22-Aug-2017

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

Re: **5A** Work Order: **1708878**

Dear Jake,

ALS Environmental received 3 samples on 15-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 26.

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

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

ALS Group, USA

Date: 22-Aug-17

Client: Caerus Oil and Gas LLC
Project: 5A
Work Order: **1708878**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1708878-01	20170814-5A-CUT(SW)	Soil		8/14/2017 14:15	8/15/2017 09:30	☐
1708878-02	20170814-5A-CUT(S)	Soil		8/14/2017 14:20	8/15/2017 09:30	☐
1708878-03	20170814-5A-CUT(SE)	Soil		8/14/2017 14:25	8/15/2017 09:30	☐

Client: Caerus Oil and Gas LLC
Project: 5A
Work Order: 1708878

Case Narrative

Batch 105909, Method ICP_6010_S, Sample 1708878-03A MS/MSD: The MS and MSD recovery was above the upper control limit for Arsenic. The corresponding result in the parent sample may be biased high.

Batch 105909, Method ICP_6010_S, Sample 1708878-03A 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.

Batch 105909, Method ICP_6010_S, Sample 1708878-03A MSD: The MSD recovery was above the upper control limit for Nickel. However, the MS recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 105910, Method DRLVI_8015_S, Samples 1708878-01A and -02A: DRO surrogate recoveries high due to matrix interference.

ALS Group, USA

Date: 22-Aug-17

Qualifier	Description
*	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.

Acronym	Description
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

Units Reported	Description
% 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

ALS Group, USA

Date: *22-Aug-17*

Client: Caerus Oil and Gas LLC
Project: 5A
Work Order: 1708878
Sample ID: 20170814-5A-CUT(SW)
Lab ID: 1708878-01
Collection Date: 8/14/2017 02:15 PM
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 8/15/17 15:58		Analyst: **KB**
DRO (C10-C28)	**160**		**6.3**	**mg/Kg-dry**	1	8/15/2017 10:24 PM
Surr: 4-Terphenyl-d14	*132*	S	*34-130*	*%REC*	1	8/15/2017 10:24 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**			Analyst: **KB**
GRO (C6-C10)	ND		8.2	mg/Kg	1	8/16/2017 05:06 AM
Surr: Toluene-d8	*95.0*		*71-123*	*%REC*	1	8/16/2017 05:06 AM
MERCURY BY CVAA			**SW7471B**	Prep: SW7471 8/15/17 12:39		Analyst: **RSH**
Mercury	**0.038**		**0.022**	**mg/Kg-dry**	1	8/15/2017 02:01 PM
METALS ANALYSIS BY ICP			**SW846 6010C**	Prep: SW3050B 8/15/17 11:13		Analyst: **LR**
Arsenic	**4.6**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Barium	**2,300**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Cadmium	ND		0.94	mg/Kg-dry	1	8/15/2017 02:22 PM
Chromium	**12**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Copper	**14**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Lead	**14**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Nickel	**11**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Selenium	**1.8**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
Silver	ND		0.47	mg/Kg-dry	1	8/15/2017 02:22 PM
Zinc	**55**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:22 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Calcium	**160**		**5.0**	**mg/L**	10	8/18/2017 08:28 PM
Magnesium	**16**		**2.0**	**mg/L**	10	8/18/2017 08:28 PM
Sodium	**1,600**		**2.0**	**mg/L**	10	8/18/2017 08:28 PM
SODIUM ADSORPTION RATIO			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Sodium Adsorption Ratio	**33**		**0.010**	**none**	1	8/18/2017
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**	Prep: SW3546 8/15/17 16:09		Analyst: **RM**
Acenaphthene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Anthracene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Benzo(a)anthracene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Benzo(a)pyrene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Benzo(b)fluoranthene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Benzo(k)fluoranthene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Chrysene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Dibenzo(a,h)anthracene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Fluoranthene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM

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

Client: Caerus Oil and Gas LLC
Project: 5A **Work Order:** 1708878
Sample ID: 20170814-5A-CUT(SW) **Lab ID:** 1708878-01
Collection Date: 8/14/2017 02:15 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	**0.074**		**0.053**	**mg/Kg-dry**	1	8/16/2017 02:54 PM
Indeno(1,2,3-cd)pyrene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Naphthalene	**0.45**		**0.053**	**mg/Kg-dry**	1	8/16/2017 02:54 PM
Pyrene	ND		0.053	mg/Kg-dry	1	8/16/2017 02:54 PM
Surr: 2-Fluorobiphenyl	*89.1*		*20-140*	*%REC*	1	8/16/2017 02:54 PM
Surr: 4-Terphenyl-d14	*102*		*22-172*	*%REC*	1	8/16/2017 02:54 PM
Surr: Nitrobenzene-d5	*96.7*		*8-140*	*%REC*	1	8/16/2017 02:54 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 8/15/17 11:37		Analyst: **BG**
Benzene	**0.16**		**0.049**	**mg/Kg**	1	8/15/2017 02:17 PM
Ethylbenzene	ND		0.049	mg/Kg	1	8/15/2017 02:17 PM
m,p-Xylene	**0.10**		**0.098**	**mg/Kg**	1	8/15/2017 02:17 PM
o-Xylene	ND		0.049	mg/Kg	1	8/15/2017 02:17 PM
Toluene	**0.22**		**0.049**	**mg/Kg**	1	8/15/2017 02:17 PM
Xylenes, Total	ND		0.15	mg/Kg	1	8/15/2017 02:17 PM
Surr: 1,2-Dichloroethane-d4	*97.6*		*70-130*	*%REC*	1	8/15/2017 02:17 PM
Surr: 4-Bromofluorobenzene	*99.3*		*70-130*	*%REC*	1	8/15/2017 02:17 PM
Surr: Dibromofluoromethane	*96.2*		*70-130*	*%REC*	1	8/15/2017 02:17 PM
Surr: Toluene-d8	*98.4*		*70-130*	*%REC*	1	8/15/2017 02:17 PM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **JB**
Electrical Conductivity @ Saturation	**8.7**		**0.25**	**mmhos/cm @2**	50	8/18/2017 02:15 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **LW**
Chromium, Trivalent	**12**		**1.3**	**mg/Kg-dry**	1	8/22/2017 04:00 PM
CHROMIUM, HEXAVALENT			**SW7196A**	Prep: SW3060A 8/21/17 19:00		Analyst: **LW**
Chromium, Hexavalent	ND		1.3	mg/Kg-dry	1	8/22/2017 03:00 PM
MOISTURE			**SW3550C**			Analyst: **RZM**
Moisture	**24**		**0.050**	**% of sample**	1	8/15/2017 10:57 AM
PH			**SW9045D**	Prep: EXTRACT 8/17/17 12:00		Analyst: **LW**
pH	**8.03**		**0.100**	**s.u.**	1	8/17/2017 12:00 PM

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

ALS Group, USA

Date: *22-Aug-17*

Client: Caerus Oil and Gas LLC
Project: 5A
Work Order: 1708878
Sample ID: 20170814-5A-CUT(S)
Lab ID: 1708878-02
Collection Date: 8/14/2017 02:20 PM
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 8/15/17 15:58		Analyst: **KB**
DRO (C10-C28)	**230**		**6.2**	**mg/Kg-dry**	1	8/15/2017 10:53 PM
Surr: 4-Terphenyl-d14	*135*	S	*34-130*	*%REC*	1	8/15/2017 10:53 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**			Analyst: **KB**
GRO (C6-C10)	ND		7.5	mg/Kg	1	8/16/2017 05:35 AM
Surr: Toluene-d8	*96.9*		*71-123*	*%REC*	1	8/16/2017 05:35 AM
MERCURY BY CVAA			**SW7471B**	Prep: SW7471 8/15/17 12:39		Analyst: **RSH**
Mercury	**0.028**		**0.021**	**mg/Kg-dry**	1	8/15/2017 02:08 PM
METALS ANALYSIS BY ICP			**SW846 6010C**	Prep: SW3050B 8/15/17 11:13		Analyst: **LR**
Arsenic	**6.9**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Barium	**3,300**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Cadmium	ND		0.94	mg/Kg-dry	1	8/15/2017 02:29 PM
Chromium	**15**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Copper	**21**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Lead	**13**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Nickel	**15**		**0.47**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Selenium	**1.9**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
Silver	ND		0.47	mg/Kg-dry	1	8/15/2017 02:29 PM
Zinc	**74**		**0.94**	**mg/Kg-dry**	1	8/15/2017 02:29 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Calcium	**800**		**5.0**	**mg/L**	10	8/18/2017 09:00 PM
Magnesium	**120**		**2.0**	**mg/L**	10	8/18/2017 09:00 PM
Sodium	**2,900**		**2.0**	**mg/L**	10	8/18/2017 09:00 PM
SODIUM ADSORPTION RATIO			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Sodium Adsorption Ratio	**25**		**0.010**	**none**	1	8/18/2017
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**	Prep: SW3546 8/15/17 16:09		Analyst: **RM**
Acenaphthene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Anthracene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Benzo(a)anthracene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Benzo(a)pyrene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Benzo(b)fluoranthene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Benzo(k)fluoranthene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Chrysene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Dibenzo(a,h)anthracene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Fluoranthene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM

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

Client: Caerus Oil and Gas LLC
Project: 5A **Work Order:** 1708878
Sample ID: 20170814-5A-CUT(S) **Lab ID:** 1708878-02
Collection Date: 8/14/2017 02:20 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	**0.081**		**0.051**	**mg/Kg-dry**	1	8/16/2017 03:08 PM
Indeno(1,2,3-cd)pyrene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Naphthalene	**0.45**		**0.051**	**mg/Kg-dry**	1	8/16/2017 03:08 PM
Pyrene	ND		0.051	mg/Kg-dry	1	8/16/2017 03:08 PM
Surr: 2-Fluorobiphenyl	*89.2*		*20-140*	*%REC*	1	8/16/2017 03:08 PM
Surr: 4-Terphenyl-d14	*104*		*22-172*	*%REC*	1	8/16/2017 03:08 PM
Surr: Nitrobenzene-d5	*98.3*		*8-140*	*%REC*	1	8/16/2017 03:08 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 8/15/17 11:37		Analyst: **BG**
Benzene	**0.15**		**0.045**	**mg/Kg**	1	8/15/2017 02:43 PM
Ethylbenzene	ND		0.045	mg/Kg	1	8/15/2017 02:43 PM
m,p-Xylene	**0.15**		**0.090**	**mg/Kg**	1	8/15/2017 02:43 PM
o-Xylene	ND		0.045	mg/Kg	1	8/15/2017 02:43 PM
Toluene	**0.28**		**0.045**	**mg/Kg**	1	8/15/2017 02:43 PM
Xylenes, Total	**0.18**		**0.14**	**mg/Kg**	1	8/15/2017 02:43 PM
Surr: 1,2-Dichloroethane-d4	*98.2*		*70-130*	*%REC*	1	8/15/2017 02:43 PM
Surr: 4-Bromofluorobenzene	*100*		*70-130*	*%REC*	1	8/15/2017 02:43 PM
Surr: Dibromofluoromethane	*97.8*		*70-130*	*%REC*	1	8/15/2017 02:43 PM
Surr: Toluene-d8	*97.4*		*70-130*	*%REC*	1	8/15/2017 02:43 PM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **JB**
Electrical Conductivity @ Saturation	**18**		**0.25**	**mmhos/cm @2**	50	8/18/2017 02:15 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **LW**
Chromium, Trivalent	**15**		**1.3**	**mg/Kg-dry**	1	8/22/2017 04:00 PM
CHROMIUM, HEXAVALENT			**SW7196A**	Prep: SW3060A 8/21/17 19:00		Analyst: **LW**
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	8/22/2017 03:00 PM
MOISTURE			**SW3550C**			Analyst: **RZM**
Moisture	**20**		**0.050**	**% of sample**	1	8/15/2017 10:57 AM
PH			**SW9045D**	Prep: EXTRACT 8/17/17 12:00		Analyst: **LW**
pH	**8.64**		**0.100**	**s.u.**	1	8/17/2017 12:00 PM

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

ALS Group, USA

Date: *22-Aug-17*

Client: Caerus Oil and Gas LLC
Project: 5A
Work Order: 1708878
Sample ID: 20170814-5A-CUT(SE)
Lab ID: 1708878-03
Collection Date: 8/14/2017 02:25 PM
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 8/15/17 15:58		Analyst: **KB**
DRO (C10-C28)	**160**		**6.7**	**mg/Kg-dry**	1	8/15/2017 11:22 PM
Surr: 4-Terphenyl-d14	*115*		*34-130*	*%REC*	1	8/15/2017 11:22 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**			Analyst: **KB**
GRO (C6-C10)	ND		8.9	mg/Kg	1	8/16/2017 06:05 AM
Surr: Toluene-d8	*96.3*		*71-123*	*%REC*	1	8/16/2017 06:05 AM
MERCURY BY CVAA			**SW7471B**	Prep: SW7471 8/15/17 12:39		Analyst: **RSH**
Mercury	**0.031**		**0.025**	**mg/Kg-dry**	1	8/15/2017 02:11 PM
METALS ANALYSIS BY ICP			**SW846 6010C**	Prep: SW3050B 8/15/17 11:13		Analyst: **LR**
Arsenic	**7.8**		**0.53**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Barium	**3,200**		**0.53**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Cadmium	ND		1.1	mg/Kg-dry	1	8/15/2017 02:35 PM
Chromium	**15**		**0.53**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Copper	**22**		**1.1**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Lead	**15**		**0.53**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Nickel	**17**		**0.53**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Selenium	**2.1**		**1.1**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
Silver	ND		0.53	mg/Kg-dry	1	8/15/2017 02:35 PM
Zinc	**77**		**1.1**	**mg/Kg-dry**	1	8/15/2017 02:35 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Calcium	**740**		**5.0**	**mg/L**	10	8/18/2017 09:06 PM
Magnesium	**120**		**2.0**	**mg/L**	10	8/18/2017 09:06 PM
Sodium	**2,900**		**2.0**	**mg/L**	10	8/18/2017 09:06 PM
SODIUM ADSORPTION RATIO			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **LR**
Sodium Adsorption Ratio	**26**		**0.010**	**none**	1	8/18/2017
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**	Prep: SW3546 8/15/17 16:09		Analyst: **RM**
Acenaphthene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Anthracene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Benzo(a)anthracene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Benzo(a)pyrene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Benzo(b)fluoranthene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Benzo(k)fluoranthene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Chrysene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Dibenzo(a,h)anthracene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Fluoranthene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM

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

Client: Caerus Oil and Gas LLC
Project: 5A **Work Order:** 1708878
Sample ID: 20170814-5A-CUT(SE) **Lab ID:** 1708878-03
Collection Date: 8/14/2017 02:25 PM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	**0.070**		**0.056**	**mg/Kg-dry**	1	8/16/2017 03:22 PM
Indeno(1,2,3-cd)pyrene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Naphthalene	**0.42**		**0.056**	**mg/Kg-dry**	1	8/16/2017 03:22 PM
Pyrene	ND		0.056	mg/Kg-dry	1	8/16/2017 03:22 PM
Surr: 2-Fluorobiphenyl	*91.7*		*20-140*	*%REC*	1	8/16/2017 03:22 PM
Surr: 4-Terphenyl-d14	*118*		*22-172*	*%REC*	1	8/16/2017 03:22 PM
Surr: Nitrobenzene-d5	*99.6*		*8-140*	*%REC*	1	8/16/2017 03:22 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 8/15/17 11:37		Analyst: **BG**
Benzene	**0.13**		**0.053**	**mg/Kg**	1	8/15/2017 03:09 PM
Ethylbenzene	ND		0.053	mg/Kg	1	8/15/2017 03:09 PM
m,p-Xylene	ND		0.11	mg/Kg	1	8/15/2017 03:09 PM
o-Xylene	ND		0.053	mg/Kg	1	8/15/2017 03:09 PM
Toluene	**0.17**		**0.053**	**mg/Kg**	1	8/15/2017 03:09 PM
Xylenes, Total	ND		0.16	mg/Kg	1	8/15/2017 03:09 PM
Surr: 1,2-Dichloroethane-d4	*98.5*		*70-130*	*%REC*	1	8/15/2017 03:09 PM
Surr: 4-Bromofluorobenzene	*97.8*		*70-130*	*%REC*	1	8/15/2017 03:09 PM
Surr: Dibromofluoromethane	*96.1*		*70-130*	*%REC*	1	8/15/2017 03:09 PM
Surr: Toluene-d8	*97.7*		*70-130*	*%REC*	1	8/15/2017 03:09 PM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 MET**	Prep: USDA Method 20B 8/17/17 11:17		Analyst: **JB**
Electrical Conductivity @ Saturation	**26**		**0.25**	**mmhos/cm @2**	50	8/18/2017 02:15 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **LW**
Chromium, Trivalent	**15**		**1.4**	**mg/Kg-dry**	1	8/22/2017 04:00 PM
CHROMIUM, HEXAVALENT			**SW7196A**	Prep: SW3060A 8/21/17 19:00		Analyst: **LW**
Chromium, Hexavalent	ND		1.4	mg/Kg-dry	1	8/22/2017 03:00 PM
MOISTURE			**SW3550C**			Analyst: **RZM**
Moisture	**28**		**0.050**	**% of sample**	1	8/15/2017 10:57 AM
PH			**SW9045D**	Prep: EXTRACT 8/17/17 12:00		Analyst: **LW**
pH	**8.14**		**0.100**	**s.u.**	1	8/17/2017 12:00 PM

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

QC BATCH REPORT

Batch ID: **105910** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-105910-105910** Units: **mg/Kg** Analysis Date: **8/15/2017 06:32 PM**

Client ID: Run ID: **GC8_170815B** SeqNo: **4585277** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
Surr: 4-Terphenyl-d14	*3.767*	0	*3.33*	0	*113*	*34-130*	0			

LCS Sample ID: **DLCSS1-105910-105910** Units: **mg/Kg** Analysis Date: **8/15/2017 07:01 PM**

Client ID: Run ID: **GC8_170815B** SeqNo: **4585279** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	398.4	5.0	333	0	120	65-122	0			
Surr: 4-Terphenyl-d14	*3.383*	0	*3.33*	0	*102*	*34-130*	0			

MS Sample ID: **1708877-01B MS** Units: **mg/Kg** Analysis Date: **8/16/2017 11:00 AM**

Client ID: Run ID: **GC8_170816A** SeqNo: **4586461** Prep Date: **8/15/2017** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	1644	49	325.1	570.7	330	65-122	0			S
Surr: 4-Terphenyl-d14	*2.441*	0	*3.251*	0	*75.1*	*34-130*	0			

MSD Sample ID: **1708877-01B MSD** Units: **mg/Kg** Analysis Date: **8/16/2017 11:29 AM**

Client ID: Run ID: **GC8_170816A** SeqNo: **4586462** Prep Date: **8/15/2017** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	1551	49	329.4	570.7	297	65-122	1644	5.86	30	S
Surr: 4-Terphenyl-d14	*2.803*	0	*3.294*	0	*85.1*	*34-130*	2.441	*13.8*	*30*	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105918b** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-105918-105918b** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 09:15 PM**
Client ID: Run ID: **GC9_170815A** SeqNo: **4585476** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
Surr: Toluene-d8	*5022*	0	*5000*	0	*100*	*71-123*	0			

LCS Sample ID: **LCS-105918-105918b** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 08:16 PM**
Client ID: Run ID: **GC9_170815A** SeqNo: **4585475** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	611100	5,000	500000	0	122	71-123	0			
Surr: Toluene-d8	*5210*	0	*5000*	0	*104*	*71-123*	0			

MS Sample ID: **1708877-03A MS** Units: **µg/Kg-dry** Analysis Date: **8/16/2017 10:32 AM**
Client ID: Run ID: **GC9_170815A** SeqNo: **4585906** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	879500	6,200	623600	0	141	71-123	0			S
Surr: Toluene-d8	*7231*	0	*6236*	0	*116*	*71-123*	0			

MSD Sample ID: **1708877-03A MSD** Units: **µg/Kg-dry** Analysis Date: **8/16/2017 11:02 AM**
Client ID: Run ID: **GC9_170815A** SeqNo: **4585907** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	879700	6,200	623600	0	141	71-123	879500	0.0267	30	S
Surr: Toluene-d8	*7131*	0	*6236*	0	*114*	*71-123*	7231	*1.39*	*30*	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105917** Instrument ID **HG1** Method: **SW7471B**

MBLK	Sample ID: **MBLK-105917-105917**			Units: **mg/Kg**			Analysis Date: **8/15/2017 01:56 PM**			
Client ID:	Run ID: **HG1_170815A**			SeqNo: **4583906**			Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.020								

LCS	Sample ID: **LCS-105917-105917**			Units: **mg/Kg**			Analysis Date: **8/15/2017 01:58 PM**			
Client ID:	Run ID: **HG1_170815A**			SeqNo: **4583907**			Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1767	0.020	0.1665	0	106	80-120	0			

MS	Sample ID: **1708878-01AMS**			Units: **mg/Kg**			Analysis Date: **8/15/2017 02:03 PM**			
Client ID: **20170814-5A-CUT(SW)**	Run ID: **HG1_170815A**			SeqNo: **4583909**			Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1546	0.017	0.1386	0.02897	90.7	75-125	0			

MSD	Sample ID: **1708878-01AMSD**			Units: **mg/Kg**			Analysis Date: **8/15/2017 02:06 PM**			
Client ID: **20170814-5A-CUT(SW)**	Run ID: **HG1_170815A**			SeqNo: **4583910**			Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1598	0.017	0.1376	0.02897	95.1	75-125	0.1546	3.27	35	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105909** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-105909-105909** Units: **mg/Kg** Analysis Date: **8/15/2017 02:09 PM**
Client ID: Run ID: **ICP2_170815A** SeqNo: **4584848** Prep Date: **8/15/2017** DF: **1**

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	0.03576	0.50								J
Chromium	ND	0.25								
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	0.05102	0.50								J

LCS Sample ID: **LCS-105909-105909** Units: **mg/Kg** Analysis Date: **8/15/2017 02:16 PM**
Client ID: Run ID: **ICP2_170815A** SeqNo: **4584849** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.014	0.25	5	0	100	80-120	0			
Barium	4.922	0.25	5	0	98.4	80-120	0			
Cadmium	4.932	0.50	5	0	98.6	80-120	0			
Chromium	5.493	0.25	5	0	110	80-120	0			
Copper	5.126	0.50	5	0	103	80-120	0			
Lead	5.378	0.25	5	0	108	80-120	0			
Nickel	5.156	0.25	5	0	103	80-120	0			
Selenium	4.519	0.50	5	0	90.4	80-120	0			
Silver	5.117	0.25	5	0	102	80-120	0			
Zinc	5.188	0.50	5	0	104	80-120	0			

MS Sample ID: **1708878-03AMS** Units: **mg/Kg** Analysis Date: **8/15/2017 02:56 PM**
Client ID: **20170814-5A-CUT(SE)** Run ID: **ICP2_170815A** SeqNo: **4584862** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	16.56	0.38	7.68	5.684	142	75-125	0			S
Barium	1326	0.38	7.68	2322	-13000	75-125	0			SO
Cadmium	9.757	0.77	7.68	0.435	121	75-125	0			
Chromium	17.15	0.38	7.68	10.77	83.2	75-125	0			
Copper	23.36	0.77	7.68	15.66	100	75-125	0			
Lead	18.68	0.38	7.68	11.21	97.3	75-125	0			
Nickel	21.07	0.38	7.68	12.44	112	75-125	0			
Selenium	8.626	0.77	7.68	1.503	92.7	75-125	0			
Silver	8.209	0.38	7.68	-0.1186	108	75-125	0			
Zinc	70.31	0.77	7.68	55.83	189	75-125	0			SO

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105909** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1708878-03AMSD** Units: **mg/Kg** Analysis Date: **8/15/2017 03:03 PM**
Client ID: **20170814-5A-CUT(SE)** Run ID: **ICP2_170815A** SeqNo: **4584863** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	18.17	0.39	7.728	5.684	162	75-125	16.56	9.3	20	S
Barium	722.8	0.39	7.728	2322	-20700	75-125	1326	58.9	20	SRO
Cadmium	9.618	0.77	7.728	0.435	119	75-125	9.757	1.43	20	
Chromium	17.85	0.39	7.728	10.77	91.7	75-125	17.15	3.99	20	
Copper	24.9	0.77	7.728	15.66	119	75-125	23.36	6.35	20	
Lead	19.08	0.39	7.728	11.21	102	75-125	18.68	2.12	20	
Nickel	23.05	0.39	7.728	12.44	137	75-125	21.07	8.99	20	S
Selenium	8.555	0.77	7.728	1.503	91.2	75-125	8.626	0.835	20	
Silver	8.43	0.39	7.728	-0.1186	111	75-125	8.209	2.66	20	
Zinc	72.79	0.77	7.728	55.83	219	75-125	70.31	3.47	20	SO

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **106050** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP	Sample ID: **1708878-01ADUP**			Units: **none**		Analysis Date: **8/18/2017**			
Client ID: **20170814-5A-CUT(SW)**		Run ID: **SAR_170818A**		SeqNo: **4594345**		Prep Date: **8/17/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	33.39	0.010	0	0	0		33.46	0.206	50	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105889** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-105889-105889** Units: **µg/Kg** Analysis Date: **8/16/2017 01:42 PM**
Client ID: Run ID: **SVMS6_170816A** SeqNo: **4586958** Prep Date: **8/15/2017** 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	*3027*	0	*3333*	0	*90.8*	*20-140*	0			
Surr: 4-Terphenyl-d14	*4659*	0	*3333*	0	*140*	*22-172*	0			
Surr: Nitrobenzene-d5	*3652*	0	*3333*	0	*110*	*8-140*	0			

LCS Sample ID: **SLCSS1-105889-105889** Units: **µg/Kg** Analysis Date: **8/16/2017 01:56 PM**
Client ID: Run ID: **SVMS6_170816A** SeqNo: **4586959** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1084	42	1333	0	81.3	40-140	0			
Anthracene	1305	42	1333	0	97.9	40-140	0			
Benzo(a)anthracene	1117	42	1333	0	83.8	40-140	0			
Benzo(a)pyrene	1273	42	1333	0	95.5	40-140	0			
Benzo(b)fluoranthene	1157	42	1333	0	86.8	40-140	0			
Benzo(k)fluoranthene	1379	42	1333	0	103	40-140	0			
Chrysene	1141	42	1333	0	85.6	40-140	0			
Dibenzo(a,h)anthracene	841.5	42	1333	0	63.1	40-140	0			
Fluoranthene	1292	42	1333	0	96.9	40-140	0			
Fluorene	1293	42	1333	0	97	40-140	0			
Indeno(1,2,3-cd)pyrene	1212	42	1333	0	90.9	40-140	0			
Naphthalene	1186	42	1333	0	89	40-140	0			
Pyrene	1642	42	1333	0	123	40-140	0			
Surr: 2-Fluorobiphenyl	*2843*	0	*3333*	0	*85.3*	*20-140*	0			
Surr: 4-Terphenyl-d14	*3691*	0	*3333*	0	*111*	*22-172*	0			
Surr: Nitrobenzene-d5	*3379*	0	*3333*	0	*101*	*8-140*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105889** Instrument ID **SVMS6** Method: **SW846 8270D**

MS	Sample ID: **1708856-04B MS**				Units: **µg/Kg**			Analysis Date: **8/16/2017 04:17 PM**		
Client ID:		Run ID: **SVMS6_170816A**			SeqNo: **4589260**		Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1305	42	1328	0	98.3	40-140	0			
Anthracene	1572	42	1328	58.37	114	40-140	0			
Benzo(a)anthracene	1540	42	1328	187.2	102	40-140	0			
Benzo(a)pyrene	1598	42	1328	209.9	104	40-140	0			
Benzo(b)fluoranthene	1669	42	1328	286.8	104	40-140	0			
Benzo(k)fluoranthene	1484	42	1328	190.5	97.4	40-140	0			
Chrysene	1486	42	1328	233.3	94.3	40-140	0			
Dibenzo(a,h)anthracene	1414	42	1328	47.62	103	40-140	0			
Fluoranthene	2169	42	1328	476.3	127	40-140	0			
Fluorene	1560	42	1328	0	117	40-140	0			
Indeno(1,2,3-cd)pyrene	1562	42	1328	204.6	102	40-140	0			
Naphthalene	1546	42	1328	0	116	40-140	0			
Pyrene	2363	42	1328	510.8	139	40-140	0			
Surr: 2-Fluorobiphenyl	*3363*	0	*3321*	0	*101*	*20-140*	0			
Surr: 4-Terphenyl-d14	*3996*	0	*3321*	0	*120*	*22-172*	0			
Surr: Nitrobenzene-d5	*3829*	0	*3321*	0	*115*	*8-140*	0			

MSD	Sample ID: **1708856-04B MSD**				Units: **µg/Kg**			Analysis Date: **8/16/2017 04:31 PM**		
Client ID:		Run ID: **SVMS6_170816A**			SeqNo: **4589263**		Prep Date: **8/15/2017**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1217	41	1306	0	93.2	40-140	1305	7	30	
Anthracene	1483	41	1306	58.37	109	40-140	1572	5.85	30	
Benzo(a)anthracene	1551	41	1306	187.2	104	40-140	1540	0.71	30	
Benzo(a)pyrene	1649	41	1306	209.9	110	40-140	1598	3.17	30	
Benzo(b)fluoranthene	1748	41	1306	286.8	112	40-140	1669	4.6	30	
Benzo(k)fluoranthene	1446	41	1306	190.5	96.1	40-140	1484	2.6	30	
Chrysene	1516	41	1306	233.3	98.2	40-140	1486	1.95	30	
Dibenzo(a,h)anthracene	1447	41	1306	47.62	107	40-140	1414	2.31	30	
Fluoranthene	2183	41	1306	476.3	131	40-140	2169	0.635	30	
Fluorene	1474	41	1306	0	113	40-140	1560	5.67	30	
Indeno(1,2,3-cd)pyrene	1569	41	1306	204.6	104	40-140	1562	0.47	30	
Naphthalene	1383	41	1306	0	106	40-140	1546	11.1	30	
Pyrene	2407	41	1306	510.8	145	40-140	2363	1.86	30	S
Surr: 2-Fluorobiphenyl	*3128*	0	*3266*	0	*95.8*	*20-140*	3363	*7.22*	*0*	
Surr: 4-Terphenyl-d14	*3745*	0	*3266*	0	*115*	*22-172*	3996	*6.48*	*0*	
Surr: Nitrobenzene-d5	*3542*	0	*3266*	0	*108*	*8-140*	3829	*7.76*	*0*	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105916** Instrument ID **VMS5** Method: **SW8260B**

MBLK Sample ID: **MBLK-105916-105916** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 12:58 PM**
Client ID: Run ID: **VMS5_170815A** SeqNo: **4583313** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30	0	0	0	0-0	0			
Ethylbenzene	ND	30	0	0	0	0-0	0			
m,p-Xylene	ND	60	0	0	0	0-0	0			
o-Xylene	ND	30	0	0	0	0-0	0			
Toluene	ND	30	0	0	0	0-0	0			
Xylenes, Total	ND	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	*971*	0	*1000*	0	*97.1*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*989*	0	*1000*	0	*98.9*	*70-130*	0			
Surr: Dibromofluoromethane	*983*	0	*1000*	0	*98.3*	*70-130*	0			
Surr: Toluene-d8	*972.5*	0	*1000*	0	*97.2*	*70-130*	0			

LCS Sample ID: **LCS-105916-105916** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 11:40 AM**
Client ID: Run ID: **VMS5_170815A** SeqNo: **4583312** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	961.5	30	1000	0	96.2	75-125	0			
Ethylbenzene	922	30	1000	0	92.2	75-125	0			
m,p-Xylene	1872	60	2000	0	93.6	80-125	0			
o-Xylene	928	30	1000	0	92.8	75-125	0			
Toluene	925	30	1000	0	92.5	70-125	0			
Xylenes, Total	2800	90	3000	0	93.3	75-125	0			
Surr: 1,2-Dichloroethane-d4	*958.5*	0	*1000*	0	*95.8*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1016*	0	*1000*	0	*102*	*70-130*	0			
Surr: Dibromofluoromethane	*981.5*	0	*1000*	0	*98.2*	*70-130*	0			
Surr: Toluene-d8	*1010*	0	*1000*	0	*101*	*70-130*	0			

MS Sample ID: **1708877-03A MS** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 07:54 PM**
Client ID: Run ID: **VMS5_170815A** SeqNo: **4585241** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1328	37	1247	0	106	75-125	0			
Ethylbenzene	1259	37	1247	0	101	75-125	0			
m,p-Xylene	2507	75	2494	0	100	80-125	0			
o-Xylene	1265	37	1247	0	101	75-125	0			
Toluene	1257	37	1247	0	101	70-125	0			
Xylenes, Total	3772	110	3742	0	101	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1142*	0	*1247*	0	*91.6*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1309*	0	*1247*	0	*105*	*70-130*	0			
Surr: Dibromofluoromethane	*1199*	0	*1247*	0	*96.2*	*70-130*	0			
Surr: Toluene-d8	*1233*	0	*1247*	0	*98.9*	*70-130*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **105916** Instrument ID **VMS5** Method: **SW8260B**

MSD Sample ID: **1708877-03A MSD** Units: **µg/Kg-dry** Analysis Date: **8/15/2017 08:20 PM**
Client ID: Run ID: **VMS5_170815A** SeqNo: **4585244** Prep Date: **8/15/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1280	37	1247	0	103	75-125	1328	3.63	30	
Ethylbenzene	1216	37	1247	0	97.5	75-125	1259	3.48	30	
m,p-Xylene	2411	75	2494	0	96.6	80-125	2507	3.91	30	
o-Xylene	1212	37	1247	0	97.2	75-125	1265	4.33	30	
Toluene	1217	37	1247	0	97.6	70-125	1257	3.23	30	
Xylenes, Total	3622	110	3742	0	96.8	75-125	3772	4.05	30	
Surr: 1,2-Dichloroethane-d4	*1109*	0	*1247*	0	*88.9*	*70-130*	1142	*2.99*	*30*	
Surr: 4-Bromofluorobenzene	*1264*	0	*1247*	0	*101*	*70-130*	1309	*3.49*	*30*	
Surr: Dibromofluoromethane	*1190*	0	*1247*	0	*95.4*	*70-130*	1199	*0.783*	*30*	
Surr: Toluene-d8	*1225*	0	*1247*	0	*98.2*	*70-130*	1233	*0.659*	*30*	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **106050** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP Sample ID: **1708878-01A DUP** Units: **mmhos/cm @25°** Analysis Date: **8/18/2017 02:15 PM**
Client ID: **20170814-5A-CUT(SW)** Run ID: **WETCHEM_170818I** SeqNo: **4591519** Prep Date: **8/17/2017** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	8.18	0.25	0	0	0		8.67	5.82	50	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **106058** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-106058-106058** Units: **s.u.** Analysis Date: **8/17/2017 12:00 PM**
Client ID: Run ID: **WETCHEM_170817I** SeqNo: **4588777** Prep Date: **8/17/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	4.02	0.10	4	0	100	90-110	0			

DUP Sample ID: **17081003-01B DUP** Units: **s.u.** Analysis Date: **8/17/2017 12:00 PM**
Client ID: Run ID: **WETCHEM_170817I** SeqNo: **4588780** Prep Date: **8/17/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.72	0.10	0	0	0	0-0	6.81	1.33	20	

DUP Sample ID: **17081007-01A DUP** Units: **s.u.** Analysis Date: **8/17/2017 12:00 PM**
Client ID: Run ID: **WETCHEM_170817I** SeqNo: **4588782** Prep Date: **8/17/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.52	0.10	0	0	0	0-0	6.64	1.82	20	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **106278** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-106278-106278** Units: **mg/Kg** Analysis Date: **8/22/2017 03:00 PM**
Client ID: Run ID: **WETCHEM_170822J** SeqNo: **4596907** 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
Chromium, Hexavalent	ND	1.0								

LCS Sample ID: **LCS-106278-106278** Units: **mg/Kg** Analysis Date: **8/22/2017 03:00 PM**
Client ID: Run ID: **WETCHEM_170822J** SeqNo: **4596908** 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
Chromium, Hexavalent	4.2	1.0	5	0	84	80-120	0			

MS Sample ID: **17081026-05B MS** Units: **mg/Kg** Analysis Date: **8/22/2017 03:00 PM**
Client ID: Run ID: **WETCHEM_170822J** SeqNo: **4596910** 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
Chromium, Hexavalent	5.119	0.99	4.95	0.2692	98	75-125	0			

MS Sample ID: **17081026-05B MSI** Units: **mg/Kg** Analysis Date: **8/22/2017 03:00 PM**
Client ID: Run ID: **WETCHEM_170822J** SeqNo: **4596912** Prep Date: **8/21/2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2152	97	2218	0.2692	97	75-125	0			

MSD Sample ID: **17081026-05B MSD** Units: **mg/Kg** Analysis Date: **8/22/2017 03:00 PM**
Client ID: Run ID: **WETCHEM_170822J** SeqNo: **4596911** 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
Chromium, Hexavalent	5.3	1.0	5	0.2692	101	75-125	5.119	3.48	20	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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

Client: Caerus Oil and Gas LLC
Work Order: 1708878
Project: 5A

QC BATCH REPORT

Batch ID: **R217871** Instrument ID **MOIST** Method: **SW3550C**

MBLK	Sample ID: **WBLKS-R217871**				Units: **% of sample**			Analysis Date: **8/15/2017 10:57 AM**		
Client ID:		Run ID: **MOIST_170815A**			SeqNo: **4584175**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS	Sample ID: **LCS-R217871**				Units: **% of sample**			Analysis Date: **8/15/2017 10:57 AM**		
Client ID:		Run ID: **MOIST_170815A**			SeqNo: **4584174**		Prep Date:		DF: **1**	
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			

DUP	Sample ID: **1708865-01B DUP**				Units: **% of sample**			Analysis Date: **8/15/2017 10:57 AM**		
Client ID:		Run ID: **MOIST_170815A**			SeqNo: **4584165**		Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.99	0.050	0	0	0	0-0	17.77	4.49	5	

The following samples were analyzed in this batch: 1708878-01A 1708878-02A 1708878-03A

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 2024

WORKORDER # 1708878

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

PROJECT NAME	A5	SAMPLER	Brett Middleton
PROJECT No.		SITE ID	
		EDD FORMAT	
		PURCHASE ORDER	
COMPANY NAME	Caerus Piceance,LLC	BILL TO COMPANY	Caerus Piceance, LLC
SEND REPORT TO	Jake Janicek	INVOICE ATTN TO	Jake Janicek
ADDRESS	120 N. Railroad,suite D	ADDRESS	120 N. Railroad,suite D
CITY / STATE / ZIP	Parachute Co 81635	CITY / STATE / ZIP	Parachute CO 81635
PHONE	970-285-9808	PHONE	970-285-9808
FAX		FAX	
E-MAIL	jjanicek@caerusoilandgas.com	E-MAIL	invoices@caerusoilandgas.com

DATE 8-14-17

TURNAROUND Same Day

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	TPH/GRO/DRO	BTEX	Table 910 PAH's	EC	PH	SAR	Benzene	Table 910 Metals
1	20170814-A5-CUT(SW)	S	8-14-17	1415	2	/		X	X	X	X	X	X	-	X
2	20170814-A5-CUT(S)	S	8-14-17	1420	2	/		X	X	X	X	X	X		X
3	20170814-A5-CUT(SE)	S	8-14-17	1425	2	/		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:

SAME Day BTEX
Next Day PAH
STD - Rest

SDZ 3.2°C

QC PACKAGE (check below)	
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

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Brett Middleton	8-14-17	1515
RECEIVED BY		N. Martinez	8-14-17	1515
RELINQUISHED BY		N. M	8-14-17	1830
RECEIVED BY		Diane E. Shea	8/15/17	0930
RELINQUISHED BY				
RECEIVED BY				

ALS Group, USA

Sample Receipt Checklist

Client Name: **CAERUS** Date/Time Received: **15-Aug-17 09:30**

Work Order: **1708878** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 15-Aug-17 (Date) Reviewed by: Chad Whelton (eSignature) 15-Aug-17 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/3.2 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	8/15/2017 9:49:00 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: