31-Jul-2018

Brett Middleton
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **Mesa 7** Work Order: **18071334**

Dear Brett,

ALS Environmental received 7 samples on 20-Jul-2018 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 38.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 31-Jul-18

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Work Order: **18071334**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
18071334-01	20180719-Mesa 7 (Middle Bottom) @ 10'	Soil		7/19/2018 11:37	7/20/2018 09:30	☐
18071334-02	20180719-Mesa 7 (N Wall) @ 9'	Soil		7/19/2018 11:40	7/20/2018 09:30	☐
18071334-03	20180719-Mesa 7 (W Wall) @ 9'	Soil		7/19/2018 11:41	7/20/2018 09:30	☐
18071334-04	20180719-Mesa 7 (E Wall) @ 9'	Soil		7/19/2018 11:43	7/20/2018 09:30	☐
18071334-05	20180719-Mesa 7 (South Bottom) @ 13'	Soil		7/19/2018 13:30	7/20/2018 09:30	☐
18071334-06	20180719-Mesa 7 (S Wall) @ 9'	Soil		7/19/2018 13:45	7/20/2018 09:30	☐
18071334-07	20180719-Mesa 7 (Spoils)	Soil		7/19/2018 14:40	7/20/2018 09:30	☐

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Work Order: 18071334

Case Narrative

Batch 121783, Method PNLVI_8270_S, Sample 18071334-01A MSD: The RPDs between the MS and MSD were outside the control limits for Fluoranthene and Fluorene. The corresponding results in the parent sample should be considered estimated.

Batch 121940, Method CR6_7196_S, Sample 18071334-04A MSD: The RPD between the MS and MSD was outside the control limit for Hexavalent Chromium. The corresponding result in the parent sample should be considered estimated.

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
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
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: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (Middle Bottom) @ 10'
Collection Date: 7/19/2018 11:37 AM

Work Order: 18071334
Lab ID: 18071334-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	U		3.6	6.3	mg/Kg-dry	1	7/29/2018 04:20
Surr: 4-Terphenyl-d14	*55.6*			*34-130*	*%REC*	1	7/29/2018 04:20
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	U		3.2	7.7	mg/Kg	1	7/23/2018 20:24
Surr: Toluene-d8	*113*			*71-123*	*%REC*	1	7/23/2018 20:24
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.038**		**0.0023**	**0.023**	**mg/Kg-dry**	1	7/26/2018 15:48
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**6.3**		**0.11**	**0.40**	**mg/Kg-dry**	1	7/25/2018 03:30
Barium	**270**		**0.16**	**0.40**	**mg/Kg-dry**	1	7/25/2018 03:30
Cadmium	**0.20**	J	**0.039**	**0.81**	**mg/Kg-dry**	1	7/25/2018 03:30
Chromium	**35**		**0.023**	**0.40**	**mg/Kg-dry**	1	7/25/2018 03:30
Copper	**25**		**0.18**	**0.81**	**mg/Kg-dry**	1	7/25/2018 03:30
Lead	**11**		**0.086**	**0.40**	**mg/Kg-dry**	1	7/25/2018 03:30
Nickel	**23**		**0.16**	**0.40**	**mg/Kg-dry**	1	7/25/2018 03:30
Selenium	**0.75**	J	**0.23**	**0.81**	**mg/Kg-dry**	1	7/25/2018 03:30
Silver	U		0.050	0.40	mg/Kg-dry	1	7/25/2018 03:30
Zinc	**57**		**0.065**	**0.81**	**mg/Kg-dry**	1	7/25/2018 03:30
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**73**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:18
Magnesium	**8.2**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:18
Sodium	**26**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:18
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**0.76**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.025	0.052	mg/Kg-dry	1	7/27/2018 01:26
Anthracene	U		0.014	0.052	mg/Kg-dry	1	7/27/2018 01:26
Benzo(a)anthracene	U		0.013	0.052	mg/Kg-dry	1	7/27/2018 01:26
Benzo(a)pyrene	U		0.022	0.052	mg/Kg-dry	1	7/27/2018 01:26
Benzo(b)fluoranthene	U		0.016	0.052	mg/Kg-dry	1	7/27/2018 01:26
Benzo(k)fluoranthene	U		0.018	0.052	mg/Kg-dry	1	7/27/2018 01:26
Chrysene	U		0.019	0.052	mg/Kg-dry	1	7/27/2018 01:26
Dibenzo(a,h)anthracene	U		0.033	0.052	mg/Kg-dry	1	7/27/2018 01:26
Fluoranthene	U		0.031	0.052	mg/Kg-dry	1	7/27/2018 01:26

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

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (Middle Bottom) @ 10'
Collection Date: 7/19/2018 11:37 AM

Work Order: 18071334
Lab ID: 18071334-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.015	0.052	mg/Kg-dry	1	7/27/2018 01:26
Indeno(1,2,3-cd)pyrene	U		0.041	0.052	mg/Kg-dry	1	7/27/2018 01:26
Naphthalene	U		0.019	0.052	mg/Kg-dry	1	7/27/2018 01:26
Pyrene	U		0.023	0.052	mg/Kg-dry	1	7/27/2018 01:26
Surr: 2-Fluorobiphenyl	*88.5*			*20-140*	*%REC*	1	7/27/2018 01:26
Surr: 4-Terphenyl-d14	*70.6*			*22-172*	*%REC*	1	7/27/2018 01:26
Surr: Nitrobenzene-d5	*100*			*28-140*	*%REC*	1	7/27/2018 01:26
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 22:42
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 22:42
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 22:42
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 22:42
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 22:42
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 22:42
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-130*	*%REC*	1	7/23/2018 22:42
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	1	7/23/2018 22:42
Surr: Dibromofluoromethane	*87.0*			*70-130*	*%REC*	1	7/23/2018 22:42
Surr: Toluene-d8	*101*			*70-130*	*%REC*	1	7/23/2018 22:42
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.55**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**35**		**0.39**	**1.3**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.37	1.2	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**21**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/24/18		Analyst: **NW**
pH	**8.30**		**0.10**	**0.100**	**s.u.**	1	7/24/2018 16:30

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (N Wall) @ 9'
Collection Date: 7/19/2018 11:40 AM

Work Order: 18071334
Lab ID: 18071334-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**43**		**4.0**	**6.9**	**mg/Kg-dry**	1	7/29/2018 11:10
Surr: 4-Terphenyl-d14	*59.6*			*34-130*	*%REC*	1	7/29/2018 11:10
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	**27**		**3.8**	**9.1**	**mg/Kg**	1	7/23/2018 21:41
Surr: Toluene-d8	*114*			*71-123*	*%REC*	1	7/23/2018 21:41
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.036**		**0.0023**	**0.023**	**mg/Kg-dry**	1	7/26/2018 15:51
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**4.9**		**0.14**	**0.54**	**mg/Kg-dry**	1	7/25/2018 03:36
Barium	**260**		**0.22**	**0.54**	**mg/Kg-dry**	1	7/25/2018 03:36
Cadmium	**0.12**	J	**0.052**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:36
Chromium	**38**		**0.030**	**0.54**	**mg/Kg-dry**	1	7/25/2018 03:36
Copper	**19**		**0.24**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:36
Lead	**13**		**0.11**	**0.54**	**mg/Kg-dry**	1	7/25/2018 03:36
Nickel	**18**		**0.22**	**0.54**	**mg/Kg-dry**	1	7/25/2018 03:36
Selenium	**0.87**	J	**0.30**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:36
Silver	U		0.067	0.54	mg/Kg-dry	1	7/25/2018 03:36
Zinc	**53**		**0.087**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:36
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**47**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:19
Magnesium	**7.3**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:19
Sodium	**27**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:19
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**0.97**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.028	0.058	mg/Kg-dry	1	7/25/2018 17:31
Anthracene	U		0.016	0.058	mg/Kg-dry	1	7/25/2018 17:31
Benzo(a)anthracene	U		0.015	0.058	mg/Kg-dry	1	7/25/2018 17:31
Benzo(a)pyrene	U		0.024	0.058	mg/Kg-dry	1	7/25/2018 17:31
Benzo(b)fluoranthene	U		0.018	0.058	mg/Kg-dry	1	7/25/2018 17:31
Benzo(k)fluoranthene	U		0.020	0.058	mg/Kg-dry	1	7/25/2018 17:31
Chrysene	U		0.021	0.058	mg/Kg-dry	1	7/25/2018 17:31
Dibenzo(a,h)anthracene	U		0.037	0.058	mg/Kg-dry	1	7/25/2018 17:31
Fluoranthene	U		0.035	0.058	mg/Kg-dry	1	7/25/2018 17:31

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (N Wall) @ 9'
Collection Date: 7/19/2018 11:40 AM

Work Order: 18071334
Lab ID: 18071334-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.017	0.058	mg/Kg-dry	1	7/25/2018 17:31
Indeno(1,2,3-cd)pyrene	U		0.045	0.058	mg/Kg-dry	1	7/25/2018 17:31
Naphthalene	U		0.021	0.058	mg/Kg-dry	1	7/25/2018 17:31
Pyrene	U		0.026	0.058	mg/Kg-dry	1	7/25/2018 17:31
Surr: 2-Fluorobiphenyl	*76.0*			*20-140*	*%REC*	1	7/25/2018 17:31
Surr: 4-Terphenyl-d14	*60.5*			*22-172*	*%REC*	1	7/25/2018 17:31
Surr: Nitrobenzene-d5	*39.0*			*28-140*	*%REC*	1	7/25/2018 17:31
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 22:57
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 22:57
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 22:57
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 22:57
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 22:57
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 22:57
Surr: 1,2-Dichloroethane-d4	*102*			*70-130*	*%REC*	1	7/23/2018 22:57
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	1	7/23/2018 22:57
Surr: Dibromofluoromethane	*87.5*			*70-130*	*%REC*	1	7/23/2018 22:57
Surr: Toluene-d8	*99.0*			*70-130*	*%REC*	1	7/23/2018 22:57
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.43**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**38**		**0.44**	**1.4**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.44	1.4	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**29**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/24/18		Analyst: **NW**
pH	**8.09**		**0.10**	**0.100**	**s.u.**	1	7/24/2018 16:30

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (W Wall) @ 9'
Collection Date: 7/19/2018 11:41 AM

Work Order: 18071334
Lab ID: 18071334-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**31**		**3.8**	**6.7**	**mg/Kg-dry**	1	7/29/2018 11:39
Surr: 4-Terphenyl-d14	*55.6*			*34-130*	*%REC*	1	7/29/2018 11:39
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	**20**		**3.6**	**8.7**	**mg/Kg**	1	7/23/2018 22:07
Surr: Toluene-d8	*119*			*71-123*	*%REC*	1	7/23/2018 22:07
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.032**		**0.0022**	**0.022**	**mg/Kg-dry**	1	7/26/2018 15:54
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**6.8**		**0.14**	**0.55**	**mg/Kg-dry**	1	7/25/2018 03:42
Barium	**310**		**0.22**	**0.55**	**mg/Kg-dry**	1	7/25/2018 03:42
Cadmium	**0.26**	J	**0.053**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:42
Chromium	**35**		**0.031**	**0.55**	**mg/Kg-dry**	1	7/25/2018 03:42
Copper	**23**		**0.24**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:42
Lead	**14**		**0.12**	**0.55**	**mg/Kg-dry**	1	7/25/2018 03:42
Nickel	**21**		**0.22**	**0.55**	**mg/Kg-dry**	1	7/25/2018 03:42
Selenium	**0.85**	J	**0.31**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:42
Silver	U		0.068	0.55	mg/Kg-dry	1	7/25/2018 03:42
Zinc	**58**		**0.088**	**1.1**	**mg/Kg-dry**	1	7/25/2018 03:42
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**96**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:21
Magnesium	**11**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:21
Sodium	**180**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:21
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**4.7**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.026	0.055	mg/Kg-dry	1	7/25/2018 17:46
Anthracene	U		0.015	0.055	mg/Kg-dry	1	7/25/2018 17:46
Benzo(a)anthracene	U		0.014	0.055	mg/Kg-dry	1	7/25/2018 17:46
Benzo(a)pyrene	U		0.023	0.055	mg/Kg-dry	1	7/25/2018 17:46
Benzo(b)fluoranthene	U		0.017	0.055	mg/Kg-dry	1	7/25/2018 17:46
Benzo(k)fluoranthene	U		0.019	0.055	mg/Kg-dry	1	7/25/2018 17:46
Chrysene	U		0.020	0.055	mg/Kg-dry	1	7/25/2018 17:46
Dibenzo(a,h)anthracene	U		0.035	0.055	mg/Kg-dry	1	7/25/2018 17:46
Fluoranthene	U		0.033	0.055	mg/Kg-dry	1	7/25/2018 17:46

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

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (W Wall) @ 9'
Collection Date: 7/19/2018 11:41 AM

Work Order: 18071334
Lab ID: 18071334-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.016	0.055	mg/Kg-dry	1	7/25/2018 17:46
Indeno(1,2,3-cd)pyrene	U		0.043	0.055	mg/Kg-dry	1	7/25/2018 17:46
Naphthalene	U		0.020	0.055	mg/Kg-dry	1	7/25/2018 17:46
Pyrene	U		0.025	0.055	mg/Kg-dry	1	7/25/2018 17:46
Surr: 2-Fluorobiphenyl	*65.6*			*20-140*	*%REC*	1	7/25/2018 17:46
Surr: 4-Terphenyl-d14	*52.4*			*22-172*	*%REC*	1	7/25/2018 17:46
Surr: Nitrobenzene-d5	*41.4*			*28-140*	*%REC*	1	7/25/2018 17:46
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 23:12
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 23:12
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 23:12
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 23:12
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 23:12
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 23:12
Surr: 1,2-Dichloroethane-d4	*98.9*			*70-130*	*%REC*	1	7/23/2018 23:12
Surr: 4-Bromofluorobenzene	*105*			*70-130*	*%REC*	1	7/23/2018 23:12
Surr: Dibromofluoromethane	*88.4*			*70-130*	*%REC*	1	7/23/2018 23:12
Surr: Toluene-d8	*98.4*			*70-130*	*%REC*	1	7/23/2018 23:12
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**1.4**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**35**		**0.42**	**1.4**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.42	1.4	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**27**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/25/18		Analyst: **NW**
pH	**8.59**		**0.10**	**0.100**	**s.u.**	1	7/25/2018 17:00

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (E Wall) @ 9'
Collection Date: 7/19/2018 11:43 AM

Work Order: 18071334
Lab ID: 18071334-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**7.7**		**3.8**	**6.6**	**mg/Kg-dry**	1	7/29/2018 12:08
Surr: 4-Terphenyl-d14	*51.1*			*34-130*	*%REC*	1	7/29/2018 12:08
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	**16**		**3.5**	**8.3**	**mg/Kg**	1	7/23/2018 22:34
Surr: Toluene-d8	*118*			*71-123*	*%REC*	1	7/23/2018 22:34
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.051**		**0.0026**	**0.026**	**mg/Kg-dry**	1	7/26/2018 16:04
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**15**		**0.12**	**0.48**	**mg/Kg-dry**	1	7/25/2018 03:48
Barium	**330**		**0.19**	**0.48**	**mg/Kg-dry**	1	7/25/2018 03:48
Cadmium	**0.27**	J	**0.046**	**0.95**	**mg/Kg-dry**	1	7/25/2018 03:48
Chromium	**42**		**0.027**	**0.48**	**mg/Kg-dry**	1	7/25/2018 03:48
Copper	**29**		**0.21**	**0.95**	**mg/Kg-dry**	1	7/25/2018 03:48
Lead	**14**		**0.10**	**0.48**	**mg/Kg-dry**	1	7/25/2018 03:48
Nickel	**21**		**0.19**	**0.48**	**mg/Kg-dry**	1	7/25/2018 03:48
Selenium	**1.3**		**0.27**	**0.95**	**mg/Kg-dry**	1	7/25/2018 03:48
Silver	U		0.059	0.48	mg/Kg-dry	1	7/25/2018 03:48
Zinc	**67**		**0.076**	**0.95**	**mg/Kg-dry**	1	7/25/2018 03:48
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**130**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:23
Magnesium	**17**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:23
Sodium	**31**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:23
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**0.68**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.026	0.055	mg/Kg-dry	1	7/25/2018 18:01
Anthracene	U		0.015	0.055	mg/Kg-dry	1	7/25/2018 18:01
Benzo(a)anthracene	U		0.014	0.055	mg/Kg-dry	1	7/25/2018 18:01
Benzo(a)pyrene	U		0.023	0.055	mg/Kg-dry	1	7/25/2018 18:01
Benzo(b)fluoranthene	U		0.017	0.055	mg/Kg-dry	1	7/25/2018 18:01
Benzo(k)fluoranthene	U		0.019	0.055	mg/Kg-dry	1	7/25/2018 18:01
Chrysene	U		0.019	0.055	mg/Kg-dry	1	7/25/2018 18:01
Dibenzo(a,h)anthracene	U		0.035	0.055	mg/Kg-dry	1	7/25/2018 18:01
Fluoranthene	U		0.033	0.055	mg/Kg-dry	1	7/25/2018 18:01

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

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (E Wall) @ 9'
Collection Date: 7/19/2018 11:43 AM

Work Order: 18071334
Lab ID: 18071334-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.016	0.055	mg/Kg-dry	1	7/25/2018 18:01
Indeno(1,2,3-cd)pyrene	U		0.043	0.055	mg/Kg-dry	1	7/25/2018 18:01
Naphthalene	U		0.020	0.055	mg/Kg-dry	1	7/25/2018 18:01
Pyrene	U		0.024	0.055	mg/Kg-dry	1	7/25/2018 18:01
Surr: 2-Fluorobiphenyl	*68.8*			*20-140*	*%REC*	1	7/25/2018 18:01
Surr: 4-Terphenyl-d14	*51.9*			*22-172*	*%REC*	1	7/25/2018 18:01
Surr: Nitrobenzene-d5	*40.7*			*28-140*	*%REC*	1	7/25/2018 18:01
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 23:27
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 23:27
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 23:27
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 23:27
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 23:27
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 23:27
Surr: 1,2-Dichloroethane-d4	*103*			*70-130*	*%REC*	1	7/23/2018 23:27
Surr: 4-Bromofluorobenzene	*100*			*70-130*	*%REC*	1	7/23/2018 23:27
Surr: Dibromofluoromethane	*89.2*			*70-130*	*%REC*	1	7/23/2018 23:27
Surr: Toluene-d8	*101*			*70-130*	*%REC*	1	7/23/2018 23:27
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**1.0**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**42**		**0.41**	**1.3**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.41	1.3	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**25**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/25/18		Analyst: **NW**
pH	**7.96**		**0.10**	**0.100**	**s.u.**	1	7/25/2018 17:00

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (South Bottom) @ 13'
Collection Date: 7/19/2018 01:30 PM

Work Order: 18071334
Lab ID: 18071334-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**16**		**6.6**	**11**	**mg/Kg-dry**	1	7/29/2018 12:38
Surr: 4-Terphenyl-d14	*53.6*			*34-130*	*%REC*	1	7/29/2018 12:38
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	U		3.1	7.3	mg/Kg	1	7/23/2018 23:00
Surr: Toluene-d8	*117*			*71-123*	*%REC*	1	7/23/2018 23:00
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.033**		**0.0020**	**0.020**	**mg/Kg-dry**	1	7/26/2018 16:06
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**5.8**		**0.11**	**0.44**	**mg/Kg-dry**	1	7/25/2018 03:54
Barium	**250**		**0.18**	**0.44**	**mg/Kg-dry**	1	7/25/2018 03:54
Cadmium	**0.48**	J	**0.042**	**0.88**	**mg/Kg-dry**	1	7/25/2018 03:54
Chromium	**34**		**0.025**	**0.44**	**mg/Kg-dry**	1	7/25/2018 03:54
Copper	**27**		**0.19**	**0.88**	**mg/Kg-dry**	1	7/25/2018 03:54
Lead	**12**		**0.094**	**0.44**	**mg/Kg-dry**	1	7/25/2018 03:54
Nickel	**20**		**0.18**	**0.44**	**mg/Kg-dry**	1	7/25/2018 03:54
Selenium	**0.66**	J	**0.25**	**0.88**	**mg/Kg-dry**	1	7/25/2018 03:54
Silver	U		0.055	0.44	mg/Kg-dry	1	7/25/2018 03:54
Zinc	**70**		**0.071**	**0.88**	**mg/Kg-dry**	1	7/25/2018 03:54
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**91**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:24
Magnesium	**12**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:24
Sodium	**58**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:24
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**1.5**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.046	0.096	mg/Kg-dry	1	7/25/2018 18:16
Anthracene	U		0.026	0.096	mg/Kg-dry	1	7/25/2018 18:16
Benzo(a)anthracene	U		0.024	0.096	mg/Kg-dry	1	7/25/2018 18:16
Benzo(a)pyrene	U		0.039	0.096	mg/Kg-dry	1	7/25/2018 18:16
Benzo(b)fluoranthene	U		0.030	0.096	mg/Kg-dry	1	7/25/2018 18:16
Benzo(k)fluoranthene	U		0.033	0.096	mg/Kg-dry	1	7/25/2018 18:16
Chrysene	U		0.034	0.096	mg/Kg-dry	1	7/25/2018 18:16
Dibenzo(a,h)anthracene	U		0.060	0.096	mg/Kg-dry	1	7/25/2018 18:16
Fluoranthene	U		0.057	0.096	mg/Kg-dry	1	7/25/2018 18:16

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

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (South Bottom) @ 13'
Collection Date: 7/19/2018 01:30 PM

Work Order: 18071334
Lab ID: 18071334-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.028	0.096	mg/Kg-dry	1	7/25/2018 18:16
Indeno(1,2,3-cd)pyrene	U		0.074	0.096	mg/Kg-dry	1	7/25/2018 18:16
Naphthalene	U		0.035	0.096	mg/Kg-dry	1	7/25/2018 18:16
Pyrene	U		0.042	0.096	mg/Kg-dry	1	7/25/2018 18:16
Surr: 2-Fluorobiphenyl	*85.9*			*20-140*	*%REC*	1	7/25/2018 18:16
Surr: 4-Terphenyl-d14	*77.7*			*22-172*	*%REC*	1	7/25/2018 18:16
Surr: Nitrobenzene-d5	*42.3*			*28-140*	*%REC*	1	7/25/2018 18:16
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 23:42
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 23:42
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 23:42
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 23:42
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 23:42
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 23:42
Surr: 1,2-Dichloroethane-d4	*101*			*70-130*	*%REC*	1	7/23/2018 23:42
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	1	7/23/2018 23:42
Surr: Dibromofluoromethane	*88.0*			*70-130*	*%REC*	1	7/23/2018 23:42
Surr: Toluene-d8	*102*			*70-130*	*%REC*	1	7/23/2018 23:42
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.90**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**34**		**0.38**	**1.2**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.38	1.2	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**19**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/25/18		Analyst: **NW**
pH	**8.29**		**0.10**	**0.100**	**s.u.**	1	7/25/2018 17:00

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (S Wall) @ 9'
Collection Date: 7/19/2018 01:45 PM

Work Order: 18071334
Lab ID: 18071334-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**7.9**		**3.6**	**6.3**	**mg/Kg-dry**	1	7/29/2018 13:07
Surr: 4-Terphenyl-d14	*51.6*			*34-130*	*%REC*	1	7/29/2018 13:07
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	U		3.3	7.8	mg/Kg	1	7/23/2018 23:26
Surr: Toluene-d8	*117*			*71-123*	*%REC*	1	7/23/2018 23:26
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.044**		**0.0022**	**0.022**	**mg/Kg-dry**	1	7/26/2018 16:09
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**12**		**0.14**	**0.52**	**mg/Kg-dry**	1	7/25/2018 04:19
Barium	**240**		**0.21**	**0.52**	**mg/Kg-dry**	1	7/25/2018 04:19
Cadmium	**0.54**	J	**0.050**	**1.0**	**mg/Kg-dry**	1	7/25/2018 04:19
Chromium	**39**		**0.029**	**0.52**	**mg/Kg-dry**	1	7/25/2018 04:19
Copper	**22**		**0.23**	**1.0**	**mg/Kg-dry**	1	7/25/2018 04:19
Lead	**12**		**0.11**	**0.52**	**mg/Kg-dry**	1	7/25/2018 04:19
Nickel	**25**		**0.21**	**0.52**	**mg/Kg-dry**	1	7/25/2018 04:19
Selenium	**0.60**	J	**0.29**	**1.0**	**mg/Kg-dry**	1	7/25/2018 04:19
Silver	U		0.065	0.52	mg/Kg-dry	1	7/25/2018 04:19
Zinc	**58**		**0.084**	**1.0**	**mg/Kg-dry**	1	7/25/2018 04:19
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**76**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:26
Magnesium	**13**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:26
Sodium	**260**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:26
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**7.3**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.025	0.052	mg/Kg-dry	1	7/25/2018 18:31
Anthracene	U		0.014	0.052	mg/Kg-dry	1	7/25/2018 18:31
Benzo(a)anthracene	U		0.013	0.052	mg/Kg-dry	1	7/25/2018 18:31
Benzo(a)pyrene	U		0.022	0.052	mg/Kg-dry	1	7/25/2018 18:31
Benzo(b)fluoranthene	U		0.016	0.052	mg/Kg-dry	1	7/25/2018 18:31
Benzo(k)fluoranthene	U		0.018	0.052	mg/Kg-dry	1	7/25/2018 18:31
Chrysene	U		0.019	0.052	mg/Kg-dry	1	7/25/2018 18:31
Dibenzo(a,h)anthracene	U		0.033	0.052	mg/Kg-dry	1	7/25/2018 18:31
Fluoranthene	U		0.031	0.052	mg/Kg-dry	1	7/25/2018 18:31

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (S Wall) @ 9'
Collection Date: 7/19/2018 01:45 PM

Work Order: 18071334
Lab ID: 18071334-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.015	0.052	mg/Kg-dry	1	7/25/2018 18:31
Indeno(1,2,3-cd)pyrene	U		0.041	0.052	mg/Kg-dry	1	7/25/2018 18:31
Naphthalene	U		0.019	0.052	mg/Kg-dry	1	7/25/2018 18:31
Pyrene	U		0.023	0.052	mg/Kg-dry	1	7/25/2018 18:31
Surr: 2-Fluorobiphenyl	*78.8*			*20-140*	*%REC*	1	7/25/2018 18:31
Surr: 4-Terphenyl-d14	*66.9*			*22-172*	*%REC*	1	7/25/2018 18:31
Surr: Nitrobenzene-d5	*39.9*			*28-140*	*%REC*	1	7/25/2018 18:31
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/23/2018 23:56
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/23/2018 23:56
m,p-Xylene	U		0.014	0.060	mg/Kg	1	7/23/2018 23:56
o-Xylene	U		0.012	0.030	mg/Kg	1	7/23/2018 23:56
Toluene	U		0.0082	0.030	mg/Kg	1	7/23/2018 23:56
Xylenes, Total	U		0.026	0.090	mg/Kg	1	7/23/2018 23:56
Surr: 1,2-Dichloroethane-d4	*103*			*70-130*	*%REC*	1	7/23/2018 23:56
Surr: 4-Bromofluorobenzene	*97.1*			*70-130*	*%REC*	1	7/23/2018 23:56
Surr: Dibromofluoromethane	*90.0*			*70-130*	*%REC*	1	7/23/2018 23:56
Surr: Toluene-d8	*99.3*			*70-130*	*%REC*	1	7/23/2018 23:56
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**2.0**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**39**		**0.40**	**1.3**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.39	1.3	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**22**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/25/18		Analyst: **NW**
pH	**8.31**		**0.10**	**0.100**	**s.u.**	1	7/25/2018 17:00

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

ALS Group, USA

Date: *31-Jul-18*

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (Spoils)
Collection Date: 7/19/2018 02:40 PM

Work Order: 18071334
Lab ID: 18071334-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 7/24/18		Analyst: **RP**
DRO (C10-C28)	**26**		**3.8**	**6.6**	**mg/Kg-dry**	1	7/29/2018 13:36
Surr: 4-Terphenyl-d14	*51.6*			*34-130*	*%REC*	1	7/29/2018 13:36
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 7/23/18		Analyst: **RP**
GRO (C6-C10)	**60**		**3.5**	**8.3**	**mg/Kg**	1	7/23/2018 23:52
Surr: Toluene-d8	*119*			*71-123*	*%REC*	1	7/23/2018 23:52
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 7/26/18		Analyst: **RSH**
Mercury	**0.039**		**0.0020**	**0.020**	**mg/Kg-dry**	1	7/26/2018 16:12
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 7/24/18		Analyst: **ABL**
Arsenic	**7.1**		**0.12**	**0.47**	**mg/Kg-dry**	1	7/25/2018 04:25
Barium	**300**		**0.19**	**0.47**	**mg/Kg-dry**	1	7/25/2018 04:25
Cadmium	**0.27**	J	**0.045**	**0.93**	**mg/Kg-dry**	1	7/25/2018 04:25
Chromium	**35**		**0.026**	**0.47**	**mg/Kg-dry**	1	7/25/2018 04:25
Copper	**23**		**0.20**	**0.93**	**mg/Kg-dry**	1	7/25/2018 04:25
Lead	**12**		**0.099**	**0.47**	**mg/Kg-dry**	1	7/25/2018 04:25
Nickel	**21**		**0.19**	**0.47**	**mg/Kg-dry**	1	7/25/2018 04:25
Selenium	**1.2**		**0.26**	**0.93**	**mg/Kg-dry**	1	7/25/2018 04:25
Silver	U		0.058	0.47	mg/Kg-dry	1	7/25/2018 04:25
Zinc	**59**		**0.075**	**0.93**	**mg/Kg-dry**	1	7/25/2018 04:25
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Calcium	**78**		**0.86**	**5.0**	**mg/L**	10	7/26/2018 02:27
Magnesium	**10**		**0.068**	**2.0**	**mg/L**	10	7/26/2018 02:27
Sodium	**150**		**0.34**	**2.0**	**mg/L**	10	7/26/2018 02:27
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/25/18		Analyst: **STP**
Sodium Adsorption Ratio	**4.2**		**0.010**	**0.010**	**none**	1	7/25/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 7/24/18		Analyst: **RM**
Acenaphthene	U		0.026	0.055	mg/Kg-dry	1	7/25/2018 18:46
Anthracene	U		0.015	0.055	mg/Kg-dry	1	7/25/2018 18:46
Benzo(a)anthracene	U		0.014	0.055	mg/Kg-dry	1	7/25/2018 18:46
Benzo(a)pyrene	U		0.023	0.055	mg/Kg-dry	1	7/25/2018 18:46
Benzo(b)fluoranthene	U		0.017	0.055	mg/Kg-dry	1	7/25/2018 18:46
Benzo(k)fluoranthene	U		0.019	0.055	mg/Kg-dry	1	7/25/2018 18:46
Chrysene	U		0.020	0.055	mg/Kg-dry	1	7/25/2018 18:46
Dibenzo(a,h)anthracene	U		0.035	0.055	mg/Kg-dry	1	7/25/2018 18:46
Fluoranthene	U		0.033	0.055	mg/Kg-dry	1	7/25/2018 18:46

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

Client: Caerus Oil and Gas LLC
Project: Mesa 7
Sample ID: 20180719-Mesa 7 (Spoils)
Collection Date: 7/19/2018 02:40 PM

Work Order: 18071334
Lab ID: 18071334-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.016	0.055	mg/Kg-dry	1	7/25/2018 18:46
Indeno(1,2,3-cd)pyrene	U		0.043	0.055	mg/Kg-dry	1	7/25/2018 18:46
Naphthalene	U		0.020	0.055	mg/Kg-dry	1	7/25/2018 18:46
Pyrene	U		0.024	0.055	mg/Kg-dry	1	7/25/2018 18:46
Surr: 2-Fluorobiphenyl	*73.1*			*20-140*	*%REC*	1	7/25/2018 18:46
Surr: 4-Terphenyl-d14	*46.5*			*22-172*	*%REC*	1	7/25/2018 18:46
Surr: Nitrobenzene-d5	*37.3*			*28-140*	*%REC*	1	7/25/2018 18:46
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 7/23/18		Analyst: **BG**
Benzene	U		0.0051	0.030	mg/Kg	1	7/24/2018 12:12
Ethylbenzene	U		0.0063	0.030	mg/Kg	1	7/24/2018 12:12
m,p-Xylene	**0.20**		**0.014**	**0.060**	**mg/Kg**	1	7/24/2018 12:12
o-Xylene	**0.042**		**0.012**	**0.030**	**mg/Kg**	1	7/24/2018 12:12
Toluene	**0.022**	J	**0.0082**	**0.030**	**mg/Kg**	1	7/24/2018 12:12
Xylenes, Total	**0.24**		**0.026**	**0.090**	**mg/Kg**	1	7/24/2018 12:12
Surr: 1,2-Dichloroethane-d4	*101*			*70-130*	*%REC*	1	7/24/2018 12:12
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	1	7/24/2018 12:12
Surr: Dibromofluoromethane	*89.3*			*70-130*	*%REC*	1	7/24/2018 12:12
Surr: Toluene-d8	*102*			*70-130*	*%REC*	1	7/24/2018 12:12
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 7/25/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**1.4**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/25/2018 12:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JB**
Chromium, Trivalent	**35**		**0.41**	**1.3**	**mg/Kg-dry**	1	7/27/2018 17:50
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 7/25/18		Analyst: **MB**
Chromium, Hexavalent	U		0.40	1.3	mg/Kg-dry	1	7/26/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**25**		**0.025**	**0.050**	**% of sample**	1	7/25/2018 20:20
PH		Method:	**SW9045D**		Prep: EXTRACT / 7/25/18		Analyst: **NW**
pH	**7.96**		**0.10**	**0.100**	**s.u.**	1	7/25/2018 17:00

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

ALS Group, USA

Date: 31-Jul-18

Client: Caerus Oil and Gas LLC

Work Order: 18071334

Project: Mesa 7

QC BATCH REPORT

Batch ID: **121782** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-121782-121782** Units: **mg/Kg** Analysis Date: **7/29/2018 01:53 AM**

Client ID: Run ID: **GC8_180727A** SeqNo: **5174280** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	*1.683*	0	*3.33*	0	*50.6*	*34-130*	0			

LCS Sample ID: **DLCSS1-121782-121782** Units: **mg/Kg** Analysis Date: **7/29/2018 02:23 AM**

Client ID: Run ID: **GC8_180727A** SeqNo: **5174281** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	336.7	5.0	333	0	101	65-122	0			
Surr: 4-Terphenyl-d14	*1.717*	0	*3.33*	0	*51.6*	*34-130*	0			

MS Sample ID: **18071334-01A MS** Units: **mg/Kg** Analysis Date: **7/29/2018 02:52 AM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **GC8_180727A** SeqNo: **5174282** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	328.4	4.8	322	0	102	65-122	0			
Surr: 4-Terphenyl-d14	*1.741*	0	*3.22*	0	*54.1*	*34-130*	0			

MSD Sample ID: **18071334-01A MSD** Units: **mg/Kg** Analysis Date: **7/29/2018 03:21 AM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **GC8_180727A** SeqNo: **5174283** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	313.8	4.8	319.5	0	98.2	65-122	328.4	4.53	30	
Surr: 4-Terphenyl-d14	*1.791*	0	*3.195*	0	*56.1*	*34-130*	1.741	*2.85*	*30*	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121700** Instrument ID **GC10** Method: **SW8015D**

MBLK Sample ID: **MBLK-121700-121700** Units: **µg/Kg-dry** Analysis Date: **7/23/2018 04:53 PM**
Client ID: Run ID: **GC10_180723A** SeqNo: **5162750** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000	0	0	0		0			
Surr: Toluene-d8	*5961*	0	*5000*	0	*119*	*71-123*	0			

LCS Sample ID: **LCS-121700-121700** Units: **µg/Kg-dry** Analysis Date: **7/23/2018 03:56 PM**
Client ID: Run ID: **GC10_180723A** SeqNo: **5162748** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	453600	5,000	500000	0	90.7	71-123	0			
Surr: Toluene-d8	*5363*	0	*5000*	0	*107*	*71-123*	0			

MS Sample ID: **18071356-02A MS** Units: **µg/Kg-dry** Analysis Date: **7/24/2018 12:18 PM**
Client ID: Run ID: **GC10_180723A** SeqNo: **5162777** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	880700	6,800	676500	342300	79.6	71-123	0			
Surr: Toluene-d8	*8054*	0	*6765*	0	*119*	*71-123*	0			

MSD Sample ID: **18071356-02A MSD** Units: **µg/Kg-dry** Analysis Date: **7/24/2018 12:45 PM**
Client ID: Run ID: **GC10_180723A** SeqNo: **5162778** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	961000	6,800	676500	342300	91.5	71-123	880700	8.72	30	
Surr: Toluene-d8	*8105*	0	*6765*	0	*120*	*71-123*	8054	*0.628*	*30*	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121907** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-121907-121907** Units: **mg/Kg** Analysis Date: **7/26/2018 03:10 PM**
Client ID: Run ID: **HG1_180726A** SeqNo: **5169646** Prep Date: **7/26/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.01067	0.020								J

LCS Sample ID: **LCS-121907-121907** Units: **mg/Kg** Analysis Date: **7/26/2018 03:13 PM**
Client ID: Run ID: **HG1_180726A** SeqNo: **5169647** Prep Date: **7/26/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1725	0.020	0.1665	0	104	80-120	0			

MS Sample ID: **18071214-01BMS** Units: **mg/Kg** Analysis Date: **7/26/2018 03:33 PM**
Client ID: Run ID: **HG1_180726A** SeqNo: **5169655** Prep Date: **7/26/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1517	0.017	0.1444	0.01063	97.7	75-125	0			

MSD Sample ID: **18071214-01BMSD** Units: **mg/Kg** Analysis Date: **7/26/2018 03:36 PM**
Client ID: Run ID: **HG1_180726A** SeqNo: **5169656** Prep Date: **7/26/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1494	0.017	0.1435	0.01063	96.7	75-125	0.1517	1.53	35	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121789** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-121789-121789** Units: **mg/Kg** Analysis Date: **7/25/2018 02:34 AM**
Client ID: Run ID: **ICP2_180724A** SeqNo: **5165598** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.0297	0.25								J
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	0.04825	0.25								J
Zinc	0.0885	0.50								J

LCS Sample ID: **LCS-121789-121789** Units: **mg/Kg** Analysis Date: **7/25/2018 02:59 AM**
Client ID: Run ID: **ICP2_180724A** SeqNo: **5165602** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.768	0.25	5	0	95.4	80-120	0			
Barium	5.051	0.25	5	0	101	80-120	0			
Cadmium	4.98	0.50	5	0	99.6	80-120	0			
Chromium	5.169	0.25	5	0	103	80-120	0			
Copper	5.185	0.50	5	0	104	80-120	0			
Lead	5.017	0.25	5	0	100	80-120	0			
Nickel	5.13	0.25	5	0	103	80-120	0			
Selenium	4.705	0.50	5	0	94.1	80-120	0			
Silver	4.915	0.25	5	0	98.3	80-120	0			
Zinc	5.051	0.50	5	0	101	80-120	0			

MS Sample ID: **1807957-05BMS** Units: **mg/Kg** Analysis Date: **7/25/2018 05:09 AM**
Client ID: Run ID: **ICP2_180724A** SeqNo: **5165623** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.61	0.34	6.878	6.575	87.7	75-125	0			
Barium	202.7	0.34	6.878	189.1	197	75-125	0			SO
Cadmium	6.286	0.69	6.878	0.1146	89.7	75-125	0			
Chromium	23.07	0.34	6.878	12.77	150	75-125	0			S
Copper	25.21	0.69	6.878	18.33	100	75-125	0			
Lead	19.27	0.34	6.878	14.05	75.9	75-125	0			
Nickel	21	0.34	6.878	15.67	77.6	75-125	0			
Selenium	6.924	0.69	6.878	0.953	86.8	75-125	0			
Silver	6.96	0.34	6.878	-0.1008	103	75-125	0			
Zinc	82.11	0.69	6.878	75.3	99	75-125	0			O

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121789** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1807957-05BMSD** Units: **mg/Kg** Analysis Date: **7/25/2018 05:14 AM**
Client ID: Run ID: **ICP2_180724A** SeqNo: **5165624** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.75	0.34	6.887	6.575	89.7	75-125	12.61	1.13	20	
Barium	209.5	0.34	6.887	189.1	297	75-125	202.7	3.34	20	SO
Cadmium	6.329	0.69	6.887	0.1146	90.2	75-125	6.286	0.683	20	
Chromium	23.24	0.34	6.887	12.77	152	75-125	23.07	0.743	20	S
Copper	25.63	0.69	6.887	18.33	106	75-125	25.21	1.66	20	
Lead	19.43	0.34	6.887	14.05	78.1	75-125	19.27	0.837	20	
Nickel	21.26	0.34	6.887	15.67	81.2	75-125	21	1.22	20	
Selenium	6.975	0.69	6.887	0.953	87.4	75-125	6.924	0.732	20	
Silver	7.051	0.34	6.887	-0.1008	104	75-125	6.96	1.31	20	
Zinc	83.95	0.69	6.887	75.3	126	75-125	82.11	2.22	20	SO

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121836** Instrument ID **ICPMS3** Method: **SW6020A**

DUP Sample ID: **18071356-03ADUP** Units: **mg/L** Analysis Date: **7/26/2018 02:39 AM**
Client ID: Run ID: **ICPMS3_180725A** SeqNo: **5167944** Prep Date: **7/25/2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	55.74	5.0	0	0	0	0-0	38.88	35.6		
Magnesium	14.82	2.0	0	0	0	0-0	9.89	39.9		
Sodium	142.9	2.0	0	0	0	0-0	102.5	32.9		

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

Batch ID: **121836** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP Sample ID: **18071356-03ADUP** Units: **none** Analysis Date: **7/25/2018**
Client ID: Run ID: **SAR_180725A** SeqNo: **5172842** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	4.396	0.010	0	0	0		3.8	14.5	50	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121783** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-121783-121783** Units: **µg/Kg** Analysis Date: **7/27/2018 12:26 PM**
Client ID: Run ID: **SVMS6_180726A** SeqNo: **5171875** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	42	0	0	0	0-0	0			
Anthracene	U	42	0	0	0	0-0	0			
Benzo(a)anthracene	U	42	0	0	0	0-0	0			
Benzo(a)pyrene	U	42	0	0	0	0-0	0			
Benzo(b)fluoranthene	U	42	0	0	0	0-0	0			
Benzo(k)fluoranthene	U	42	0	0	0	0-0	0			
Chrysene	U	42	0	0	0	0-0	0			
Dibenzo(a,h)anthracene	U	42	0	0	0	0-0	0			
Fluoranthene	U	42	0	0	0	0-0	0			
Fluorene	U	42	0	0	0	0-0	0			
Indeno(1,2,3-cd)pyrene	U	42	0	0	0	0-0	0			
Naphthalene	U	42	0	0	0	0-0	0			
Pyrene	U	42	0	0	0	0-0	0			
Surr: 2-Fluorobiphenyl	*3111*	0	*3333*	0	*93.3*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2520*	0	*3333*	0	*75.6*	*22-172*	0			
Surr: Nitrobenzene-d5	*3432*	0	*3333*	0	*103*	*28-140*	0			

LCS Sample ID: **SLCSS1-121783-121783** Units: **µg/Kg** Analysis Date: **7/27/2018 12:41 PM**
Client ID: Run ID: **SVMS6_180726A** SeqNo: **5171876** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1168	42	1333	0	87.6	40-140	0			
Anthracene	1431	42	1333	0	107	40-140	0			
Benzo(a)anthracene	1293	42	1333	0	97	40-140	0			
Benzo(a)pyrene	1283	42	1333	0	96.2	40-140	0			
Benzo(b)fluoranthene	1218	42	1333	0	91.4	40-140	0			
Benzo(k)fluoranthene	1174	42	1333	0	88.1	40-140	0			
Chrysene	1218	42	1333	0	91.4	40-140	0			
Dibenzo(a,h)anthracene	1121	42	1333	0	84.1	40-140	0			
Fluoranthene	1176	42	1333	0	88.2	40-140	0			
Fluorene	1250	42	1333	0	93.8	40-140	0			
Indeno(1,2,3-cd)pyrene	1217	42	1333	0	91.3	40-140	0			
Naphthalene	1180	42	1333	0	88.5	40-140	0			
Pyrene	1192	42	1333	0	89.4	40-140	0			
Surr: 2-Fluorobiphenyl	*3045*	0	*3333*	0	*91.4*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2384*	0	*3333*	0	*71.5*	*22-172*	0			
Surr: Nitrobenzene-d5	*3425*	0	*3333*	0	*103*	*28-140*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121783** Instrument ID **SVMS6** Method: **SW846 8270D**

MS Sample ID: **18071334-01A MS** Units: **µg/Kg** Analysis Date: **7/27/2018 12:56 PM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **SVMS6_180726A** SeqNo: **5171877** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1179	41	1319	0	89.4	40-140	0			
Anthracene	1467	41	1319	0	111	40-140	0			
Benzo(a)anthracene	1325	41	1319	0	100	40-140	0			
Benzo(a)pyrene	1305	41	1319	0	98.9	40-140	0			
Benzo(b)fluoranthene	1238	41	1319	0	93.8	40-140	0			
Benzo(k)fluoranthene	1200	41	1319	0	91	40-140	0			
Chrysene	1238	41	1319	0	93.9	40-140	0			
Dibenzo(a,h)anthracene	1147	41	1319	0	87	40-140	0			
Fluoranthene	1218	41	1319	0	92.3	40-140	0			
Fluorene	1252	41	1319	0	94.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1234	41	1319	0	93.6	40-140	0			
Naphthalene	1271	41	1319	0	96.4	40-140	0			
Pyrene	1220	41	1319	0	92.5	40-140	0			
Surr: 2-Fluorobiphenyl	*3091*	0	*3298*	0	*93.7*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2362*	0	*3298*	0	*71.6*	*22-172*	0			
Surr: Nitrobenzene-d5	*3691*	0	*3298*	0	*112*	*28-140*	0			

MSD Sample ID: **18071334-01A MSD** Units: **µg/Kg** Analysis Date: **7/27/2018 01:11 AM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **SVMS6_180726A** SeqNo: **5171851** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1130	42	1332	0	84.9	40-140	1179	4.25	30	
Anthracene	1405	42	1332	0	105	40-140	1467	4.32	30	
Benzo(a)anthracene	1226	42	1332	0	92.1	40-140	1325	7.75	30	
Benzo(a)pyrene	1230	42	1332	0	92.4	40-140	1305	5.89	30	
Benzo(b)fluoranthene	1212	42	1332	0	91	40-140	1238	2.07	30	
Benzo(k)fluoranthene	1057	42	1332	0	79.3	40-140	1200	12.7	30	
Chrysene	1162	42	1332	0	87.3	40-140	1238	6.32	30	
Dibenzo(a,h)anthracene	1049	42	1332	0	78.8	40-140	1147	8.93	30	
Fluoranthene	1137	42	1332	0	85.4	40-140	1218	6.88	30	
Fluorene	1193	42	1332	0	89.6	40-140	1252	4.84	30	
Indeno(1,2,3-cd)pyrene	1161	42	1332	0	87.2	40-140	1234	6.11	30	
Naphthalene	1258	42	1332	0	94.5	40-140	1271	1.01	30	
Pyrene	1152	42	1332	0	86.5	40-140	1220	5.77	30	
Surr: 2-Fluorobiphenyl	*2993*	0	*3330*	0	*89.9*	*20-140*	3091	*3.22*	*0*	
Surr: 4-Terphenyl-d14	*2204*	0	*3330*	0	*66.2*	*22-172*	2362	*6.95*	*0*	
Surr: Nitrobenzene-d5	*3800*	0	*3330*	0	*114*	*28-140*	3691	*2.93*	*0*	

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121783** Instrument ID **SVMS6** Method: **SW846 8270D**

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121783A** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-121783-121783A** Units: **µg/Kg** Analysis Date: **7/25/2018 03:31 PM**
Client ID: Run ID: **SVMS6_180725A** SeqNo: **5168515** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	42								
Anthracene	U	42								
Benzo(a)anthracene	U	42								
Benzo(a)pyrene	U	42								
Benzo(b)fluoranthene	U	42								
Benzo(k)fluoranthene	U	42								
Chrysene	U	42								
Dibenzo(a,h)anthracene	U	42								
Fluoranthene	U	42								
Fluorene	U	42								
Indeno(1,2,3-cd)pyrene	U	42								
Naphthalene	U	42								
Pyrene	U	42								
Surr: 2-Fluorobiphenyl	*2436*	0	*3333*	0	*73.1*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2297*	0	*3333*	0	*68.9*	*22-172*	0			
Surr: Nitrobenzene-d5	*1882*	0	*3333*	0	*56.5*	*28-140*	0			

LCS Sample ID: **SLCSS1-121783-121783A** Units: **µg/Kg** Analysis Date: **7/25/2018 03:46 PM**
Client ID: Run ID: **SVMS6_180725A** SeqNo: **5168516** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1149	42	1333	0	86.2	40-140	0			
Anthracene	1347	42	1333	0	101	40-140	0			
Benzo(a)anthracene	1506	42	1333	0	113	40-140	0			
Benzo(a)pyrene	1413	42	1333	0	106	40-140	0			
Benzo(b)fluoranthene	1417	42	1333	0	106	40-140	0			
Benzo(k)fluoranthene	1240	42	1333	0	93	40-140	0			
Chrysene	1023	42	1333	0	76.7	40-140	0			
Dibenzo(a,h)anthracene	1411	42	1333	0	106	40-140	0			
Fluoranthene	1177	42	1333	0	88.3	40-140	0			
Fluorene	1311	42	1333	0	98.4	40-140	0			
Indeno(1,2,3-cd)pyrene	1570	42	1333	0	118	40-140	0			
Naphthalene	1134	42	1333	0	85.1	40-140	0			
Pyrene	1811	42	1333	0	136	40-140	0			
Surr: 2-Fluorobiphenyl	*1790*	0	*3333*	0	*53.7*	*20-140*	0			
Surr: 4-Terphenyl-d14	*3419*	0	*3333*	0	*103*	*22-172*	0			
Surr: Nitrobenzene-d5	*1685*	0	*3333*	0	*50.6*	*28-140*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121783A** Instrument ID **SVMS6** Method: **SW846 8270D**

MS Sample ID: **18071334-01A MS** Units: **µg/Kg** Analysis Date: **7/25/2018 04:01 PM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **SVMS6_180725A** SeqNo: **5168517** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1149	41	1319	0	87.1	40-140	0			
Anthracene	1391	41	1319	0	105	40-140	0			
Benzo(a)anthracene	1365	41	1319	0	104	40-140	0			
Benzo(a)pyrene	1323	41	1319	0	100	40-140	0			
Benzo(b)fluoranthene	1268	41	1319	0	96.2	40-140	0			
Benzo(k)fluoranthene	1162	41	1319	0	88.1	40-140	0			
Chrysene	1049	41	1319	0	79.5	40-140	0			
Dibenzo(a,h)anthracene	1476	41	1319	0	112	40-140	0			
Fluoranthene	1144	41	1319	0	86.8	40-140	0			
Fluorene	1846	41	1319	0	140	40-140	0			
Indeno(1,2,3-cd)pyrene	1549	41	1319	0	117	40-140	0			
Naphthalene	1354	41	1319	0	103	40-140	0			
Pyrene	1437	41	1319	0	109	40-140	0			
Surr: 2-Fluorobiphenyl	*2658*	0	*3298*	0	*80.6*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2233*	0	*3298*	0	*67.7*	*22-172*	0			
Surr: Nitrobenzene-d5	*1557*	0	*3298*	0	*47.2*	*28-140*	0			

MSD Sample ID: **18071334-01A MSD** Units: **µg/Kg** Analysis Date: **7/25/2018 04:16 PM**

Client ID: **20180719-Mesa 7 (Middle Bottom) @ 10'** Run ID: **SVMS6_180725A** SeqNo: **5168518** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1063	42	1332	0	79.8	40-140	1149	7.72	30	
Anthracene	1361	42	1332	0	102	40-140	1391	2.19	30	
Benzo(a)anthracene	1357	42	1332	0	102	40-140	1365	0.594	30	
Benzo(a)pyrene	1312	42	1332	0	98.6	40-140	1323	0.811	30	
Benzo(b)fluoranthene	1213	42	1332	0	91.1	40-140	1268	4.44	30	
Benzo(k)fluoranthene	1095	42	1332	0	82.2	40-140	1162	5.88	30	
Chrysene	1008	42	1332	0	75.7	40-140	1049	3.92	30	
Dibenzo(a,h)anthracene	1374	42	1332	0	103	40-140	1476	7.11	30	
Fluoranthene	745.2	42	1332	0	56	40-140	1144	42.2	30	R
Fluorene	1202	42	1332	0	90.2	40-140	1846	42.3	30	R
Indeno(1,2,3-cd)pyrene	1537	42	1332	0	115	40-140	1549	0.809	30	
Naphthalene	1313	42	1332	0	98.6	40-140	1354	3.13	30	
Pyrene	1770	42	1332	0	133	40-140	1437	20.7	30	
Surr: 2-Fluorobiphenyl	*1770*	0	*3330*	0	*53.2*	*20-140*	2658	*40.1*	*0*	
Surr: 4-Terphenyl-d14	*2055*	0	*3330*	0	*61.7*	*22-172*	2233	*8.33*	*0*	
Surr: Nitrobenzene-d5	*1565*	0	*3330*	0	*47*	*28-140*	1557	*0.53*	*0*	

The following samples were analyzed in this batch: 18071334-01A

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121699** Instrument ID **VMS9** Method: **SW8260C**

MBLK Sample ID: **MBLK-121699-121699** Units: **µg/Kg-dry** Analysis Date: **7/24/2018 01:07 PM**
Client ID: Run ID: **VMS9_180724A** SeqNo: **5164400** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	*1016*	0	*1000*	0	*102*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*992*	0	*1000*	0	*99.2*	*70-130*	0			
Surr: Dibromofluoromethane	*926*	0	*1000*	0	*92.6*	*70-130*	0			
Surr: Toluene-d8	*986.5*	0	*1000*	0	*98.6*	*70-130*	0			

LCS Sample ID: **LCS-121699-121699** Units: **µg/Kg-dry** Analysis Date: **7/24/2018 12:22 PM**
Client ID: Run ID: **VMS9_180724A** SeqNo: **5164399** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1032	30	1000	0	103	75-125	0			
Ethylbenzene	1170	30	1000	0	117	75-125	0			
m,p-Xylene	2318	60	2000	0	116	80-125	0			
o-Xylene	1142	30	1000	0	114	75-125	0			
Toluene	1025	30	1000	0	102	70-125	0			
Xylenes, Total	3459	90	3000	0	115	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1002*	0	*1000*	0	*100*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1048*	0	*1000*	0	*105*	*70-130*	0			
Surr: Dibromofluoromethane	*1012*	0	*1000*	0	*101*	*70-130*	0			
Surr: Toluene-d8	*1046*	0	*1000*	0	*105*	*70-130*	0			

MS Sample ID: **18071356-02A MS** Units: **µg/Kg-dry** Analysis Date: **7/23/2018 07:11 PM**
Client ID: Run ID: **VMS9_180723A** SeqNo: **5163756** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1371	41	1353	0	101	75-125	0			
Ethylbenzene	1548	41	1353	0	114	75-125	0			
m,p-Xylene	13920	81	2706	8191	212	80-125	0			SE
o-Xylene	4287	41	1353	2113	161	75-125	0			S
Toluene	1465	41	1353	58.85	104	70-125	0			
Xylenes, Total	18200	120	4059	10300	195	75-125	0			S
Surr: 1,2-Dichloroethane-d4	*1367*	0	*1353*	0	*101*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1412*	0	*1353*	0	*104*	*70-130*	0			
Surr: Dibromofluoromethane	*1230*	0	*1353*	0	*90.9*	*70-130*	0			
Surr: Toluene-d8	*1528*	0	*1353*	0	*113*	*70-130*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121699** Instrument ID **VMS9** Method: **SW8260C**

MSD	Sample ID: **18071356-02A MSD**				Units: **µg/Kg-dry**		Analysis Date: **7/23/2018 07:26 PM**			
Client ID:		Run ID: **VMS9_180723A**			SeqNo: **5163757**		Prep Date: **7/23/2018**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1404	41	1353	0	104	75-125	1371	2.34	30	
Ethylbenzene	1643	41	1353	0	121	75-125	1548	5.98	30	
m,p-Xylene	16420	81	2706	8191	304	80-125	13920	16.5	30	SE
o-Xylene	4877	41	1353	2113	204	75-125	4287	12.9	30	S
Toluene	1504	41	1353	58.85	107	70-125	1465	2.64	30	
Xylenes, Total	21290	120	4059	10300	271	75-125	18200	15.6	30	SE
Surr: 1,2-Dichloroethane-d4	*1305*	0	*1353*	0	*96.4*	*70-130*	1367	*4.66*	*30*	
Surr: 4-Bromofluorobenzene	*1389*	0	*1353*	0	*103*	*70-130*	1412	*1.69*	*30*	
Surr: Dibromofluoromethane	*1262*	0	*1353*	0	*93.3*	*70-130*	1230	*2.61*	*30*	
Surr: Toluene-d8	*1549*	0	*1353*	0	*114*	*70-130*	1528	*1.36*	*30*	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121797** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-121797-121797** Units: **s.u.** Analysis Date: **7/24/2018 04:30 PM**
Client ID: Run ID: **WETCHEM_180724N** SeqNo: **5165078** Prep Date: **7/24/2018** DF: **1**

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			

DUP Sample ID: **18071217-03A DUP** Units: **s.u.** Analysis Date: **7/24/2018 04:30 PM**
Client ID: Run ID: **WETCHEM_180724N** SeqNo: **5165081** Prep Date: **7/24/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.59	0.10	0	0	0	0-0	8.57	0.233	20	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121836** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP	Sample ID: **18071356-03A DUP**				Units: **mmhos/cm @25°**		Analysis Date: **7/25/2018 12:15 PM**		
Client ID:		Run ID: **WETCHEM_180725F**			SeqNo: **5166666**		Prep Date: **7/25/2018**	DF: **25**	

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	1.4	0.12	0	0	0		0.97	36.3	50	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121851** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-121851-121851** Units: **s.u.** Analysis Date: **7/25/2018 05:00 PM**
Client ID: Run ID: **WETCHEM_180725M** SeqNo: **5167455** Prep Date: **7/25/2018** DF: **1**

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			

DUP Sample ID: **18071334-06A DUP** Units: **s.u.** Analysis Date: **7/25/2018 05:00 PM**
Client ID: **20180719-Mesa 7 (S Wall) @ 9'** Run ID: **WETCHEM_180725M** SeqNo: **5167460** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.38	0.10	0	0	0	0-0	8.31	0.839	20	

DUP Sample ID: **18071478-01A DUP** Units: **s.u.** Analysis Date: **7/25/2018 05:00 PM**
Client ID: Run ID: **WETCHEM_180725M** SeqNo: **5167465** Prep Date: **7/25/2018** 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	6.47	0.77	20	

The following samples were analyzed in this batch:

18071334-03A	18071334-04A	18071334-05A
18071334-06A	18071334-07A	

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **121940** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-121940-121940** Units: **mg/Kg** Analysis Date: **7/26/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180726N** SeqNo: **5170056** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	U	1.0								

LCS Sample ID: **LCS-121940-121940** Units: **mg/Kg** Analysis Date: **7/26/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180726N** SeqNo: **5170055** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.35	1.0	5	0	87	80-120	0			

MS Sample ID: **18071334-04A MS** Units: **mg/Kg** Analysis Date: **7/26/2018 04:00 PM**
Client ID: **20180719-Mesa 7 (E Wall) @ 9'** Run ID: **WETCHEM_180726N** SeqNo: **5170045** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1.109	0.99	4.95	-2.62	75.3	75-125	0			

MS Sample ID: **18071334-04A MSI** Units: **mg/Kg** Analysis Date: **7/26/2018 04:00 PM**
Client ID: **20180719-Mesa 7 (E Wall) @ 9'** Run ID: **WETCHEM_180726N** SeqNo: **5170047** Prep Date: **7/25/2018** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1561	96	1640	-2.62	95.3	75-125	0			

MSD Sample ID: **18071334-04A MSD** Units: **mg/Kg** Analysis Date: **7/26/2018 04:00 PM**
Client ID: **20180719-Mesa 7 (E Wall) @ 9'** Run ID: **WETCHEM_180726N** SeqNo: **5170046** Prep Date: **7/25/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1.881	0.99	4.95	-2.62	90.9	75-125	1.109	51.7	20	R

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

Client: Caerus Oil and Gas LLC
Work Order: 18071334
Project: Mesa 7

QC BATCH REPORT

Batch ID: **R240949** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R240949** Units: **% of sample** Analysis Date: **7/25/2018 08:20 PM**
Client ID: Run ID: **MOIST_180725D** SeqNo: **5169096** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R240949** Units: **% of sample** Analysis Date: **7/25/2018 08:20 PM**
Client ID: Run ID: **MOIST_180725D** SeqNo: **5169095** 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: **18071297-33A DUP** Units: **% of sample** Analysis Date: **7/25/2018 08:20 PM**
Client ID: Run ID: **MOIST_180725D** SeqNo: **5169074** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.27	0.050	0	0	0	0-0	7.45	2.45	10	

DUP Sample ID: **18071297-42A DUP** Units: **% of sample** Analysis Date: **7/25/2018 08:20 PM**
Client ID: Run ID: **MOIST_180725D** SeqNo: **5169084** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	6.61	0.050	0	0	0	0-0	6.75	2.1	10	

The following samples were analyzed in this batch:

18071334-01A	18071334-02A	18071334-03A
18071334-04A	18071334-05A	18071334-06A
18071334-07A		

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

18071334

CHAIN OF CUSTODY

ALS Laboratory Group

Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

Page 1 of 1

CLIENT CONTACT AND REPORTING INFORMATION	INVOICE ADDRESS (If other than reporting address)
y Name: Caerus Oil and Gas LLC	Company Name: Same
Manager: Brett Middleton	Contact Name: Same
: 143 Diamond Avenue	Address: Same
te, CO 81635	
970-285-9606	**PROJECT INFORMATION**
bmiddleton@caerusoilandgas.com	Project ID: Mesa 7
jianicek@caerusoilandgas.com, cmckisson@ltenv.com	Site:
\	PO No:
5 Day Standard TAT	ALS Quote No:
(Pls specify date required STD) (express fee will apply)	

ANALYSIS REQUIRED (suite codes must be listed to attract suite prices)

#	SAMPLE IDENTIFICATION (this description will appear on report)	MATRIX (a)	SAMPLING AND CONTAINER INFO Date	Time	Tot Bottle	REMARKS	TPH- GRO/DRO	BTEX	TABLE 910- PAH's	SAR	EC	TABLE 910- Metals	pH
	20180719-Mesa 7 (Middle Bottom) @10'	S	7-19-18	1137	3		X	X	X	X	X	X	X
	20180719-Mesa 7 (N Wall) @ 9'			1140									
	20180719-Mesa 7 (W Wall) @ 9'			1141									
	20180719-Mesa 7 (E Wall) @ 9'			1143									
	20180719-Mesa 7 (South Bottom) @ 13'			1330									
	20180719-Mesa 7 (S Wall) @ 9'			1345									
	20180719-Mesa 7 (Spoils)			1440									

CROSS THE REQUESTED ANALYSIS

CLIENT SIGNATURES	For lab use only				
Signature:	Cooler Security Seal ☐ sealed ☐ broken ☐ not available	Sample Temp ☐ chilled ☐ ambient deg 'C	No of Cooler Received carton / cooler box	Received by (lab)	Date and Time 7/20/18 0930
Date and Time of Completion: 7-19-18 1700			Courier Name AS	Committed by	Date and Time

DW (Drinking water), **SW** (Surface water), **GW** (Ground water), **WW** (Waste water), **S** (Soil), **SL** (Sludge), **SE** (Sediment), **OS** (Other solid material)

SDL 5.2°C

ALS Group, USA

Sample Receipt Checklist

Client Name: **CAERUS** Date/Time Received: **20-Jul-18 09:30**

Work Order: **18071334** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 21-Jul-18 (Date) Reviewed by: Chad Whelton (eSignature) 23-Jul-18 (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):	5.2/5.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	7/21/2018 8:45:01 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: