcel On Which Well Will Be Located

(YOU MUST ATTACH A CURRENT DEED FOR THE SUBJECT PARCEL)

A. Legal Description (may be provided as an attachment)

See attached Exhibit A

B. # of acres in parcel

82.221 (gross); 81 net

C. Owner

David Farley Family Trust

D. Will this be the only well on this parcel? ☒ YES ☐ NO (if no - list other wells)

E. State Parcel ID# (optional)

121123000012

Office Use Only

Form GWS-45 (07/2009)

RECEIVED

AUG 18 2011

WATER RESOURCES  
STATE ENGINEER  
COLO

#### 6. Use Of Well (check applicable boxes)

Attach a detailed description of uses applied for.

- ☐ Industrial  
☐ Municipal  
☐ Irrigation  
☒ Commercial  
☐ Dewatering System  
☐ Geothermal (☐ production or ☐ reinjection)  
☐ Other (describe): See Exhibit B  
Commercial Exempt

#### 7. Well Data (proposed)

Maximum pumping rate

15

gpm

Annual amount to be withdrawn

73

acre-feet

Total depth

60

feet

Aquifer

#### 8. Land On Which Ground Water Will Be Used

Legal Description (may be provided as an attachment)

See Question 4 and Exhibit A

(If used for crop irrigation, attach a scaled map that shows irrigated area.)

A. # Acres

B. Owner

C. List any other wells or water rights used on this land.

#### 9. Proposed Well Driller License #(optional):

#### 10. Signature Of Applicant(s) Or Authorized Agent

The making of false statements herein constitutes perjury in the second degree, which is punishable as a class 1 misdemeanor pursuant to C.R.S. 24-4-104 (13)(a). I have read the statements herein, know the contents thereof and state that they are true to my knowledge.

Sign here (Must be original signature) See Authorization

Date

8/16/11

Print name & title

Jenna Seigel, Attorney, OHS, Coan & Peters, LLC

#### Office Use Only

USGS map name

DWR map no.

Surface elev.

Receipt area only

Transaction #: 3651930  
Date: 8/18/2011 1:42:46 PM  
Transaction Total: \$100.00  
CHECK #0913 \$100.00

AQUAMAP

WE

WR

CWCB

TOPO

MYLAR

SB5

DIV 1 WD 2 BA     MD



COLORADO DIVISION OF WATER RESOURCES  
DEPARTMENT OF NATURAL RESOURCES  
1313 SHERMAN ST, RM 818, DENVER, CO 80203  
main: (303) 866-3581 <http://water.state.co.us>  
fax: (303) 866-3589 Online Requests: [AskDWR](#)

Form GWS-57 (08/2011)

Application Receipt No. \_\_\_\_\_

Applicant's Name: Dana Farley Family Trust

## COMMERCIAL DRINKING AND SANITARY WELL WORKSHEET

Review instructions on reverse side prior to completing form. The form must be completed in black or blue ink or typed.

1. Name and Type of Business: machine shop; commercial hangar/warehouse/storage facility  
shop caretaker's trailer house

2. Is this application for a new well?

☐ Yes

☒ No

If no, is this application for a change of use for an existing well?

☒ Yes

☐ No

Permit Number of well (if applicable) 239959

For wells used for drinking and sanitary purposes prior to May 8, 1972, a field inspection of the well to verify historical uses may be required. See form GWS-12 Registration of Existing Well and form GWS-12A Statement of Historical Use for further information.

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3. Is the parcel the well is located on (or will be located on) within the boundaries of a water service area (water district, municipality, water company, etc.) or is water available from another source (such as a well)?

☐ Yes

☒ No

If yes, indicate what this other source is \_\_\_\_\_

(name of water district/supplier, or well permit number)

4. Proposed type of disposal system to be used:

☒ Septic tank / absorption leach field

☐ Central System (district name: ) \_\_\_\_\_

☐ Vault (location sewage hauled to: ) \_\_\_\_\_

☐ Other (attach copy of engineering design)

5. Water Demand Calculations (for average factors for water demand see below)

### Employees

Number of Employees	X	Number of Gallons per Employee per Day	X	Number of Days Employee Works per Year	=	Gallons per Year
10	X	15	X	365	=	54,750

A

### Customers

Number of Customers per Day	X	Number of Gallons per Customer	X	Number of Days Business is Open per Year	=	Gallons per Year
5	X	5	X	365	=	9125

B

Other Uses (Note: No uses outside of the building would be permitted for this type of well.)

Type of Use	X	Gallons per Use per Day	X	Days per Year	=	Gallons per Year
Shop caretaker trailer house	X	80	X	365	=	29,200

C

Total amount of water required:

=	Gallons per Year (A + B + C)
=	93,075

For wells used for commercial drinking and sanitary purposes on or after May 8, 1972, the total water demand cannot exceed 108,600 gallons (1/3 of an acre-foot) per year.

For wells used for commercial drinking and sanitary purposes prior to May 8, 1972, the total water demand cannot exceed 325,900 gallons (1 acre-foot) per year.

### General Guidelines for Water Demand in Gallons per Day

Day Workers at Offices – 15 gallons/person/day

Food Service Establishments (with toilet and kitchen wastes) – 10 gallons/patron/day

Churches (does not include food service) – 5 gallons/seat/day

Overnight Lodging – 50 gallons/customer/day

On-Site Proprietor of Overnight Lodging (i.e. on-site owner of a Bed & Breakfast) – 80 gallons/person/day

Additional water demand figures may be obtained from a private water consultant or from a technical reference on this subject.

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COLORADO

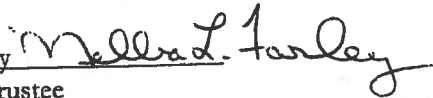
AUTHORIZATION

I, Melba L. Farley, as Trustee of the David Farley Family Trust, hereby specifically request and authorize Fred L. Otis and Jenna Seigel of Otis, Coan & Peters, LLC to submit and release to the Colorado Division of Water Resources and the Weld County Department of Planning Services, and any investigator associated therewith, Water Well Permit Applications, a Use by Special Review Application or/and any other document necessary or associated therewith.

By signing this authorization, I hereby release Otis, Coan & Peters, LLC from and hereby waive any and all claims I may have or liability that may arise from the disclosure of such documents. I further hereby acknowledge that disclosure of these documents may mean they are available to the public and may be used for any purpose by anyone who obtains the documents through this disclosure.

/s/ Melba L. Farley

Melba L. Farley, Trustee  
David Farley Family Trust



8-10-11

Date

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**EXHIBIT A**

**Legal Description of Parcel on Which Well Will Be Located  
&  
Parcel on Which Ground Water Will Be Used**

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Parcel 1 of Subdivision Exemption No. 1190, being a portion of the Northwest  $\frac{1}{4}$  of Section 23, Township 3 North, Range 66 West of the 6<sup>th</sup> P.M., County of Weld, State of Colorado.

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**EXHIBIT B**

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**USE OF WELL**

WATER RESOURCES  
STATE ENGINEER

- Machine Shop (currently named Farley's Machine Shop)
- Machine Shop Caretaker Trailer House
- Commercial hangar/warehouse/storage facility

**WARRANTY DEED**

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**THIS DEED** is dated April 27, 2011, and is made between David Farley Family Trust, dated May 14, 2008, the "Grantor", of the County of Weld and State of Colorado, and the David Farley Family Trust, dated May 14, 2008, the "Grantee," whose legal address is P.O. Box 363, Platteville, CO 80651.

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STATE ENGINEER  
2010

**WITNESS**, that the Grantor, for and in consideration of the sum of **TEN DOLLARS, (\$10.00)**, the receipt and sufficiency of which is hereby acknowledged, hereby grants, bargains, sells, conveys and confirms unto the Grantee and the Grantee's heirs and assigns forever, all the real property, together with any improvements thereon, located in the County of Weld and State of Colorado, described as follows:

Parcel 1 of Subdivision Exemption No. 1190, being a portion of the Northwest ¼ of Section 23, Township 3 North, Range 66 West of the 6<sup>th</sup> P.M., County of Weld, State of Colorado.

**TOGETHER** with all and singular the hereditaments and appurtenances thereunto belonging, or in anywise appertaining, the reversions, remainders, rents, issues and profits thereof, and all the estate, right, title, interest, claim and demand whatsoever of the Grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances;

**TO HAVE AND TO HOLD** the said premises above bargained and described, with the appurtenances, unto the Grantee and the Grantee's heirs and assigns forever.

The Grantor, for the Grantor and the Grantor's heirs and assigns, does covenant, grant, bargain, and agree to and with the Grantee, and the Grantee's heirs and assigns: that at the time of the ensembling and delivery of these presents, the Grantor is well seized of the premises above described; has good, sure, perfect, absolute and indefeasible estate of inheritance, in law and in fee simple; and has good right, full power and lawful authority to grant, bargain, sell and convey the same in manner and form as aforesaid; and that the same are free and clear from all former and other grants, bargains, sales, liens, taxes, assessments, encumbrances and restrictions of whatever kind or nature soever, except and subject to: ☒ none; or ☐ the following matters:

And the Grantor shall and will **WARRANT THE TITLE AND DEFEND** the above described premises, *but not any adjoining vacated street or alley*, if any, in the quiet and peaceable possession of the Grantee and the heirs and assigns of the Grantee, against all and every person or persons claiming the whole or any part thereof.

