



28-Aug-2017

Jake Janicek  
Caerus Oil and Gas LLC  
120 N. Railroad Ave. Suite D  
Parachute, CO 81635

Re: **4506**

Work Order: **17081254**

Dear Jake,

ALS Environmental received 5 samples on 18-Aug-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 33.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton", is written over a white background.

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager

Certificate No: MN 998501

### Report of Laboratory Analysis

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Environmental The logo icon for ALS Environmental, a stylized blue triangle with a yellow flame-like shape inside.

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**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Work Order:** 17081254

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17081254-01	20170817-4506-PIT(S)4	Soil		8/17/2017 14:10	8/18/2017 09:30	<input type="checkbox"/>
17081254-02	20170817-4506-PIT(E)5	Soil		8/17/2017 13:35	8/18/2017 09:30	<input type="checkbox"/>
17081254-03	20170817-4506-PIT(BOT)10	Soil		8/17/2017 13:50	8/18/2017 09:30	<input type="checkbox"/>
17081254-04	20170817-4506-PIT(W)6	Soil		8/17/2017 14:00	8/18/2017 09:30	<input type="checkbox"/>
17081254-05	20170817-4506-PIT(N)6	Soil		8/17/2017 13:30	8/18/2017 09:30	<input type="checkbox"/>

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**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Work Order:** 17081254

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**Case Narrative**

Batch 106229, Method DRLVI\_8015\_S, Sample 17081254-03A: Low DRO surrogate recovery due to sample matrix effects confirmed by re-extraction.

Batch 106273, Method ICP\_6010\_S, Sample 17081254-01A MS: The MS recovery was above the upper control limit for Nickel. However, the MSD recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 106273, Method ICP\_6010\_S, Sample 17081254-01A MS/MSD: The MS and MSD recovery was above the upper control limit for Lead. The corresponding result in the parent sample may be biased high.

Batch 106273, Method ICP\_6010\_S, Sample 17081254-01A MS/MSD: The MS and MSD recoveries were outside of the control limits for Barium and Zinc; however, the results in the parent sample are greater than 4x the spike amount. No qualification is required.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg	Milligrams per Kilogram
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

Client: Caerus Oil and Gas LLC  
 Project: 4506  
 Sample ID: 20170817-4506-PIT(S)4  
 Collection Date: 8/17/2017 02:10 PM

Work Order: 17081254  
 Lab ID: 17081254-01  
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>			<b>SW8015C</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>KB</b>
<b>DRO (C10-C28)</b>	<b>24</b>		<b>5.3</b>	<b>mg/Kg-dry</b>	1	8/21/2017 10:55 PM
<i>Surr: 4-Terphenyl-d14</i>	35.0		34-130	%REC	1	8/21/2017 10:55 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>			<b>SW8015D</b>	Prep: SW5035	8/19/17 12:44	Analyst: <b>KB</b>
<b>GRO (C6-C10)</b>	ND		5.9	mg/Kg	1	8/21/2017 08:58 PM
<i>Surr: Toluene-d8</i>	96.0		71-123	%REC	1	8/21/2017 08:58 PM
<b>MERCURY BY CVAA</b>			<b>SW7471B</b>	Prep: SW7471	8/24/17 16:16	Analyst: <b>RSH</b>
Mercury	ND		0.019	mg/Kg-dry	1	8/24/2017 06:56 PM
<b>METALS ANALYSIS BY ICP</b>			<b>SW846 6010C</b>	Prep: SW3050B	8/22/17 16:30	Analyst: <b>LR</b>
Arsenic	8.6		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Barium	410		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Cadmium	ND		0.82	mg/Kg-dry	1	8/24/2017 01:10 AM
Chromium	21		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Copper	13		0.82	mg/Kg-dry	1	8/24/2017 01:10 AM
Lead	16		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Nickel	12		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Selenium	2.5		0.82	mg/Kg-dry	1	8/24/2017 01:10 AM
Silver	ND		0.41	mg/Kg-dry	1	8/24/2017 01:10 AM
Zinc	61		0.82	mg/Kg-dry	1	8/24/2017 01:10 AM
<b>SOLUBLE CATIONS FOR SAR</b>			<b>SW846 6010C</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Calcium	260		5.0	mg/L	10	8/25/2017 07:50 PM
Magnesium	76		2.0	mg/L	10	8/25/2017 07:50 PM
Sodium	980		2.0	mg/L	10	8/25/2017 07:50 PM
<b>SODIUM ADSORPTION RATIO</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Sodium Adsorption Ratio	14		0.010	none	1	8/23/2017
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			<b>SW846 8270D</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>RM</b>
Acenaphthene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Benzo(a)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Benzo(a)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Benzo(b)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Benzo(k)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Chrysene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Dibenzo(a,h)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 28-Aug-17

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(S)4  
**Collection Date:** 8/17/2017 02:10 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-01  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Indeno(1,2,3-cd)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Naphthalene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 07:50 PM
Surr: 2-Fluorobiphenyl	34.5		20-140	%REC	1	8/22/2017 07:50 PM
Surr: 4-Terphenyl-d14	43.9		22-172	%REC	1	8/22/2017 07:50 PM
Surr: Nitrobenzene-d5	45.7		8-140	%REC	1	8/22/2017 07:50 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>		Prep: SW5035 8/19/17 12:42	Analyst: <b>AK</b>
Benzene	ND		0.030	mg/Kg	1	8/20/2017 09:08 AM
Ethylbenzene	ND		0.030	mg/Kg	1	8/20/2017 09:08 AM
m,p-Xylene	ND		0.060	mg/Kg	1	8/20/2017 09:08 AM
o-Xylene	ND		0.030	mg/Kg	1	8/20/2017 09:08 AM
Toluene	ND		0.030	mg/Kg	1	8/20/2017 09:08 AM
Xylenes, Total	ND		0.090	mg/Kg	1	8/20/2017 09:08 AM
Surr: 1,2-Dichloroethane-d4	95.8		70-130	%REC	1	8/20/2017 09:08 AM
Surr: 4-Bromofluorobenzene	97.6		70-130	%REC	1	8/20/2017 09:08 AM
Surr: Dibromofluoromethane	93.2		70-130	%REC	1	8/20/2017 09:08 AM
Surr: Toluene-d8	102		70-130	%REC	1	8/20/2017 09:08 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 MET</b>		Prep: USDA Method 20B 8/23/17 10:47	Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	6.7		0.25	mmhos/cm @2	50	8/24/2017 10:30 AM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>LW</b>
Chromium, Trivalent	21		1.1	mg/Kg-dry	1	8/24/2017 03:45 PM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>		Prep: SW3060A 8/23/17 12:00	Analyst: <b>LW</b>
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	8/23/2017 03:30 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>BTG</b>
Moisture	8.0		0.050	% of sample	1	8/23/2017 03:27 PM
<b>PH</b>			<b>SW9045D</b>		Prep: EXTRACT 8/21/17 17:10	Analyst: <b>STP</b>
pH	7.61		0.100	s.u.	1	8/22/2017 10:30 AM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Caerus Oil and Gas LLC  
 Project: 4506  
 Sample ID: 20170817-4506-PIT(E)5  
 Collection Date: 8/17/2017 01:35 PM

