



# GC/MS Volatiles Case Narrative

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## COGCC

Buckhart -- 25087038

Work Order Number: 1202226

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 02/20/12.

The aqueous sample was free of headspace prior to analysis.

The sample 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 SOP 525 Revision 15 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 criteria were met in daily (continuing) calibration verifications (CCV).
7. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, ALS has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. Due to fluctuations in ambient laboratory conditions, reported sample values for common laboratory contaminants may be due to lab contamination even if the compound in question is not detected in the associated method blank.



All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. 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 SOP 939 Revision 4.

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 Hellickson  
Emily Hellickson  
Organics Primary Data Reviewer

22 Feb. 12  
Date

[Signature]  
Organics Final Data Reviewer

2/23/12  
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

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**OrderNum:** 1202226

**Client Name:** COGCC

**Client Project Name:** Burkhart

**Client Project Number:** 25087038

**Client PO Number:**

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Burkhart 1/#200340214	1202226-1		WATER	20-Feb-12	12:00



# ALS Laboratory Group

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

## Chain-of-Custody

Form 202r8

PROJECT NAME <i>Bidwell, Burkhardt, Olson</i>		SAMPLER SITE ID		DATE <i>2/20/12</i>		WORKORDER # <i>1202226</i>	
PROJECT NO. <i>25087038</i>		EDD FORMAT		TURNAROUND <i>STD</i>		PAGE <i>1</i> of <i>1</i>	
COMPANY NAME <i>Terracon Consultants</i>		PURCHASE ORDER <i>COGCC</i>		DATE <i>2/20/12</i>		DISPOSAL <i>Ex Lab</i>	
SEND REPORT TO <i>John Axelsson / Amy Wolf</i>		BILL TO COMPANY <i>COGCC</i>		TURNAROUND <i>STD</i>		Return to Client	
ADDRESS <i>10625 W 170th Ave, Littleton, CO 80120</i>		INVOICE ATTN TO <i>John Axelsson</i>		TURNAROUND <i>STD</i>		Return to Client	
CITY / STATE / ZIP <i>Littleton, CO 80120</i>		ADDRESS <i>10625 W 170th Ave, Littleton, CO 80120</i>		TURNAROUND <i>STD</i>		Return to Client	
PHONE <i>303-983-3300</i>		CITY / STATE / ZIP <i>Littleton, CO 80120</i>		TURNAROUND <i>STD</i>		Return to Client	
FAX <i>303-983-3300</i>		PHONE <i>303-983-3300</i>		TURNAROUND <i>STD</i>		Return to Client	
E-MAIL <i>Jc.dellaort@terracon.com</i>		FAX <i>303-983-3300</i>		TURNAROUND <i>STD</i>		Return to Client	
E-MAIL <i>Jc.dellaort@terracon.com</i>		FAX <i>303-983-3300</i>		TURNAROUND <i>STD</i>		Return to Client	

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

For metals or anions, please detail analytes below.

Comments:

*Please include sulfate, nitrate/nitrite w/ Total N*

QC PACKAGE (check below)

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

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>[Signature]</i>	<i>Ashley K. Byrne</i>	<i>2/20/12</i>	<i>1700</i>
RELINQUISHED BY	<i>[Signature]</i>	<i>C. Dellaort</i>	<i>2-20-12</i>	<i>1700</i>
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



## CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCCWorkorder No: 1202226Project Manager: AWInitials: CDT Date: 2-20-12

1. Does this project require any <b>special handling</b> in addition to standard Paragon procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody <b>seals</b> on <b>shipping containers</b> intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on <b>sample containers</b> intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a <b>COC (Chain-of-Custody)</b> present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the <b>COC and bottle labels complete and legible</b> ?		<input checked="" type="radio"/> YES	NO
6. Is the <b>COC in agreement</b> with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were <b>airbills / shipping documents</b> present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	NO
8. Are all <b>aqueous samples requiring preservation preserved correctly?</b> (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous <b>non-preserved samples pH 4-9?</b>	N/A	<input checked="" type="radio"/> YES	NO
10. Is there <b>sufficient sample</b> for the requested analyses?		YES	<input checked="" type="radio"/> NO
11. Were all samples placed in the <b>proper containers</b> for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within <b>holding times</b> for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received <b>intact?</b> (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring <b>no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon)</b> headspace free? <b>Size of bubble:</b> _____ < green pea _____ > green pea	N/A	<input checked="" type="radio"/> YES	NO
15. Do perchlorate LCMS-MS samples <b>have</b> headspace? (at least 1/3 of container required)	<input checked="" type="radio"/> N/A	YES	NO
16. Were samples checked for and free from the presence of <b>residual chlorine?</b> (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES	NO
17. Were the samples <b>shipped on ice?</b>		<input checked="" type="radio"/> YES	NO
18. Were cooler temperatures measured at 0.1-6.0°C? <b>IR gun used*:</b> #2 <input checked="" type="radio"/> #4		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.4</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>NA</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.

RECEIVED 6 total UOA VIALS, SO ASSIGNED 2 FOR EACH ANALYSIS.

2/22/12: cancelled NO2/NO3 by 353.2 due to samples bottles being left out of cooler overnight. Replaced analysis with 300.0 NO2 and 300.0 NO3. aw 2/22/12

If applicable, was the client contacted? ☒ YES / ☒ NO / ☒ NA Contact: John Axelson aw 2/22/12 Date/Time: 2/22/12Project Manager Signature / Date: C. Wolf 2/21/12

# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Lab ID: VL120221-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 21-Feb-12

Date Analyzed: 21-Feb-12

Prep Method: SW5030 Rev C

Prep Batch: VL120221-3

QCBatchID: VL120221-3-2

Run ID: VL120221-3A

Cleanup: NONE

Basis: N/A

File Name: C34603

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

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

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	27.1		25	108	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26.8		25	107	84 - 118
2037-26-5	TOLUENE-D8	25.7		25	103	85 - 115

Data Package ID: VL1202226-1

Date Printed: Wednesday, February 22, 2012

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LIMS Version: 6.562

# GC/MS Volatiles

Method SW8260\_25 Revision C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Field ID:	Burkhart 1/#200340214
Lab ID:	1202226-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 20-Feb-12

Date Extracted: 21-Feb-12

Date Analyzed: 21-Feb-12

Prep Method: SW5030 Rev C

Prep Batch: VL120221-3

QCBatchID: VL120221-3-2

Run ID: VL120221-3A

Cleanup: NONE

Basis: As Received

File Name: C34605

Analyst: Tyler Knaeb

Sample Aliquot: 10 ML

Final Volume: 10 ML

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
71-43-2	BENZENE	1	1	1	U	
100-41-4	ETHYLBENZENE	1	1	1	U	
136777-61-	M+P-XYLENE	1	1	1	U	
95-47-6	O-XYLENE	1	1	1	U	
108-88-3	TOLUENE	1	1	1	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	26.6		25	107	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26.2		25	105	84 - 118
2037-26-5	TOLUENE-D8	26		25	104	85 - 115

Data Package ID: VL1202226-1



# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Lab ID: VL120221-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/21/2012

Date Analyzed: 02/21/2012

Prep Method: SW5030C

Prep Batch: VL120221-3

QCBatchID: VL120221-3-2

Run ID: VL120221-3A

Cleanup: NONE

Basis: N/A

File Name: C34600

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
71-43-2	BENZENE	10	10.9	1		109	83 - 117%
100-41-4	ETHYLBENZENE	10	10.7	1		107	81 - 113%
136777-61-	M+P-XYLENE	20	21.9	1		109	82 - 115%
95-47-6	O-XYLENE	10	10.9	1		109	81 - 115%
108-88-3	TOLUENE	10	10.6	1		106	82 - 113%

Lab ID: VL120221-3LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/21/2012

Date Analyzed: 02/21/2012

Prep Method: SW5030C

Prep Batch: VL120221-3

QCBatchID: VL120221-3-2

Run ID: VL120221-3A

Cleanup: NONE

Basis: N/A

File Name: C34601

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
71-43-2	BENZENE	10	11.1	1		111	20	2
100-41-4	ETHYLBENZENE	10	10.8	1		108	20	1
136777-61-	M+P-XYLENE	20	22.1	1		110	20	1
95-47-6	O-XYLENE	10	11.1	1		111	20	2
108-88-3	TOLUENE	10	10.8	1		108	20	2

Data Package ID: VL1202226-1

Date Printed: Wednesday, February 22, 2012

ALS Environmental -- FC

LIMS Version: 6.562

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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: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

### 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	105		108		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	107		109		84 - 118
2037-26-5	TOLUENE-D8	25	104		104		85 - 115

Data Package ID: VL1202226-1

Date Printed: Wednesday, February 22, 2012

ALS Environmental -- FC

LIMS Version: 6.562

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