**IN WITNESS WHEREOF**, the Grantor has executed this deed on the date set forth above.

David Farley Family Trust, dated May 14, 2008

By: Melba L. Farley  
Melba L. Farley, Trustee

STATE OF COLORADO )  
 ) ss.  
County of Weld )

The foregoing instrument was acknowledged before me this 27<sup>th</sup> day of April, 2011, by Melba L. Farley as Trustee of the David Farley Family Trust, dated May 14, 2008.

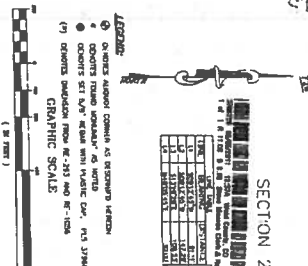
Witness my hand and official seal.  
My commission expires: 8-5-13

DALE LEIGH DOWNING  
NOTARY PUBLIC  
STATE OF COLORADO

Dale Leigh Downing  
Notary Public

STATE RESOURCES  
STATE ENGINEER  
2010

**SUBDIVISION EXEMPTION No. 1190**  
BEING LOCATED WITHIN THE NORTHWEST ONE-QUARTER OF  
SECTION 23, TOWNSHIP 3 NORTH, RANGE 66 WEST, OF THE 6TH PRINCIPAL MERIDIAN  
COUNTY OF WELD, STATE OF COLORADO.

[illegible]

OF THE UNITED STATES AND THE DISTRICT OF COLUMBIA  
 IN SENATE, FEBRUARY 2, 1944.  
 REPORT  
 OF THE  
 COMMISSIONERS OF THE GENERAL LAND OFFICE  
 IN RESPONSE TO A RESOLUTION PASSED BY THE SENATE  
 MAY 11, 1943.  
 PREPARED BY THE  
 COMMISSIONERS OF THE GENERAL LAND OFFICE  
 WASHINGTON, D. C.  
 1944

[illegible][illegible][illegible]

CLIENT  
DAVID FARLEY FAMILY TRUST  
AND  
CITE, COAN & PETERS, LLC

DATE: FEBRUARY 25, 2011  
SCALE 1"=200' HK 121  
DWG: PWE CHK PWE  
PLAT: 034-000-01-100

**SUBDIVISION EXEMPTION PLAT**  
**SUBDIVISION EXEMPTION NO. 1180**  
BEING WITHIN THE NW1/4 OF SECTION 23, T34N,  
R66W OF THE 8TH P.M., COUNTY OF WELD, STATE OF COLORADO.



## OTIS, COAN & PETERS, LLC

Attorneys and Counselors at Law

[www.nocolegal.com](http://www.nocolegal.com)

PLEASE REPLY TO FORT COLLINS OFFICE

Jenna Seigel

[jseigel@nocolegal.com](mailto:jseigel@nocolegal.com)

Fred L. Otis  
G. Brent Coan\*  
Jennifer Lynn Peters  
Michael D. Stewart  
Shannon D. Lyons  
Daniel W. Jones  
Charles M. Shoop  
Michael C. Payne^  
Sara K. Stieben  
Jenna Seigel  
Angelina M. Robinson

\* Also licensed in Arizona

^ Also licensed in Nebraska

Fort Collins Office  
103 W. Mountain Ave., Suite 2B  
Fort Collins, Colorado 80524  
Telephone: 970-225-6700  
Facsimile: 970-232-9927

Greeley Office  
1812 56<sup>th</sup> Avenue  
Greeley, Colorado 80634  
Telephone: 970-330-6700  
Facsimile: 970-330-2969

August 4, 2011

Colorado Division of Water Resources  
Department of Natural Resources  
Attn: Joanna Williams  
1313 Sherman Street, Room 818  
Denver, CO 80203

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WATER RESOURCES  
STATE ENGINEER

RE: David Farley Family Trust – Well Permit – AmUSR-521

Dear Ms. Williams:

Enclosed please find a well permit application to convert the existing well on the David Farley Family Trust from a domestic well to a commercial exempt well. Said application is in connection with Case No. AmUSR-521.

Please let me know if you require any additional information.

Thank you.

Sincerely,  
**Otis, Coan & Peters, LLC**

*Jenna Seigel*  
Jenna Seigel

Enclosure