Work Order: 17081254  
 Lab ID: 17081254-02  
 Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>			<b>SW8015C</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>KB</b>
DRO (C10-C28)	15		5.4	mg/Kg-dry	1	8/21/2017 11:24 PM
Surr: 4-Terphenyl-d14	60.1		34-130	%REC	1	8/21/2017 11:24 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>			<b>SW8015D</b>	Prep: SW5035	8/19/17 12:44	Analyst: <b>KB</b>
GRO (C6-C10)	ND		5.8	mg/Kg	1	8/21/2017 09:28 PM
Surr: Toluene-d8	97.0		71-123	%REC	1	8/21/2017 09:28 PM
<b>MERCURY BY CVAA</b>			<b>SW7471B</b>	Prep: SW7471	8/24/17 16:16	Analyst: <b>RSB</b>
Mercury	ND		0.019	mg/Kg-dry	1	8/24/2017 06:58 PM
<b>METALS ANALYSIS BY ICP</b>			<b>SW846 6010C</b>	Prep: SW3050B	8/22/17 16:30	Analyst: <b>LR</b>
Arsenic	6.9		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Barium	210		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Cadmium	ND		0.72	mg/Kg-dry	1	8/24/2017 01:47 AM
Chromium	16		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Copper	11		0.72	mg/Kg-dry	1	8/24/2017 01:47 AM
Lead	15		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Nickel	13		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Selenium	2.8		0.72	mg/Kg-dry	1	8/24/2017 01:47 AM
Silver	ND		0.36	mg/Kg-dry	1	8/24/2017 01:47 AM
Zinc	59		0.72	mg/Kg-dry	1	8/24/2017 01:47 AM
<b>SOLUBLE CATIONS FOR SAR</b>			<b>SW846 6010C</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Calcium	160		5.0	mg/L	10	8/25/2017 07:56 PM
Magnesium	33		2.0	mg/L	10	8/25/2017 07:56 PM
Sodium	690		2.0	mg/L	10	8/25/2017 07:56 PM
<b>SODIUM ADSORPTION RATIO</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Sodium Adsorption Ratio	13		0.010	none	1	8/23/2017
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			<b>SW846 8270D</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>RM</b>
Acenaphthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Benzo(a)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Benzo(a)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Benzo(b)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Benzo(k)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Chrysene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Dibenzo(a,h)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 28-Aug-17

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(E)5  
**Collection Date:** 8/17/2017 01:35 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-02  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Indeno(1,2,3-cd)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Naphthalene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:04 PM
Surr: 2-Fluorobiphenyl	60.1		20-140	%REC	1	8/22/2017 08:04 PM
Surr: 4-Terphenyl-d14	78.0		22-172	%REC	1	8/22/2017 08:04 PM
Surr: Nitrobenzene-d5	69.4		8-140	%REC	1	8/22/2017 08:04 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035	8/19/17 12:42	Analyst: <b>AK</b>
Benzene	ND		0.030	mg/Kg	1	8/20/2017 09:24 AM
Ethylbenzene	ND		0.030	mg/Kg	1	8/20/2017 09:24 AM
m,p-Xylene	ND		0.060	mg/Kg	1	8/20/2017 09:24 AM
o-Xylene	ND		0.030	mg/Kg	1	8/20/2017 09:24 AM
Toluene	ND		0.030	mg/Kg	1	8/20/2017 09:24 AM
Xylenes, Total	ND		0.090	mg/Kg	1	8/20/2017 09:24 AM
Surr: 1,2-Dichloroethane-d4	99.0		70-130	%REC	1	8/20/2017 09:24 AM
Surr: 4-Bromofluorobenzene	95.8		70-130	%REC	1	8/20/2017 09:24 AM
Surr: Dibromofluoromethane	86.6		70-130	%REC	1	8/20/2017 09:24 AM
Surr: Toluene-d8	99.9		70-130	%REC	1	8/20/2017 09:24 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	4.7		0.25	mmhos/cm @2	50	8/24/2017 10:30 AM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>LW</b>
Chromium, Trivalent	16		1.1	mg/Kg-dry	1	8/24/2017 03:45 PM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A	8/23/17 12:00	Analyst: <b>LW</b>
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	8/23/2017 03:30 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>BTG</b>
Moisture	7.7		0.050	% of sample	1	8/23/2017 04:52 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT	8/21/17 17:10	Analyst: <b>STP</b>
pH	8.04		0.100	s.u.	1	8/22/2017 10:30 AM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Client: Caerus Oil and Gas LLC

Project: 4506

Work Order: 17081254

Sample ID: 20170817-4506-PIT(BOT)10

Lab ID: 17081254-03

Collection Date: 8/17/2017 01:50 PM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>			<b>SW8015C</b>	Prep: SW3546	8/22/17 16:15	Analyst: <b>KB</b>
<b>DRO (C10-C28)</b>	<b>19</b>		<b>5.6</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/22/2017 08:42 PM
<i>Surr: 4-Terphenyl-d14</i>	24.0	S	34-130	%REC	1	8/22/2017 08:42 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>			<b>SW8015D</b>	Prep: SW5035	8/19/17 12:44	Analyst: <b>KB</b>
<b>GRO (C6-C10)</b>	ND		6.4	mg/Kg	1	8/21/2017 10:28 PM
<i>Surr: Toluene-d8</i>	95.9		71-123	%REC	1	8/21/2017 10:28 PM
<b>MERCURY BY CVAA</b>			<b>SW7471B</b>	Prep: SW7471	8/24/17 16:16	Analyst: <b>RSH</b>
Mercury	ND		0.021	mg/Kg-dry	1	8/24/2017 07:01 PM
<b>METALS ANALYSIS BY ICP</b>			<b>SW846 6010C</b>	Prep: SW3050B	8/22/17 16:30	Analyst: <b>LR</b>
Arsenic	6.1		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Barium	720		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Cadmium	ND		0.77	mg/Kg-dry	1	8/24/2017 02:13 AM
Chromium	22		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Copper	15		0.77	mg/Kg-dry	1	8/24/2017 02:13 AM
Lead	24		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Nickel	14		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Selenium	2.2		0.77	mg/Kg-dry	1	8/24/2017 02:13 AM
Silver	ND		0.38	mg/Kg-dry	1	8/24/2017 02:13 AM
Zinc	130		0.77	mg/Kg-dry	1	8/24/2017 02:13 AM
<b>SOLUBLE CATIONS FOR SAR</b>			<b>SW846 6010C</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Calcium	900		5.0	mg/L	10	8/25/2017 08:03 PM
Magnesium	170		2.0	mg/L	10	8/25/2017 08:03 PM
Sodium	2,900		2.0	mg/L	10	8/25/2017 08:03 PM
<b>SODIUM ADSORPTION RATIO</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Sodium Adsorption Ratio	23		0.010	none	1	8/23/2017
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			<b>SW846 8270D</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>RM</b>
Acenaphthene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Anthracene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Benzo(a)anthracene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Benzo(a)pyrene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Benzo(b)fluoranthene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Benzo(k)fluoranthene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Chrysene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Dibenzo(a,h)anthracene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Fluoranthene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 28-Aug-17

**Client:** Caerus Oil and Gas LLC

**Project:** 4506

**Work Order:** 17081254

**Sample ID:** 20170817-4506-PIT(BOT)10

**Lab ID:** 17081254-03

**Collection Date:** 8/17/2017 01:50 PM

**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Indeno(1,2,3-cd)pyrene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
<b>Naphthalene</b>	<b>0.079</b>		<b>0.046</b>	<b>mg/Kg-dry</b>	1	8/22/2017 08:18 PM
Pyrene	ND		0.046	mg/Kg-dry	1	8/22/2017 08:18 PM
Surr: 2-Fluorobiphenyl	20.2		20-140	%REC	1	8/22/2017 08:18 PM
Surr: 4-Terphenyl-d14	23.7		22-172	%REC	1	8/22/2017 08:18 PM
Surr: Nitrobenzene-d5	28.6		8-140	%REC	1	8/22/2017 08:18 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035	8/19/17 12:42	Analyst: <b>AK</b>
Benzene	ND		0.030	mg/Kg	1	8/20/2017 09:40 AM
Ethylbenzene	ND		0.030	mg/Kg	1	8/20/2017 09:40 AM
m,p-Xylene	ND		0.060	mg/Kg	1	8/20/2017 09:40 AM
o-Xylene	ND		0.030	mg/Kg	1	8/20/2017 09:40 AM
Toluene	ND		0.030	mg/Kg	1	8/20/2017 09:40 AM
Xylenes, Total	ND		0.090	mg/Kg	1	8/20/2017 09:40 AM
Surr: 1,2-Dichloroethane-d4	95.0		70-130	%REC	1	8/20/2017 09:40 AM
Surr: 4-Bromofluorobenzene	97.6		70-130	%REC	1	8/20/2017 09:40 AM
Surr: Dibromofluoromethane	94.0		70-130	%REC	1	8/20/2017 09:40 AM
Surr: Toluene-d8	101		70-130	%REC	1	8/20/2017 09:40 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	21		0.25	mmhos/cm @2	50	8/24/2017 10:30 AM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>LW</b>
Chromium, Trivalent	22		1.1	mg/Kg-dry	1	8/24/2017 03:45 PM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A	8/23/17 12:00	Analyst: <b>LW</b>
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	8/23/2017 03:30 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>BTG</b>
Moisture	12		0.050	% of sample	1	8/23/2017 04:52 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT	8/22/17 15:00	Analyst: <b>STP</b>
pH	7.27		0.100	s.u.	1	8/23/2017 11:30 AM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(W)6  
**Collection Date:** 8/17/2017 02:00 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-04  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>			<b>SW8015C</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>KB</b>
<b>DRO (C10-C28)</b>	<b>7.4</b>		<b>5.4</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/22/2017 12:22 PM
<i>Surr: 4-Terphenyl-d14</i>	49.0		34-130	%REC	1	8/22/2017 12:22 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>			<b>SW8015D</b>	Prep: SW5035	8/19/17 12:44	Analyst: <b>KB</b>
<b>GRO (C6-C10)</b>	ND		5.9	mg/Kg	1	8/21/2017 10:57 PM
<i>Surr: Toluene-d8</i>	96.4		71-123	%REC	1	8/21/2017 10:57 PM
<b>MERCURY BY CVAA</b>			<b>SW7471B</b>	Prep: SW7471	8/24/17 16:16	Analyst: <b>RSH</b>
Mercury	ND		0.018	mg/Kg-dry	1	8/24/2017 07:03 PM
<b>METALS ANALYSIS BY ICP</b>			<b>SW846 6010C</b>	Prep: SW3050B	8/22/17 16:30	Analyst: <b>LR</b>
<b>Arsenic</b>	<b>7.2</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>Barium</b>	<b>230</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
Cadmium	ND		0.89	mg/Kg-dry	1	8/24/2017 02:21 AM
<b>Chromium</b>	<b>20</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>Copper</b>	<b>13</b>		<b>0.89</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>Lead</b>	<b>15</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>Nickel</b>	<b>15</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>Selenium</b>	<b>2.6</b>		<b>0.89</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
Silver	ND		0.45	mg/Kg-dry	1	8/24/2017 02:21 AM
<b>Zinc</b>	<b>70</b>		<b>0.89</b>	<b>mg/Kg-dry</b>	<b>1</b>	8/24/2017 02:21 AM
<b>SOLUBLE CATIONS FOR SAR</b>			<b>SW846 6010C</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
<b>Calcium</b>	<b>230</b>		<b>5.0</b>	<b>mg/L</b>	<b>10</b>	8/25/2017 08:28 PM
<b>Magnesium</b>	<b>120</b>		<b>2.0</b>	<b>mg/L</b>	<b>10</b>	8/25/2017 08:28 PM
<b>Sodium</b>	<b>1,200</b>		<b>2.0</b>	<b>mg/L</b>	<b>10</b>	8/25/2017 08:28 PM
<b>SODIUM ADSORPTION RATIO</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
<b>Sodium Adsorption Ratio</b>	<b>16</b>		<b>0.010</b>	<b>none</b>	<b>1</b>	8/23/2017
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			<b>SW846 8270D</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>RM</b>
Acenaphthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Benzo(a)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Benzo(a)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Benzo(b)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Benzo(k)fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Chrysene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Dibenzo(a,h)anthracene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Fluoranthene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 28-Aug-17

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(W)6  
**Collection Date:** 8/17/2017 02:00 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-04  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Indeno(1,2,3-cd)pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Naphthalene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Pyrene	ND		0.045	mg/Kg-dry	1	8/22/2017 08:32 PM
Surr: 2-Fluorobiphenyl	50.0		20-140	%REC	1	8/22/2017 08:32 PM
Surr: 4-Terphenyl-d14	61.8		22-172	%REC	1	8/22/2017 08:32 PM
Surr: Nitrobenzene-d5	64.1		8-140	%REC	1	8/22/2017 08:32 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035	8/19/17 12:42	Analyst: <b>AK</b>
Benzene	ND		0.030	mg/Kg	1	8/20/2017 09:56 AM
Ethylbenzene	ND		0.030	mg/Kg	1	8/20/2017 09:56 AM
m,p-Xylene	ND		0.060	mg/Kg	1	8/20/2017 09:56 AM
o-Xylene	ND		0.030	mg/Kg	1	8/20/2017 09:56 AM
Toluene	ND		0.030	mg/Kg	1	8/20/2017 09:56 AM
Xylenes, Total	ND		0.090	mg/Kg	1	8/20/2017 09:56 AM
Surr: 1,2-Dichloroethane-d4	95.2		70-130	%REC	1	8/20/2017 09:56 AM
Surr: 4-Bromofluorobenzene	98.9		70-130	%REC	1	8/20/2017 09:56 AM
Surr: Dibromofluoromethane	95.6		70-130	%REC	1	8/20/2017 09:56 AM
Surr: Toluene-d8	102		70-130	%REC	1	8/20/2017 09:56 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	7.4		0.25	mmhos/cm @2	50	8/24/2017 10:30 AM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>LW</b>
Chromium, Trivalent	20		1.1	mg/Kg-dry	1	8/24/2017 03:45 PM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A	8/23/17 12:00	Analyst: <b>LW</b>
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	8/23/2017 03:30 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>BTG</b>
Moisture	8.4		0.050	% of sample	1	8/23/2017 04:52 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT	8/22/17 15:00	Analyst: <b>STP</b>
pH	8.14		0.100	s.u.	1	8/23/2017 11:30 AM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(N)6  
**Collection Date:** 8/17/2017 01:30 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-05  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>			<b>SW8015C</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>KB</b>
<b>DRO (C10-C28)</b>	7.1		5.0	mg/Kg-dry	1	8/22/2017 12:51 PM
<i>Surr: 4-Terphenyl-d14</i>	56.1		34-130	%REC	1	8/22/2017 12:51 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>			<b>SW8015D</b>	Prep: SW5035	8/19/17 12:44	Analyst: <b>KB</b>
<b>GRO (C6-C10)</b>	ND		5.5	mg/Kg	1	8/21/2017 11:27 PM
<i>Surr: Toluene-d8</i>	94.1		71-123	%REC	1	8/21/2017 11:27 PM
<b>MERCURY BY CVAA</b>			<b>SW7471B</b>	Prep: SW7471	8/24/17 16:16	Analyst: <b>RSB</b>
Mercury	ND		0.018	mg/Kg-dry	1	8/24/2017 07:11 PM
<b>METALS ANALYSIS BY ICP</b>			<b>SW846 6010C</b>	Prep: SW3050B	8/22/17 16:30	Analyst: <b>LR</b>
Arsenic	6.9		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Barium	180		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Cadmium	ND		0.72	mg/Kg-dry	1	8/24/2017 02:28 AM
Chromium	23		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Copper	9.3		0.72	mg/Kg-dry	1	8/24/2017 02:28 AM
Lead	16		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Nickel	12		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Selenium	2.3		0.72	mg/Kg-dry	1	8/24/2017 02:28 AM
Silver	ND		0.36	mg/Kg-dry	1	8/24/2017 02:28 AM
Zinc	68		0.72	mg/Kg-dry	1	8/24/2017 02:28 AM
<b>SOLUBLE CATIONS FOR SAR</b>			<b>SW846 6010C</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Calcium	110		5.0	mg/L	10	8/25/2017 08:35 PM
Magnesium	21		2.0	mg/L	10	8/25/2017 08:35 PM
Sodium	200		2.0	mg/L	10	8/25/2017 08:35 PM
<b>SODIUM ADSORPTION RATIO</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>LR</b>
Sodium Adsorption Ratio	4.7		0.010	none	1	8/23/2017
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>			<b>SW846 8270D</b>	Prep: SW3546	8/21/17 15:50	Analyst: <b>RM</b>
Acenaphthene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Anthracene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Benzo(a)anthracene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Benzo(a)pyrene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Benzo(b)fluoranthene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Benzo(k)fluoranthene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Chrysene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Dibenzo(a,h)anthracene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Fluoranthene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group, USA**

Date: 28-Aug-17

**Client:** Caerus Oil and Gas LLC  
**Project:** 4506  
**Sample ID:** 20170817-4506-PIT(N)6  
**Collection Date:** 8/17/2017 01:30 PM

**Work Order:** 17081254  
**Lab ID:** 17081254-05  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Indeno(1,2,3-cd)pyrene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Naphthalene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Pyrene	ND		0.042	mg/Kg-dry	1	8/22/2017 08:46 PM
Surr: 2-Fluorobiphenyl	57.4		20-140	%REC	1	8/22/2017 08:46 PM
Surr: 4-Terphenyl-d14	75.5		22-172	%REC	1	8/22/2017 08:46 PM
Surr: Nitrobenzene-d5	68.8		8-140	%REC	1	8/22/2017 08:46 PM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035	8/19/17 12:42	Analyst: <b>AK</b>
Benzene	ND		0.030	mg/Kg	1	8/20/2017 10:12 AM
Ethylbenzene	ND		0.030	mg/Kg	1	8/20/2017 10:12 AM
m,p-Xylene	ND		0.060	mg/Kg	1	8/20/2017 10:12 AM
o-Xylene	ND		0.030	mg/Kg	1	8/20/2017 10:12 AM
Toluene	ND		0.030	mg/Kg	1	8/20/2017 10:12 AM
Xylenes, Total	ND		0.090	mg/Kg	1	8/20/2017 10:12 AM
Surr: 1,2-Dichloroethane-d4	99.8		70-130	%REC	1	8/20/2017 10:12 AM
Surr: 4-Bromofluorobenzene	95.8		70-130	%REC	1	8/20/2017 10:12 AM
Surr: Dibromofluoromethane	94.8		70-130	%REC	1	8/20/2017 10:12 AM
Surr: Toluene-d8	99.5		70-130	%REC	1	8/20/2017 10:12 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 MET</b>	Prep: USDA Method 20B	8/23/17 10:47	Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	1.5		0.25	mmhos/cm @2	50	8/24/2017 10:30 AM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>LW</b>
Chromium, Trivalent	23		1.1	mg/Kg-dry	1	8/24/2017 03:45 PM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A	8/23/17 12:00	Analyst: <b>LW</b>
Chromium, Hexavalent	ND		1.0	mg/Kg-dry	1	8/23/2017 03:30 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>BTG</b>
Moisture	5.1		0.050	% of sample	1	8/23/2017 04:52 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT	8/22/17 15:00	Analyst: <b>STP</b>
pH	8.52		0.100	s.u.	1	8/23/2017 11:30 AM

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 17081254  
**Project:** 4506

**QC BATCH REPORT**

Batch ID: **106157** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: <b>DBLKS1-106157-106157</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/21/2017 05:06 PM</b>		
Client ID:		Run ID: <b>GC8_170821A</b>		SeqNo: <b>4595000</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.917	0	3.33	0	87.6	34-130	0			

LCS		Sample ID: <b>DLCSS1-106157-106157</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/21/2017 05:35 PM</b>		
Client ID:		Run ID: <b>GC8_170821A</b>		SeqNo: <b>4595001</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	310	5.0	333	0	93.1	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.95	0	3.33	0	88.6	34-130	0			

MS		Sample ID: <b>17081256-04A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/21/2017 06:04 PM</b>		
Client ID:		Run ID: <b>GC8_170821A</b>		SeqNo: <b>4595002</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	258.2	4.9	326.2	8.961	76.4	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.318	0	3.262	0	71.1	34-130	0			

MSD		Sample ID: <b>17081256-04A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/21/2017 06:33 PM</b>		
Client ID:		Run ID: <b>GC8_170821A</b>		SeqNo: <b>4595003</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	257.8	4.9	325.6	8.961	76.4	65-122	258.2	0.144	30	
<i>Surr: 4-Terphenyl-d14</i>	2.493	0	3.256	0	76.6	34-130	2.318	7.29	30	

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **106229** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: <b>DBLKS1-106229-106229</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/22/2017 06:17 PM</b>		
Client ID:		Run ID: <b>GC8_170822B</b>				SeqNo: <b>4597629</b>		Prep Date: <b>8/22/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	3.033	0	3.33	0	91.1	34-130	0			

LCS		Sample ID: <b>DLCSS1-106229-106229</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/22/2017 06:46 PM</b>		
Client ID:		Run ID: <b>GC8_170822B</b>				SeqNo: <b>4597630</b>		Prep Date: <b>8/22/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	317.2	5.0	333	0	95.3	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	3.167	0	3.33	0	95.1	34-130	0			

MS		Sample ID: <b>17081325-07B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/22/2017 07:15 PM</b>		
Client ID:		Run ID: <b>GC8_170822B</b>				SeqNo: <b>4597631</b>		Prep Date: <b>8/22/2017</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	367.3	50	330.6	93.76	82.7	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.647	0	3.306	0	80.1	34-130	0			

MSD		Sample ID: <b>17081325-07B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/22/2017 07:44 PM</b>		
Client ID:		Run ID: <b>GC8_170822B</b>				SeqNo: <b>4597632</b>		Prep Date: <b>8/22/2017</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	460.5	49	328.7	93.76	112	65-122	367.3	22.5	30	
<i>Surr: 4-Terphenyl-d14</i>	2.468	0	3.287	0	75.1	34-130	2.647	7.03	30	

The following samples were analyzed in this batch: 17081254-03A

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **106148** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: <b>MBLK-106148-106148</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>8/21/2017 12:03 PM</b>		
Client ID:		Run ID: <b>GC9_170821A</b>				SeqNo: <b>4593913</b>		Prep Date: <b>8/19/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
<i>Surr: Toluene-d8</i>	4649	0	5000	0	93	71-123	0			

LCS		Sample ID: <b>LCS-106148-106148</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>8/21/2017 11:04 AM</b>		
Client ID:		Run ID: <b>GC9_170821A</b>				SeqNo: <b>4593912</b>		Prep Date: <b>8/19/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	608700	5,000	500000	0	122	71-123	0			
<i>Surr: Toluene-d8</i>	5338	0	5000	0	107	71-123	0			

MS		Sample ID: <b>17081227-02A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>8/21/2017 01:02 PM</b>		
Client ID:		Run ID: <b>GC9_170821A</b>				SeqNo: <b>4595056</b>		Prep Date: <b>8/19/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	741600	6,100	611100	9184	120	71-123	0			
<i>Surr: Toluene-d8</i>	5707	0	6111	0	93.4	71-123	0			

MSD		Sample ID: <b>17081227-02A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>8/21/2017 01:31 PM</b>		
Client ID:		Run ID: <b>GC9_170821A</b>				SeqNo: <b>4595057</b>		Prep Date: <b>8/19/2017</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	836900	6,100	611100	9184	135	71-123	741600	12.1	30	S
<i>Surr: Toluene-d8</i>	6144	0	6111	0	101	71-123	5707	7.36	30	

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **106432** Instrument ID **HG1** Method: **SW7471B**

<b>MBLK</b>	Sample ID: <b>MBLK-106432-106432</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 06:51 PM</b>					
Client ID:	Run ID: <b>HG1_170824A</b>		SeqNo: <b>4603098</b>		Prep Date: <b>8/24/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

<b>LCS</b>	Sample ID: <b>LCS-106432-106432</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 06:53 PM</b>					
Client ID:	Run ID: <b>HG1_170824A</b>		SeqNo: <b>4603099</b>		Prep Date: <b>8/24/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1633 0.020 0.1665 0 98.1 80-120 0

<b>MS</b>	Sample ID: <b>17081254-04AMS</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 07:06 PM</b>					
Client ID: <b>20170817-4506-PIT(W)6</b>	Run ID: <b>HG1_170824A</b>		SeqNo: <b>4603104</b>		Prep Date: <b>8/24/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1434 0.017 0.1384 0.01063 95.9 75-125 0

<b>MSD</b>	Sample ID: <b>17081254-04AMSD</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 07:08 PM</b>					
Client ID: <b>20170817-4506-PIT(W)6</b>	Run ID: <b>HG1_170824A</b>		SeqNo: <b>4603105</b>		Prep Date: <b>8/24/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1448 0.017 0.1391 0.01063 96.5 75-125 0.1434 1.04 35

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **106273** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK		Sample ID: <b>MBLK-106273-106273</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 01:04 AM</b>		
Client ID:		Run ID: <b>ICP2_170823A</b>			SeqNo: <b>4600540</b>		Prep Date: <b>8/22/2017</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	0.02969	0.50								J
Chromium	0.02213	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	0.1162	0.50								J

LCS		Sample ID: <b>LCS-106273-106273</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 12:58 AM</b>		
Client ID:		Run ID: <b>ICP2_170823A</b>			SeqNo: <b>4600539</b>		Prep Date: <b>8/22/2017</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.217	0.25	5	0	104	80-120	0			
Barium	5.222	0.25	5	0	104	80-120	0			
Cadmium	5.248	0.50	5	0	105	80-120	0			
Chromium	5.682	0.25	5	0	114	80-120	0			
Copper	5.219	0.50	5	0	104	80-120	0			
Lead	5.157	0.25	5	0	103	80-120	0			
Nickel	5.336	0.25	5	0	107	80-120	0			
Selenium	4.595	0.50	5	0	91.9	80-120	0			
Silver	5.038	0.25	5	0	101	80-120	0			
Zinc	5.524	0.50	5	0	110	80-120	0			

MS		Sample ID: <b>17081254-01AMS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>8/24/2017 01:32 AM</b>		
Client ID: <b>20170817-4506-PIT(S)4</b>		Run ID: <b>ICP2_170823A</b>			SeqNo: <b>4600544</b>		Prep Date: <b>8/22/2017</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	14.74	0.38	7.541	7.915	90.5	75-125	0			
Barium	315.2	0.38	7.541	376.5	-813	75-125	0			SO
Cadmium	9.08	0.75	7.541	0.389	115	75-125	0			
Chromium	28.11	0.38	7.541	19.12	119	75-125	0			
Copper	21.24	0.75	7.541	12.26	119	75-125	0			
Lead	26.13	0.38	7.541	14.61	153	75-125	0			S
Nickel	21.72	0.38	7.541	10.83	144	75-125	0			S
Selenium	9.41	0.75	7.541	2.254	94.9	75-125	0			
Silver	7.646	0.38	7.541	-0.343	106	75-125	0			
Zinc	82.75	0.75	7.541	56.14	353	75-125	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 17081254  
**Project:** 4506

# QC BATCH REPORT

Batch ID: **106273**      Instrument ID **ICP2**      Method: **SW846 6010C**

MSD		Sample ID: 17081254-01AMSD				Units: mg/Kg		Analysis Date: 8/24/2017 01:39 AM		
Client ID: 20170817-4506-PIT(S)4		Run ID: ICP2_170823A				SeqNo: 4600545		Prep Date: 8/22/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	14.49	0.38	7.576	7.915	86.7	75-125	14.74	1.75	20	
Barium	311	0.38	7.576	376.5	-865	75-125	315.2	1.33	20	SO
Cadmium	9.062	0.76	7.576	0.389	114	75-125	9.08	0.196	20	
Chromium	27.67	0.38	7.576	19.12	113	75-125	28.11	1.59	20	
Copper	19.91	0.76	7.576	12.26	101	75-125	21.24	6.48	20	
Lead	24.85	0.38	7.576	14.61	135	75-125	26.13	5.03	20	S
Nickel	19.22	0.38	7.576	10.83	111	75-125	21.72	12.2	20	
Selenium	9.383	0.76	7.576	2.254	94.1	75-125	9.41	0.291	20	
Silver	7.721	0.38	7.576	-0.343	106	75-125	7.646	0.978	20	
Zinc	75.94	0.76	7.576	56.14	261	75-125	82.75	8.59	20	SO

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 17081254  
**Project:** 4506

# QC BATCH REPORT

Batch ID: **106326**      Instrument ID **ICP2**      Method: **SW846 6010C**

DUP		Sample ID: 17081227-02ADUP				Units: mg/L		Analysis Date: 8/25/2017 07:24 PM		
Client ID:		Run ID: ICP2_170825A				SeqNo: 4605541		Prep Date: 8/23/2017		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	148.7	5.0	0	0	0	0-0	0			
Magnesium	38.88	2.0	0	0	0	0-0	0			
Sodium	1605	2.0	0	0	0	0-0	0			

DUP		Sample ID: 17081227-02ADUP				Units: none		Analysis Date: 8/23/2017		
Client ID:		Run ID: SAR_170823A				SeqNo: 4605721		Prep Date: 8/23/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	30.3	0.010	0	0	0		30.2	0.338	50	

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: 106156 Instrument ID SVMS6 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-106156-106156				Units: µg/Kg		Analysis Date: 8/22/2017 12:37 PM		
Client ID:		Run ID: SVMS6_170822A		SeqNo: 4599754		Prep Date: 8/21/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	42								
Anthracene	ND	42								
Benzo(a)anthracene	ND	42								
Benzo(a)pyrene	ND	42								
Benzo(b)fluoranthene	ND	42								
Benzo(k)fluoranthene	ND	42								
Chrysene	ND	42								
Dibenzo(a,h)anthracene	ND	42								
Fluoranthene	ND	42								
Fluorene	ND	42								
Indeno(1,2,3-cd)pyrene	ND	42								
Naphthalene	ND	42								
Pyrene	ND	42								
Surr: 2-Fluorobiphenyl	3045	0	3333	0	91.4	20-140	0			
Surr: 4-Terphenyl-d14	3872	0	3333	0	116	22-172	0			
Surr: Nitrobenzene-d5	3280	0	3333	0	98.4	8-140	0			

LCS		Sample ID: SLCSS1-106156-106156				Units: µg/Kg		Analysis Date: 8/22/2017 12:51 PM		
Client ID:		Run ID: SVMS6_170822A		SeqNo: 4599755		Prep Date: 8/21/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1115	42	1333	0	83.6	40-140	0			
Anthracene	1307	42	1333	0	98	40-140	0			
Benzo(a)anthracene	1123	42	1333	0	84.3	40-140	0			
Benzo(a)pyrene	1401	42	1333	0	105	40-140	0			
Benzo(b)fluoranthene	1284	42	1333	0	96.3	40-140	0			
Benzo(k)fluoranthene	1394	42	1333	0	105	40-140	0			
Chrysene	1104	42	1333	0	82.9	40-140	0			
Dibenzo(a,h)anthracene	1108	42	1333	0	83.1	40-140	0			
Fluoranthene	978.6	42	1333	0	73.4	40-140	0			
Fluorene	1326	42	1333	0	99.4	40-140	0			
Indeno(1,2,3-cd)pyrene	1193	42	1333	0	89.5	40-140	0			
Naphthalene	1173	42	1333	0	88	40-140	0			
Pyrene	1069	42	1333	0	80.2	40-140	0			
Surr: 2-Fluorobiphenyl	2949	0	3333	0	88.5	20-140	0			
Surr: 4-Terphenyl-d14	3253	0	3333	0	97.6	22-172	0			
Surr: Nitrobenzene-d5	3308	0	3333	0	99.3	8-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: 106156 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 17081227-04A MS			Units: µg/Kg		Analysis Date: 8/22/2017 01:05 PM			
Client ID:				Run ID: SVMS6_170822A			SeqNo: 4599756		Prep Date: 8/21/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Acenaphthene	1003	41	1317	0	76.1	40-140	0					
Anthracene	1206	41	1317	0	91.5	40-140	0					
Benzo(a)anthracene	1063	41	1317	0	80.7	40-140	0					
Benzo(a)pyrene	1287	41	1317	0	97.7	40-140	0					
Benzo(b)fluoranthene	1270	41	1317	0	96.4	40-140	0					
Benzo(k)fluoranthene	1363	41	1317	0	103	40-140	0					
Chrysene	1084	41	1317	0	82.3	40-140	0					
Dibenzo(a,h)anthracene	1081	41	1317	0	82.1	40-140	0					
Fluoranthene	897.3	41	1317	0	68.1	40-140	0					
Fluorene	1190	41	1317	0	90.3	40-140	0					
Indeno(1,2,3-cd)pyrene	1284	41	1317	0	97.5	40-140	0					
Naphthalene	1105	41	1317	0	83.9	40-140	0					
Pyrene	992	41	1317	0	75.3	40-140	0					
Surr: 2-Fluorobiphenyl	2679	0	3294	0	81.3	20-140	0					
Surr: 4-Terphenyl-d14	2876	0	3294	0	87.3	22-172	0					
Surr: Nitrobenzene-d5	3101	0	3294	0	94.1	8-140	0					

MSD				Sample ID: 17081227-04A MSD			Units: µg/Kg		Analysis Date: 8/22/2017 01:19 PM			
Client ID:				Run ID: SVMS6_170822A			SeqNo: 4599757		Prep Date: 8/21/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Acenaphthene	1063	41	1315	0	80.8	40-140	1003	5.83	30			
Anthracene	1280	41	1315	0	97.3	40-140	1206	5.97	30			
Benzo(a)anthracene	1151	41	1315	0	87.5	40-140	1063	7.95	30			
Benzo(a)pyrene	1391	41	1315	0	106	40-140	1287	7.75	30			
Benzo(b)fluoranthene	1259	41	1315	0	95.7	40-140	1270	0.857	30			
Benzo(k)fluoranthene	1403	41	1315	0	107	40-140	1363	2.88	30			
Chrysene	1136	41	1315	0	86.3	40-140	1084	4.66	30			
Dibenzo(a,h)anthracene	1247	41	1315	0	94.8	40-140	1081	14.2	30			
Fluoranthene	941.1	41	1315	0	71.6	40-140	897.3	4.76	30			
Fluorene	1254	41	1315	0	95.4	40-140	1190	5.25	30			
Indeno(1,2,3-cd)pyrene	1382	41	1315	0	105	40-140	1284	7.33	30			
Naphthalene	1174	41	1315	0	89.2	40-140	1105	6.02	30			
Pyrene	1133	41	1315	0	86.2	40-140	992	13.3	30			
Surr: 2-Fluorobiphenyl	2885	0	3289	0	87.7	20-140	2679	7.4	0			
Surr: 4-Terphenyl-d14	3292	0	3289	0	100	22-172	2876	13.5	0			
Surr: Nitrobenzene-d5	3182	0	3289	0	96.8	8-140	3101	2.59	0			

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: 106147 Instrument ID VMS8 Method: SW8260B

MBLK		Sample ID: MBLK-106147-106147				Units: µg/Kg-dry		Analysis Date: 8/19/2017 09:25 PM		
Client ID:		Run ID: VMS8_170819A			SeqNo: 4592823		Prep Date: 8/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
Surr: 1,2-Dichloroethane-d4	935.5	0	1000	0	93.6	70-130	0			
Surr: 4-Bromofluorobenzene	995	0	1000	0	99.5	70-130	0			
Surr: Dibromofluoromethane	854.5	0	1000	0	85.4	70-130	0			
Surr: Toluene-d8	1010	0	1000	0	101	70-130	0			

LCS		Sample ID: LCS-106147-106147				Units: µg/Kg-dry		Analysis Date: 8/19/2017 08:37 PM		
Client ID:		Run ID: VMS8_170819A			SeqNo: 4592822		Prep Date: 8/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	937	30	1000	0	93.7	75-125	0			
Ethylbenzene	928	30	1000	0	92.8	75-125	0			
m,p-Xylene	1866	60	2000	0	93.3	80-125	0			
o-Xylene	924.5	30	1000	0	92.4	75-125	0			
Toluene	915	30	1000	0	91.5	70-125	0			
Xylenes, Total	2791	90	3000	0	93	75-125	0			
Surr: 1,2-Dichloroethane-d4	957.5	0	1000	0	95.8	70-130	0			
Surr: 4-Bromofluorobenzene	1016	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	999	0	1000	0	99.9	70-130	0			
Surr: Toluene-d8	1010	0	1000	0	101	70-130	0			

MS		Sample ID: 17081227-02A MS				Units: µg/Kg-dry		Analysis Date: 8/20/2017 10:28 AM		
Client ID:		Run ID: VMS8_170819B			SeqNo: 4593226		Prep Date: 8/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1058	30	1000	0	106	75-125	0			
Ethylbenzene	978.5	30	1000	0	97.8	75-125	0			
m,p-Xylene	1950	60	2000	0	97.5	80-125	0			
o-Xylene	985	30	1000	0	98.5	75-125	0			
Toluene	984.5	30	1000	0	98.4	70-125	0			
Xylenes, Total	2935	90	3000	0	97.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	992.5	0	1000	0	99.2	70-130	0			
Surr: 4-Bromofluorobenzene	961.5	0	1000	0	96.2	70-130	0			
Surr: Dibromofluoromethane	963	0	1000	0	96.3	70-130	0			
Surr: Toluene-d8	982.5	0	1000	0	98.2	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: 106147 Instrument ID VMS8 Method: SW8260B

MSD		Sample ID: 17081227-02A MSD				Units: µg/Kg-dry		Analysis Date: 8/20/2017 10:44 AM		
Client ID:		Run ID: VMS8_170819B			SeqNo: 4593227		Prep Date: 8/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1012	30	1000	0	101	75-125	1058	4.49	30	
Ethylbenzene	1002	30	1000	0	100	75-125	978.5	2.32	30	
m,p-Xylene	2008	60	2000	0	100	80-125	1950	2.96	30	
o-Xylene	981	30	1000	0	98.1	75-125	985	0.407	30	
Toluene	987	30	1000	0	98.7	70-125	984.5	0.254	30	
Xylenes, Total	2990	90	3000	0	99.6	75-125	2935	1.84	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	978	0	1000	0	97.8	70-130	992.5	1.47	30	
<i>Surr: 4-Bromofluorobenzene</i>	995	0	1000	0	99.5	70-130	961.5	3.42	30	
<i>Surr: Dibromofluoromethane</i>	978	0	1000	0	97.8	70-130	963	1.55	30	
<i>Surr: Toluene-d8</i>	1000	0	1000	0	100	70-130	982.5	1.82	30	

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 17081254  
**Project:** 4506

# QC BATCH REPORT

Batch ID: **106213**      Instrument ID **WETCHEM**      Method: **SW9045D**

LCS		Sample ID: <b>LCS-106213-106213</b>				Units: <b>s.u.</b>		Analysis Date: <b>8/22/2017 10:30 AM</b>		
Client ID:		Run ID: <b>WETCHEM_170822C</b>		SeqNo: <b>4595865</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.91	0.10	4	0	97.8	90-110	0			

DUP		Sample ID: <b>17081171-01B DUP</b>				Units: <b>s.u.</b>		Analysis Date: <b>8/22/2017 10:30 AM</b>		
Client ID:		Run ID: <b>WETCHEM_170822C</b>		SeqNo: <b>4595873</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.64	0.10	0	0	0	0-0	6.79	2.23	20	

DUP		Sample ID: <b>17081302-01A DUP</b>				Units: <b>s.u.</b>		Analysis Date: <b>8/22/2017 10:30 AM</b>		
Client ID:		Run ID: <b>WETCHEM_170822C</b>		SeqNo: <b>4595885</b>		Prep Date: <b>8/21/2017</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8	0.10	0	0	0	0-0	7.9	1.26	20	

The following samples were analyzed in this batch:

17081254-01A	17081254-02A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 17081254  
**Project:** 4506

# QC BATCH REPORT

Batch ID: **106269**      Instrument ID **WETCHEM**      Method: **SW9045D**

<b>LCS</b>	Sample ID: <b>LCS-106269-106269</b>		Units: <b>s.u.</b>		Analysis Date: <b>8/23/2017 11:30 AM</b>					
Client ID:	Run ID: <b>WETCHEM_170823E</b>		SeqNo: <b>4598401</b>		Prep Date: <b>8/22/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH                                      3.94      0.10      4                      0      98.5      90-110                      0

<b>DUP</b>	Sample ID: <b>17081180-01A DUP</b>		Units: <b>s.u.</b>		Analysis Date: <b>8/23/2017 11:30 AM</b>					
Client ID:	Run ID: <b>WETCHEM_170823E</b>		SeqNo: <b>4598404</b>		Prep Date: <b>8/22/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH                                      7.51      0.10      0                      0      0      0-0                      7.43      1.07      20

<b>DUP</b>	Sample ID: <b>17081256-05A DUP</b>		Units: <b>s.u.</b>		Analysis Date: <b>8/23/2017 11:30 AM</b>					
Client ID:	Run ID: <b>WETCHEM_170823E</b>		SeqNo: <b>4598413</b>		Prep Date: <b>8/22/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH                                      7.96      0.10      0                      0      0      0-0                      7.99      0.376      20

The following samples were analyzed in this batch:

17081254-03A	17081254-04A	17081254-05A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC

**Work Order:** 17081254

**Project:** 4506

# QC BATCH REPORT

Batch ID: **106326**

Instrument ID **WETCHEM**

Method: **USDA H60 Metho**

<b>DUP</b>	Sample ID: <b>17081227-02A DUP</b>		Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>8/24/2017 10:30 AM</b>					
Client ID:	Run ID: <b>WETCHEM_170824E</b>		SeqNo: <b>4600999</b>		Prep Date: <b>8/23/2017</b>		DF: <b>50</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	10.15	0.25	0	0	0		10.15	0	50	

**The following samples were analyzed in this batch:**

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **106327** Instrument ID **WETCHEM** Method: **SW7196A**

<b>MBLK</b>	Sample ID: <b>MBLK-106327-106327</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/23/2017 03:30 PM</b>					
Client ID:	Run ID: <b>WETCHEM_170823B</b>		SeqNo: <b>4598200</b>		Prep Date: <b>8/23/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 1.0

<b>LCS</b>	Sample ID: <b>LCS-106327-106327</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/23/2017 03:30 PM</b>					
Client ID:	Run ID: <b>WETCHEM_170823B</b>		SeqNo: <b>4598201</b>		Prep Date: <b>8/23/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.2 1.0 5 0 84 80-120 0

<b>MS</b>	Sample ID: <b>17081227-02A MS</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/23/2017 03:30 PM</b>					
Client ID:	Run ID: <b>WETCHEM_170823B</b>		SeqNo: <b>4598203</b>		Prep Date: <b>8/23/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.111 1.0 5.051 0.04082 80.6 75-125 0

<b>MS</b>	Sample ID: <b>17081227-02A MSI</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/23/2017 03:30 PM</b>					
Client ID:	Run ID: <b>WETCHEM_170823B</b>		SeqNo: <b>4598205</b>		Prep Date: <b>8/23/2017</b> DF: <b>100</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1826 100 2397 0.04082 76.2 75-125 0

<b>MSD</b>	Sample ID: <b>17081227-02A MSD</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>8/23/2017 03:30 PM</b>					
Client ID:	Run ID: <b>WETCHEM_170823B</b>		SeqNo: <b>4598204</b>		Prep Date: <b>8/23/2017</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.111 1.0 5.051 0.04082 80.6 75-125 4.111 0 20

The following samples were analyzed in this batch:

17081254-01A	17081254-02A	17081254-03A
17081254-04A	17081254-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **R218504** Instrument ID **MOIST** Method: **SW3550C**

<b>MBLK</b>	Sample ID: <b>WBLKS-R218504</b>		Units: % of sample				Analysis Date: <b>8/23/2017 03:27 PM</b>			
Client ID:	Run ID: <b>MOIST_170823D</b>		SeqNo: <b>4600942</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

<b>LCS</b>	Sample ID: <b>LCS-R218504</b>		Units: % of sample				Analysis Date: <b>8/23/2017 03:27 PM</b>			
Client ID:	Run ID: <b>MOIST_170823D</b>		SeqNo: <b>4600941</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

<b>DUP</b>	Sample ID: <b>17081226-05A DUP</b>		Units: % of sample				Analysis Date: <b>8/23/2017 03:27 PM</b>			
Client ID:	Run ID: <b>MOIST_170823D</b>		SeqNo: <b>4600924</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 13.94 0.050 0 0 0 0-0 13.15 5.83 5 R

<b>DUP</b>	Sample ID: <b>17081227-05A DUP</b>		Units: % of sample				Analysis Date: <b>8/23/2017 03:27 PM</b>			
Client ID:	Run ID: <b>MOIST_170823D</b>		SeqNo: <b>4600936</b>		Prep Date:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 20.15 0.050 0 0 0 0-0 21.97 8.64 5 R

The following samples were analyzed in this batch:

17081254-01A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 17081254  
 Project: 4506

# QC BATCH REPORT

Batch ID: **R218506** Instrument ID **MOIST** Method: **SW3550C**

<b>MBLK</b>	Sample ID: <b>WBLKS-R218506</b>		Units: % of sample			Analysis Date: <b>8/23/2017 04:52 PM</b>				
Client ID:	Run ID: <b>MOIST_170823E</b>		SeqNo: <b>4600967</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

<b>LCS</b>	Sample ID: <b>LCS-R218506</b>		Units: % of sample			Analysis Date: <b>8/23/2017 04:52 PM</b>				
Client ID:	Run ID: <b>MOIST_170823E</b>		SeqNo: <b>4600966</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

<b>DUP</b>	Sample ID: <b>17081259-04B DUP</b>		Units: % of sample			Analysis Date: <b>8/23/2017 04:52 PM</b>				
Client ID:	Run ID: <b>MOIST_170823E</b>		SeqNo: <b>4600962</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 22.36 0.050 0 0 0 0-0 22.36 0 5

<b>DUP</b>	Sample ID: <b>17081259-05B DUP</b>		Units: % of sample			Analysis Date: <b>8/23/2017 04:52 PM</b>				
Client ID:	Run ID: <b>MOIST_170823E</b>		SeqNo: <b>4600964</b>		Prep Date:			DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 20.8 0.050 0 0 0 0-0 20.35 2.19 5

The following samples were analyzed in this batch:

17081254-02A	17081254-03A	17081254-04A
17081254-05A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



# ALS Laboratory Group

3352 128th Ave. Holland Michigan, 49424

## Chain-of-Custody

Form 2020

WORKORDER # 17081254

SAMPLER *Brett Middleton*

SITE ID *4506*

EDD FORMAT

PURCHASE ORDER

BILL TO COMPANY *Caerus Piceance, LLC*

INVOICE ATTN TO *Jake Janicek*

ADDRESS *120 N. Railroad, suite D*

CITY/STATE/ZIP *Parachute CO 81635*

PHONE *970-285-9608*

FAX

E-MAIL *invoicing@caerusoilandgas.com*

DATE *8-17-17*

TURNAROUND *STD*

TPH/GRO/DRO

BTEX

Table 910 PAH's

EC

PH

SAR

Benzene

Table 910 Metals

PAGE 1 of 1  
DISPOSAL By Lab or Return to Client

PROJECT NAME *4506*

PROJECT No.

COMPANY NAME *Caerus Piceance, LLC*

SEND REPORT TO *Jake Janicek*

ADDRESS *120 N. Railroad, suite D*

CITY/STATE/ZIP *Parachute Co 81635*

PHONE *970-285-9608*

FAX

E-MAIL *jjanicek@caerusoilandgas.com*

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
1	<i>20170817-4506-PIT(S)4</i>	<i>S</i>	<i>8-17-17</i>	<i>1410</i>	<i>3</i>		
2	<i>20170817-4506-PIT(E)5</i>	<i>S</i>	<i>8-17-17</i>	<i>1335</i>	<i>5</i>		
3	<i>20170817-4506-PIT(BOT)10</i>	<i>S</i>	<i>8-17-17</i>	<i>1350</i>	<i>3</i>		
4	<i>20170817-4506-PIT(W)6</i>	<i>S</i>	<i>8-17-17</i>	<i>1400</i>	<i>5</i>		
5	<i>20170817-4506-PIT(N)6</i>	<i>S</i>	<i>8-17-17</i>	<i>1330</i>	<i>3</i>		

TPH/GRO/DRO	BTEX	Table 910 PAH's	EC	PH	SAR	Benzene	Table 910 Metals
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X

\*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: *SR2 4.2u*

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

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	<i>Brett Middleton</i>	<i>8-17-17</i>	<i>1625</i>
RECEIVED BY	<i>[Signature]</i>	<i>M. M. M.</i>	<i>8-17-17</i>	<i>1625</i>
RELINQUISHED BY	<i>[Signature]</i>	<i>M.</i>	<i>8-17-17</i>	<i>1610</i>
RECEIVED BY	<i>[Signature]</i>	<i>Diane G. Sha</i>	<i>8/18/17</i>	<i>0930</i>
RELINQUISHED BY				
RECEIVED BY				

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **18-Aug-17 09:30**

Work Order: **17081254**

Received by: **DS**

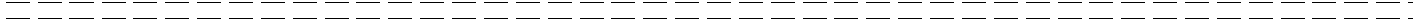
Checklist completed by Diane Shaw 18-Aug-17  
eSignature Date

Reviewed by: Chad Whilton 19-Aug-17  
eSignature Date

Matrices: Soil  
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.2/4.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>8/18/2017 5:05:14 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u></u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction: