



09-May-2018

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

Re: **Puckett 697-26A Cuttings Sampling**

Work Order: **1805026**

Dear Brett,

ALS Environmental received 6 samples on 01-May-2018 09:00 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 34.

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,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager

## Report of Laboratory Analysis

Certificate No: MN 998501

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental The ALS logo, a stylized blue triangle with a yellow flame inside.

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**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Work Order:** 1805026

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**Work Order Sample Summary**

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1805026-01	20180430-26A (CUT-E)	Soil		4/30/2018 13:15	5/1/2018 09:00	<input type="checkbox"/>
1805026-02	20180430-26A (CUT-S)	Soil		4/30/2018 13:25	5/1/2018 09:00	<input type="checkbox"/>
1805026-03	20180430-26A (CUT-N)	Soil		4/30/2018 13:35	5/1/2018 09:00	<input type="checkbox"/>
1805026-04	20180430-26A (CUT-MID)	Soil		4/30/2018 13:45	5/1/2018 09:00	<input type="checkbox"/>
1805026-05	20180430-26A (CUT-MID01)	Soil		4/30/2018 13:55	5/1/2018 09:00	<input type="checkbox"/>
1805026-06	20180430-26A (CUT-MID02)	Soil		4/30/2018 14:05	5/1/2018 09:00	<input type="checkbox"/>

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**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Work Order:** 1805026

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**Case Narrative**

Batch 117747, Method CR6\_7196\_S, Sample 1805026-01B MS/MSD: The MS/MSD recovery was below the lower control limit for Hexavalent Chromium. The corresponding result in the parent sample may be biased low.

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	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.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
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

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
% of sample	Percent of Sample
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: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-E)  
**Collection Date:** 4/30/2018 01:15 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>100</b>		<b>3.4</b>	<b>5.9</b>	<b>mg/Kg-dry</b>	1	5/4/2018 08:40
Surr: 4-Terphenyl-d14	76.6			34-130	%REC	1	5/4/2018 08:40
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>78</b>		<b>2.9</b>	<b>6.9</b>	<b>mg/Kg-dry</b>	1	5/5/2018 01:15
Surr: Toluene-d8	88.3			71-123	%REC	1	5/5/2018 01:15
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.021</b>	J	<b>0.0021</b>	<b>0.021</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:36
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>9.2</b>		<b>0.12</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Barium</b>	<b>500</b>		<b>0.18</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Cadmium</b>	<b>0.30</b>	J	<b>0.042</b>	<b>0.89</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Chromium</b>	<b>23</b>		<b>0.025</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Copper</b>	<b>30</b>		<b>0.19</b>	<b>0.89</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Lead</b>	<b>9.4</b>		<b>0.094</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	1	5/7/2018 14:51
<b>Nickel</b>	<b>14</b>		<b>0.18</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>Selenium</b>	<b>3.5</b>		<b>0.25</b>	<b>0.89</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
Silver	U		0.055	0.44	mg/Kg-dry	1	5/4/2018 05:32
<b>Zinc</b>	<b>61</b>		<b>0.071</b>	<b>0.89</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:32
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>200</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:41
<b>Magnesium</b>	<b>17</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:41
<b>Sodium</b>	<b>1,000</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:41
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>19</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0035	0.049	mg/Kg-dry	1	5/3/2018 02:29
Anthracene	U		0.0018	0.049	mg/Kg-dry	1	5/3/2018 02:29
Benzo(a)anthracene	U		0.0030	0.049	mg/Kg-dry	1	5/3/2018 02:29
Benzo(a)pyrene	U		0.0012	0.049	mg/Kg-dry	1	5/3/2018 02:29
Benzo(b)fluoranthene	U		0.0019	0.049	mg/Kg-dry	1	5/3/2018 02:29
Benzo(k)fluoranthene	U		0.0025	0.049	mg/Kg-dry	1	5/3/2018 02:29
Chrysene	U		0.0019	0.049	mg/Kg-dry	1	5/3/2018 02:29
Dibenzo(a,h)anthracene	U		0.0016	0.049	mg/Kg-dry	1	5/3/2018 02:29
Fluoranthene	U		0.0014	0.049	mg/Kg-dry	1	5/3/2018 02:29

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-E)  
**Collection Date:** 4/30/2018 01:15 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.049	mg/Kg-dry	1	5/3/2018 02:29
Indeno(1,2,3-cd)pyrene	U		0.0015	0.049	mg/Kg-dry	1	5/3/2018 02:29
<b>Naphthalene</b>	<b>0.18</b>		<b>0.0092</b>	<b>0.049</b>	<b>mg/Kg-dry</b>	1	5/3/2018 02:29
Pyrene	U		0.0018	0.049	mg/Kg-dry	1	5/3/2018 02:29
Surr: 2-Fluorobiphenyl	81.6			20-140	%REC	1	5/3/2018 02:29
Surr: 4-Terphenyl-d14	82.9			22-172	%REC	1	5/3/2018 02:29
Surr: Nitrobenzene-d5	88.9			28-140	%REC	1	5/3/2018 02:29
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>1.9</b>		<b>0.0071</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
<b>Ethylbenzene</b>	<b>0.49</b>		<b>0.0087</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
<b>m,p-Xylene</b>	<b>2.7</b>		<b>0.020</b>	<b>0.083</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
<b>o-Xylene</b>	<b>0.49</b>		<b>0.016</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
<b>Toluene</b>	<b>4.5</b>		<b>0.011</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
<b>Xylenes, Total</b>	<b>3.2</b>		<b>0.036</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 07:58
Surr: 1,2-Dichloroethane-d4	106			70-130	%REC	1	5/5/2018 07:58
Surr: 4-Bromofluorobenzene	107			70-130	%REC	1	5/5/2018 07:58
Surr: Dibromofluoromethane	92.4			70-130	%REC	1	5/5/2018 07:58
Surr: Toluene-d8	103			70-130	%REC	1	5/5/2018 07:58
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>6.3</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>23</b>		<b>0.37</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.36	1.2	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>16</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.94</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-S)  
**Collection Date:** 4/30/2018 01:25 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>110</b>		<b>3.4</b>	<b>5.9</b>	<b>mg/Kg-dry</b>	1	5/4/2018 09:38
Surr: 4-Terphenyl-d14	89.1			34-130	%REC	1	5/4/2018 09:38
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>56</b>		<b>2.8</b>	<b>6.8</b>	<b>mg/Kg-dry</b>	1	5/5/2018 12:45
Surr: Toluene-d8	87.8			71-123	%REC	1	5/5/2018 12:45
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.042</b>		<b>0.0022</b>	<b>0.022</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:39
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>10</b>		<b>0.11</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Barium</b>	<b>440</b>		<b>0.17</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Cadmium</b>	<b>0.32</b>	J	<b>0.040</b>	<b>0.84</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Chromium</b>	<b>18</b>		<b>0.023</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Copper</b>	<b>28</b>		<b>0.18</b>	<b>0.84</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Lead</b>	<b>11</b>		<b>0.089</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	5/7/2018 14:58
<b>Nickel</b>	<b>14</b>		<b>0.17</b>	<b>0.42</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>Selenium</b>	<b>3.3</b>		<b>0.23</b>	<b>0.84</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
Silver	U		0.052	0.42	mg/Kg-dry	1	5/4/2018 05:38
<b>Zinc</b>	<b>56</b>		<b>0.067</b>	<b>0.84</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:38
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>300</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:42
<b>Magnesium</b>	<b>23</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:42
<b>Sodium</b>	<b>940</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:42
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>14</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0035	0.049	mg/Kg-dry	1	5/3/2018 02:43
Anthracene	U		0.0018	0.049	mg/Kg-dry	1	5/3/2018 02:43
Benzo(a)anthracene	U		0.0030	0.049	mg/Kg-dry	1	5/3/2018 02:43
Benzo(a)pyrene	U		0.0012	0.049	mg/Kg-dry	1	5/3/2018 02:43
Benzo(b)fluoranthene	U		0.0019	0.049	mg/Kg-dry	1	5/3/2018 02:43
Benzo(k)fluoranthene	U		0.0025	0.049	mg/Kg-dry	1	5/3/2018 02:43
Chrysene	U		0.0019	0.049	mg/Kg-dry	1	5/3/2018 02:43
Dibenzo(a,h)anthracene	U		0.0016	0.049	mg/Kg-dry	1	5/3/2018 02:43
Fluoranthene	U		0.0014	0.049	mg/Kg-dry	1	5/3/2018 02:43

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-S)  
**Collection Date:** 4/30/2018 01:25 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.049	mg/Kg-dry	1	5/3/2018 02:43
Indeno(1,2,3-cd)pyrene	U		0.0015	0.049	mg/Kg-dry	1	5/3/2018 02:43
<b>Naphthalene</b>	<b>0.28</b>		<b>0.0092</b>	<b>0.049</b>	<b>mg/Kg-dry</b>	1	5/3/2018 02:43
Pyrene	U		0.0018	0.049	mg/Kg-dry	1	5/3/2018 02:43
Surr: 2-Fluorobiphenyl	76.4			20-140	%REC	1	5/3/2018 02:43
Surr: 4-Terphenyl-d14	78.1			22-172	%REC	1	5/3/2018 02:43
Surr: Nitrobenzene-d5	74.4			28-140	%REC	1	5/3/2018 02:43
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>0.91</b>		<b>0.0069</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
<b>Ethylbenzene</b>	<b>0.33</b>		<b>0.0086</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
<b>m,p-Xylene</b>	<b>2.0</b>		<b>0.019</b>	<b>0.081</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
<b>o-Xylene</b>	<b>0.33</b>		<b>0.016</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
<b>Toluene</b>	<b>2.6</b>		<b>0.011</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
<b>Xylenes, Total</b>	<b>2.3</b>		<b>0.035</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 08:13
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	5/5/2018 08:13
Surr: 4-Bromofluorobenzene	108			70-130	%REC	1	5/5/2018 08:13
Surr: Dibromofluoromethane	85.5			70-130	%REC	1	5/5/2018 08:13
Surr: Toluene-d8	103			70-130	%REC	1	5/5/2018 08:13
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>6.6</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>18</b>		<b>0.36</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.36	1.2	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>15</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.47</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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



# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-N)  
**Collection Date:** 4/30/2018 01:35 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>110</b>		<b>3.3</b>	<b>5.8</b>	<b>mg/Kg-dry</b>	1	5/4/2018 10:08
Surr: 4-Terphenyl-d14	95.1			34-130	%REC	1	5/4/2018 10:08
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>56</b>		<b>2.8</b>	<b>6.8</b>	<b>mg/Kg-dry</b>	1	5/8/2018 02:40
Surr: Toluene-d8	83.8			71-123	%REC	1	5/8/2018 02:40
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.032</b>		<b>0.0020</b>	<b>0.020</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:50
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>7.7</b>		<b>0.12</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Barium</b>	<b>510</b>		<b>0.18</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Cadmium</b>	<b>0.29</b>	J	<b>0.043</b>	<b>0.90</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Chromium</b>	<b>25</b>		<b>0.025</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Copper</b>	<b>28</b>		<b>0.20</b>	<b>0.90</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Lead</b>	<b>9.0</b>		<b>0.095</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	5/7/2018 15:05
<b>Nickel</b>	<b>13</b>		<b>0.18</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>Selenium</b>	<b>3.5</b>		<b>0.25</b>	<b>0.90</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
Silver	U		0.056	0.45	mg/Kg-dry	1	5/4/2018 05:45
<b>Zinc</b>	<b>58</b>		<b>0.072</b>	<b>0.90</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:45
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>430</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:46
<b>Magnesium</b>	<b>27</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:46
<b>Sodium</b>	<b>1,200</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:46
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>15</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0034	0.048	mg/Kg-dry	1	5/3/2018 02:58
Anthracene	U		0.0018	0.048	mg/Kg-dry	1	5/3/2018 02:58
Benzo(a)anthracene	U		0.0030	0.048	mg/Kg-dry	1	5/3/2018 02:58
Benzo(a)pyrene	U		0.0012	0.048	mg/Kg-dry	1	5/3/2018 02:58
Benzo(b)fluoranthene	U		0.0019	0.048	mg/Kg-dry	1	5/3/2018 02:58
Benzo(k)fluoranthene	U		0.0025	0.048	mg/Kg-dry	1	5/3/2018 02:58
Chrysene	U		0.0019	0.048	mg/Kg-dry	1	5/3/2018 02:58
Dibenzo(a,h)anthracene	U		0.0016	0.048	mg/Kg-dry	1	5/3/2018 02:58
Fluoranthene	U		0.0014	0.048	mg/Kg-dry	1	5/3/2018 02:58

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-N)  
**Collection Date:** 4/30/2018 01:35 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Fluorene</b>	<b>0.050</b>		<b>0.0016</b>	<b>0.048</b>	<b>mg/Kg-dry</b>	1	5/3/2018 02:58
Indeno(1,2,3-cd)pyrene	U		0.0015	0.048	mg/Kg-dry	1	5/3/2018 02:58
<b>Naphthalene</b>	<b>0.41</b>		<b>0.0091</b>	<b>0.048</b>	<b>mg/Kg-dry</b>	1	5/3/2018 02:58
Pyrene	U		0.0018	0.048	mg/Kg-dry	1	5/3/2018 02:58
Surr: 2-Fluorobiphenyl	77.6			20-140	%REC	1	5/3/2018 02:58
Surr: 4-Terphenyl-d14	99.8			22-172	%REC	1	5/3/2018 02:58
Surr: Nitrobenzene-d5	77.6			28-140	%REC	1	5/3/2018 02:58
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>1.5</b>		<b>0.0069</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
<b>Ethylbenzene</b>	<b>0.32</b>		<b>0.0086</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
<b>m,p-Xylene</b>	<b>2.0</b>		<b>0.019</b>	<b>0.081</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
<b>o-Xylene</b>	<b>0.32</b>		<b>0.016</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
<b>Toluene</b>	<b>3.3</b>		<b>0.011</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
<b>Xylenes, Total</b>	<b>2.3</b>		<b>0.035</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:38
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	5/5/2018 05:38
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	5/5/2018 05:38
Surr: Dibromofluoromethane	88.6			70-130	%REC	1	5/5/2018 05:38
Surr: Toluene-d8	97.8			70-130	%REC	1	5/5/2018 05:38
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>8.8</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>25</b>		<b>0.36</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.35	1.1	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>15</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.39</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID)  
**Collection Date:** 4/30/2018 01:45 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>160</b>		<b>3.3</b>	<b>5.7</b>	<b>mg/Kg-dry</b>	1	5/4/2018 10:37
Surr: 4-Terphenyl-d14	102			34-130	%REC	1	5/4/2018 10:37
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>99</b>		<b>2.9</b>	<b>6.9</b>	<b>mg/Kg-dry</b>	1	5/8/2018 03:10
Surr: Toluene-d8	80.5			71-123	%REC	1	5/8/2018 03:10
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.029</b>		<b>0.0021</b>	<b>0.021</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:52
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>9.1</b>		<b>0.13</b>	<b>0.48</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Barium</b>	<b>860</b>		<b>0.19</b>	<b>0.48</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Cadmium</b>	<b>0.29</b>	J	<b>0.046</b>	<b>0.96</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Chromium</b>	<b>18</b>		<b>0.027</b>	<b>0.48</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Copper</b>	<b>28</b>		<b>0.21</b>	<b>0.96</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Lead</b>	<b>8.4</b>		<b>0.10</b>	<b>0.48</b>	<b>mg/Kg-dry</b>	1	5/7/2018 15:12
<b>Nickel</b>	<b>14</b>		<b>0.19</b>	<b>0.48</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>Selenium</b>	<b>3.7</b>		<b>0.27</b>	<b>0.96</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
Silver	U		0.060	0.48	mg/Kg-dry	1	5/4/2018 05:52
<b>Zinc</b>	<b>58</b>		<b>0.077</b>	<b>0.96</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:52
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>310</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:47
<b>Magnesium</b>	<b>20</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:47
<b>Sodium</b>	<b>1,100</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:47
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>16</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0034	0.047	mg/Kg-dry	1	5/3/2018 03:12
Anthracene	U		0.0017	0.047	mg/Kg-dry	1	5/3/2018 03:12
Benzo(a)anthracene	U		0.0029	0.047	mg/Kg-dry	1	5/3/2018 03:12
Benzo(a)pyrene	U		0.0012	0.047	mg/Kg-dry	1	5/3/2018 03:12
Benzo(b)fluoranthene	U		0.0018	0.047	mg/Kg-dry	1	5/3/2018 03:12
Benzo(k)fluoranthene	U		0.0025	0.047	mg/Kg-dry	1	5/3/2018 03:12
Chrysene	U		0.0018	0.047	mg/Kg-dry	1	5/3/2018 03:12
Dibenzo(a,h)anthracene	U		0.0015	0.047	mg/Kg-dry	1	5/3/2018 03:12
Fluoranthene	U		0.0014	0.047	mg/Kg-dry	1	5/3/2018 03:12

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID)  
**Collection Date:** 4/30/2018 01:45 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0015	0.047	mg/Kg-dry	1	5/3/2018 03:12
Indeno(1,2,3-cd)pyrene	U		0.0015	0.047	mg/Kg-dry	1	5/3/2018 03:12
<b>Naphthalene</b>	<b>0.23</b>		<b>0.0089</b>	<b>0.047</b>	<b>mg/Kg-dry</b>	1	5/3/2018 03:12
Pyrene	U		0.0017	0.047	mg/Kg-dry	1	5/3/2018 03:12
Surr: 2-Fluorobiphenyl	98.9			20-140	%REC	1	5/3/2018 03:12
Surr: 4-Terphenyl-d14	123			22-172	%REC	1	5/3/2018 03:12
Surr: Nitrobenzene-d5	93.1			28-140	%REC	1	5/3/2018 03:12
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>1.0</b>		<b>0.0071</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
<b>Ethylbenzene</b>	<b>0.24</b>		<b>0.0087</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
<b>m,p-Xylene</b>	<b>1.6</b>		<b>0.020</b>	<b>0.083</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
<b>o-Xylene</b>	<b>0.25</b>		<b>0.016</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
<b>Toluene</b>	<b>2.4</b>		<b>0.011</b>	<b>0.041</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
<b>Xylenes, Total</b>	<b>1.8</b>		<b>0.036</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 05:53
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	5/5/2018 05:53
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	5/5/2018 05:53
Surr: Dibromofluoromethane	89.6			70-130	%REC	1	5/5/2018 05:53
Surr: Toluene-d8	103			70-130	%REC	1	5/5/2018 05:53
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>7.4</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>18</b>		<b>0.37</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.37	1.2	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>16</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.36</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID01)  
**Collection Date:** 4/30/2018 01:55 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>130</b>		<b>3.3</b>	<b>5.8</b>	<b>mg/Kg-dry</b>	1	5/4/2018 01:23
Surr: 4-Terphenyl-d14	77.1			34-130	%REC	1	5/4/2018 01:23
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>52</b>		<b>2.8</b>	<b>6.6</b>	<b>mg/Kg-dry</b>	1	5/8/2018 03:40
Surr: Toluene-d8	80.2			71-123	%REC	1	5/8/2018 03:40
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.029</b>		<b>0.0020</b>	<b>0.020</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:55
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>9.6</b>		<b>0.12</b>	<b>0.47</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Barium</b>	<b>410</b>		<b>0.19</b>	<b>0.47</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Cadmium</b>	<b>0.32</b>	J	<b>0.045</b>	<b>0.95</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Chromium</b>	<b>16</b>		<b>0.027</b>	<b>0.47</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Copper</b>	<b>30</b>		<b>0.21</b>	<b>0.95</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Lead</b>	<b>8.9</b>		<b>0.10</b>	<b>0.47</b>	<b>mg/Kg-dry</b>	1	5/7/2018 15:19
<b>Nickel</b>	<b>14</b>		<b>0.19</b>	<b>0.47</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>Selenium</b>	<b>3.7</b>		<b>0.27</b>	<b>0.95</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
Silver	U		0.059	0.47	mg/Kg-dry	1	5/4/2018 05:59
<b>Zinc</b>	<b>57</b>		<b>0.076</b>	<b>0.95</b>	<b>mg/Kg-dry</b>	1	5/4/2018 05:59
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>470</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:49
<b>Magnesium</b>	<b>28</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:49
<b>Sodium</b>	<b>1,100</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:49
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>14</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0034	0.048	mg/Kg-dry	1	5/2/2018 22:26
Anthracene	U		0.0018	0.048	mg/Kg-dry	1	5/2/2018 22:26
Benzo(a)anthracene	U		0.0030	0.048	mg/Kg-dry	1	5/2/2018 22:26
Benzo(a)pyrene	U		0.0012	0.048	mg/Kg-dry	1	5/2/2018 22:26
Benzo(b)fluoranthene	U		0.0019	0.048	mg/Kg-dry	1	5/2/2018 22:26
Benzo(k)fluoranthene	U		0.0025	0.048	mg/Kg-dry	1	5/2/2018 22:26
Chrysene	U		0.0019	0.048	mg/Kg-dry	1	5/2/2018 22:26
Dibenzo(a,h)anthracene	U		0.0016	0.048	mg/Kg-dry	1	5/2/2018 22:26
Fluoranthene	U		0.0014	0.048	mg/Kg-dry	1	5/2/2018 22:26

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID01)  
**Collection Date:** 4/30/2018 01:55 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Fluorene</b>	<b>0.094</b>		<b>0.0016</b>	<b>0.048</b>	<b>mg/Kg-dry</b>	1	5/2/2018 22:26
Indeno(1,2,3-cd)pyrene	U		0.0015	0.048	mg/Kg-dry	1	5/2/2018 22:26
<b>Naphthalene</b>	<b>0.86</b>		<b>0.0091</b>	<b>0.048</b>	<b>mg/Kg-dry</b>	1	5/2/2018 22:26
Pyrene	U		0.0018	0.048	mg/Kg-dry	1	5/2/2018 22:26
Surr: 2-Fluorobiphenyl	72.3			20-140	%REC	1	5/2/2018 22:26
Surr: 4-Terphenyl-d14	79.6			22-172	%REC	1	5/2/2018 22:26
Surr: Nitrobenzene-d5	63.6			28-140	%REC	1	5/2/2018 22:26
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>1.2</b>		<b>0.0068</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
<b>Ethylbenzene</b>	<b>0.29</b>		<b>0.0084</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
<b>m,p-Xylene</b>	<b>1.3</b>		<b>0.019</b>	<b>0.080</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
<b>o-Xylene</b>	<b>0.25</b>		<b>0.015</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
<b>Toluene</b>	<b>2.3</b>		<b>0.011</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
<b>Xylenes, Total</b>	<b>1.6</b>		<b>0.034</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:09
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	5/5/2018 06:09
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	5/5/2018 06:09
Surr: Dibromofluoromethane	90.6			70-130	%REC	1	5/5/2018 06:09
Surr: Toluene-d8	101			70-130	%REC	1	5/5/2018 06:09
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>8.6</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>16</b>		<b>0.36</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.36	1.2	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>14</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.33</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID02)  
**Collection Date:** 4/30/2018 02:05 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-06  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/2/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>130</b>		<b>3.2</b>	<b>5.5</b>	<b>mg/Kg-dry</b>	1	5/4/2018 01:52
Surr: 4-Terphenyl-d14	85.1			34-130	%REC	1	5/4/2018 01:52
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/2/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>63</b>		<b>2.8</b>	<b>6.6</b>	<b>mg/Kg-dry</b>	1	5/8/2018 04:09
Surr: Toluene-d8	82.6			71-123	%REC	1	5/8/2018 04:09
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/4/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.046</b>		<b>0.0021</b>	<b>0.021</b>	<b>mg/Kg-dry</b>	1	5/4/2018 20:58
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/3/18		Analyst: <b>HBA</b>
<b>Arsenic</b>	<b>11</b>		<b>0.11</b>	<b>0.43</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Barium</b>	<b>390</b>		<b>0.17</b>	<b>0.43</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Cadmium</b>	<b>0.49</b>	J	<b>0.042</b>	<b>0.87</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Chromium</b>	<b>17</b>		<b>0.024</b>	<b>0.43</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Copper</b>	<b>32</b>		<b>0.19</b>	<b>0.87</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Lead</b>	<b>9.6</b>		<b>0.092</b>	<b>0.43</b>	<b>mg/Kg-dry</b>	1	5/7/2018 15:26
<b>Nickel</b>	<b>15</b>		<b>0.17</b>	<b>0.43</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>Selenium</b>	<b>3.5</b>		<b>0.24</b>	<b>0.87</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
Silver	U		0.054	0.43	mg/Kg-dry	1	5/4/2018 06:05
<b>Zinc</b>	<b>59</b>		<b>0.069</b>	<b>0.87</b>	<b>mg/Kg-dry</b>	1	5/4/2018 06:05
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>590</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	10	5/3/2018 16:50
<b>Magnesium</b>	<b>33</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:50
<b>Sodium</b>	<b>1,200</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	10	5/3/2018 16:50
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>13</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	5/3/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/2/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0033	0.046	mg/Kg-dry	1	5/2/2018 22:40
Anthracene	U		0.0017	0.046	mg/Kg-dry	1	5/2/2018 22:40
Benzo(a)anthracene	U		0.0028	0.046	mg/Kg-dry	1	5/2/2018 22:40
Benzo(a)pyrene	U		0.0012	0.046	mg/Kg-dry	1	5/2/2018 22:40
Benzo(b)fluoranthene	U		0.0018	0.046	mg/Kg-dry	1	5/2/2018 22:40
Benzo(k)fluoranthene	U		0.0024	0.046	mg/Kg-dry	1	5/2/2018 22:40
Chrysene	U		0.0018	0.046	mg/Kg-dry	1	5/2/2018 22:40
Dibenzo(a,h)anthracene	U		0.0015	0.046	mg/Kg-dry	1	5/2/2018 22:40
Fluoranthene	U		0.0013	0.046	mg/Kg-dry	1	5/2/2018 22:40

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

# ALS Group, USA

Date: 09-May-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180430-26A (CUT-MID02)  
**Collection Date:** 4/30/2018 02:05 PM

**Work Order:** 1805026  
**Lab ID:** 1805026-06  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Fluorene</b>	<b>0.047</b>		<b>0.0015</b>	<b>0.046</b>	<b>mg/Kg-dry</b>	1	5/2/2018 22:40
Indeno(1,2,3-cd)pyrene	U		0.0014	0.046	mg/Kg-dry	1	5/2/2018 22:40
<b>Naphthalene</b>	<b>0.43</b>		<b>0.0087</b>	<b>0.046</b>	<b>mg/Kg-dry</b>	1	5/2/2018 22:40
Pyrene	U		0.0017	0.046	mg/Kg-dry	1	5/2/2018 22:40
Surr: 2-Fluorobiphenyl	82.8			20-140	%REC	1	5/2/2018 22:40
Surr: 4-Terphenyl-d14	89.7			22-172	%REC	1	5/2/2018 22:40
Surr: Nitrobenzene-d5	85.1			28-140	%REC	1	5/2/2018 22:40
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260B</b>		Prep: SW5035 / 5/2/18		Analyst: <b>EMR</b>
<b>Benzene</b>	<b>0.75</b>		<b>0.0068</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
<b>Ethylbenzene</b>	<b>0.26</b>		<b>0.0084</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
<b>m,p-Xylene</b>	<b>1.5</b>		<b>0.019</b>	<b>0.080</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
<b>o-Xylene</b>	<b>0.27</b>		<b>0.015</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
<b>Toluene</b>	<b>2.1</b>		<b>0.011</b>	<b>0.040</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
<b>Xylenes, Total</b>	<b>1.7</b>		<b>0.034</b>	<b>0.12</b>	<b>mg/Kg-dry</b>	1	5/5/2018 06:24
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	5/5/2018 06:24
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	5/5/2018 06:24
Surr: Dibromofluoromethane	86.8			70-130	%REC	1	5/5/2018 06:24
Surr: Toluene-d8	102			70-130	%REC	1	5/5/2018 06:24
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/3/18		Analyst: <b>ED</b>
<b>Electrical Conductivity @ Saturation</b>	<b>9.7</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	5/4/2018 14:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
<b>Chromium, Trivalent</b>	<b>17</b>		<b>0.36</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	5/4/2018 15:30
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/2/18		Analyst: <b>MB</b>
<b>Chromium, Hexavalent</b>	U		0.35	1.1	mg/Kg-dry	1	5/4/2018 11:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>14</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	5/2/2018 17:30
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/2/18		Analyst: <b>RZM</b>
<b>pH</b>	<b>8.22</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	5/3/2018 09:40

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



**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

**QC BATCH REPORT**

Batch ID: **117739** Instrument ID **GC8** Method: **SW8015C**

<b>MBLK</b>		Sample ID: <b>DBLKS1-117739-117739</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 01:49 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015902</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.3	0	3.33	0	69.1	34-130	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-117739-117739</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 02:18 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015903</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	315	5.0	333	0	94.6	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	3.35	0	3.33	0	101	34-130	0			

<b>MS</b>		Sample ID: <b>1805099-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 03:17 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015905</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	539.8	5.0	332.5	900	-108	65-122	0			S
<i>Surr: 4-Terphenyl-d14</i>	2.629	0	3.325	0	79.1	34-130	0			

<b>MSD</b>		Sample ID: <b>1805099-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 03:46 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015906</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	494.2	5.0	331.3	900	-123	65-122	539.8	8.82	30	S
<i>Surr: 4-Terphenyl-d14</i>	2.968	0	3.313	0	89.6	34-130	2.629	12.1	30	

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B		

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117750**      Instrument ID **GC8**      Method: **SW8015C**

<b>MBLK</b>		Sample ID: <b>DBLKS1-117750-117750</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 08:08 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015914</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	2.583	0	3.33	0	77.6	34-130	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-117750-117750</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 08:37 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015916</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	307.2	5.0	333	0	92.2	65-122	0			
Surr: 4-Terphenyl-d14	2.65	0	3.33	0	79.6	34-130	0			

<b>MS</b>		Sample ID: <b>1805110-02A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 09:35 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015921</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	755.8	4.9	326.2	226.2	162	65-122	0			S
Surr: 4-Terphenyl-d14	2.645	0	3.262	0	81.1	34-130	0			

<b>MSD</b>		Sample ID: <b>1805110-02A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/3/2018 10:04 AM</b>		
Client ID:		Run ID: <b>GC8_180502A</b>				SeqNo: <b>5015923</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	557.1	5.0	332.9	226.2	99.4	65-122	755.8	30.3	30	R
Surr: 4-Terphenyl-d14	2.849	0	3.329	0	85.6	34-130	2.645	7.44	30	

The following samples were analyzed in this batch:
 

1805026-05B	1805026-06B
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117726**      Instrument ID: **GC9**      Method: **SW8015D**

<b>MBLK</b>		Sample ID: <b>MBLK-117726-117726</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/5/2018 12:15 PM</b>		
Client ID:		Run ID: <b>GC9_180504B</b>				SeqNo: <b>5020237</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
<i>Surr: Toluene-d8</i>	4618	0	5000	0	92.4	71-123	0			

<b>LCS</b>		Sample ID: <b>LCS-117726-117726</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/4/2018 11:16 PM</b>		
Client ID:		Run ID: <b>GC9_180504B</b>				SeqNo: <b>5020214</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	471800	5,000	500000	0	94.4	71-123	0			
<i>Surr: Toluene-d8</i>	4664	0	5000	0	93.3	71-123	0			

<b>MS</b>		Sample ID: <b>1805008-04A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/5/2018 03:44 AM</b>		
Client ID:		Run ID: <b>GC9_180504B</b>				SeqNo: <b>5020223</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	622900	7,300	734600	0	84.8	71-123	0			
<i>Surr: Toluene-d8</i>	6485	0	7346	0	88.3	71-123	0			

<b>MSD</b>		Sample ID: <b>1805008-04A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/5/2018 04:14 AM</b>		
Client ID:		Run ID: <b>GC9_180504B</b>				SeqNo: <b>5020224</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	597300	7,300	734600	0	81.3	71-123	622900	4.2	30	
<i>Surr: Toluene-d8</i>	6184	0	7346	0	84.2	71-123	6485	4.74	30	

The following samples were analyzed in this batch:

1805026-01A	1805026-02A	1805026-03A
1805026-04A	1805026-05A	1805026-06A

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117886** Instrument ID **HG1** Method: **SW7471B**

<b>MBLK</b>		Sample ID: <b>MBLK-117886-117886</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 07:43 PM</b>		
Client ID:		Run ID: <b>HG1_180504A</b>				SeqNo: <b>5020540</b>		Prep Date: <b>5/4/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

<b>LCS</b>		Sample ID: <b>LCS-117886-117886</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 07:46 PM</b>		
Client ID:		Run ID: <b>HG1_180504A</b>				SeqNo: <b>5020541</b>		Prep Date: <b>5/4/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1833 0.020 0.1665 0 110 80-120 0

<b>MS</b>		Sample ID: <b>18041784-02BMS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 07:54 PM</b>		
Client ID:		Run ID: <b>HG1_180504A</b>				SeqNo: <b>5020544</b>		Prep Date: <b>5/4/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1591 0.018 0.1471 0.00132 107 75-125 0

<b>MSD</b>		Sample ID: <b>18041784-02BMSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 07:57 PM</b>		
Client ID:		Run ID: <b>HG1_180504A</b>				SeqNo: <b>5020545</b>		Prep Date: <b>5/4/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1558 0.018 0.1476 0.00132 105 75-125 0.1591 2.05 35

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117805** Instrument ID **ICP2** Method: **SW846 6010C**

Sample ID: MBLK-117805-117805				Units: mg/Kg			Analysis Date: 5/3/2018 01:46 PM			
Client ID:		Run ID: ICP2_180503A			SeqNo: 5016317		Prep Date: 5/3/2018		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	U	0.25								
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	0.04155	0.25								J
Zinc	U	0.50								

LCS				Sample ID: LCS-117805-117805				Units: mg/Kg			Analysis Date: 5/3/2018 01:52 PM			
Client ID:				Run ID: ICP2_180503A				SeqNo: 5016318			Prep Date: 5/3/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Arsenic	4.93	0.25	5	0	98.6	80-120	0							
Barium	5.056	0.25	5	0	101	80-120	0							
Cadmium	5.127	0.50	5	0	103	80-120	0							
Chromium	5.1	0.25	5	0	102	80-120	0							
Copper	5.286	0.50	5	0	106	80-120	0							
Lead	5.096	0.25	5	0	102	80-120	0							
Nickel	5.238	0.25	5	0	105	80-120	0							
Selenium	4.77	0.50	5	0	95.4	80-120	0							
Silver	5.147	0.25	5	0	103	80-120	0							
Zinc	5.074	0.50	5	0	101	80-120	0							

MS				Sample ID: 18041784-07BMS			Units: mg/Kg		Analysis Date: 5/3/2018 02:05 PM		
Client ID:			Run ID: ICP2_180503A		SeqNo: 5016320		Prep Date: 5/3/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	8.275	0.39	7.728	0.8346	96.3	75-125	0				
Barium	11.3	0.39	7.728	3.06	107	75-125	0				
Cadmium	7.787	0.77	7.728	0.01306	101	75-125	0				
Chromium	10.6	0.39	7.728	2.326	107	75-125	0				
Copper	10.35	0.77	7.728	2.342	104	75-125	0				
Lead	7.937	0.39	7.728	0.7597	92.9	75-125	0				
Nickel	9.434	0.39	7.728	2.11	94.8	75-125	0				
Selenium	9.144	0.77	7.728	1.267	102	75-125	0				
Silver	8.03	0.39	7.728	-0.02427	104	75-125	0				
Zinc	14.01	0.77	7.728	6.406	98.4	75-125	0				

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117805** Instrument ID **ICP2** Method: **SW846 6010C**

MSD				Sample ID: 18041784-07BMSD			Units: mg/Kg		Analysis Date: 5/3/2018 02:11 PM		
Client ID:			Run ID: ICP2_180503A			SeqNo: 5016321		Prep Date: 5/3/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	8.473	0.39	7.704	0.8346	99.2	75-125	8.275	2.37	20		
Barium	11.84	0.39	7.704	3.06	114	75-125	11.3	4.63	20		
Cadmium	7.826	0.77	7.704	0.01306	101	75-125	7.787	0.495	20		
Chromium	10.3	0.39	7.704	2.326	104	75-125	10.6	2.84	20		
Copper	11.05	0.77	7.704	2.342	113	75-125	10.35	6.49	20		
Lead	8.008	0.39	7.704	0.7597	94.1	75-125	7.937	0.887	20		
Nickel	9.643	0.39	7.704	2.11	97.8	75-125	9.434	2.19	20		
Selenium	9.167	0.77	7.704	1.267	103	75-125	9.144	0.242	20		
Silver	8.129	0.39	7.704	-0.02427	106	75-125	8.03	1.22	20		
Zinc	14.78	0.77	7.704	6.406	109	75-125	14.01	5.38	20		

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117824**      Instrument ID **ICPMS3**      Method: **SW6020A**

<b>DUP</b>		Sample ID: <b>1805026-02BDUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/3/2018 04:44 PM</b>		
Client ID: <b>20180430-26A (CUT-S)</b>		Run ID: <b>ICPMS3_180503A</b>				SeqNo: <b>5017581</b>		Prep Date: <b>5/3/2018</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	351.9	5.0	0	0	0	0-0	298.7	16.3		
Magnesium	26.58	2.0	0	0	0	0-0	23.42	12.6		
Sodium	993.1	2.0	0	0	0	0-0	937	5.81		

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

Batch ID: **117824**      Instrument ID **SAR**      Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>1805026-02BDUP</b>				Units: <b>none</b>		Analysis Date: <b>5/3/2018</b>		
Client ID: <b>20180430-26A (CUT-S)</b>		Run ID: <b>SAR_180503A</b>				SeqNo: <b>5023127</b>		Prep Date: <b>5/3/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	13.75	0.010	0	0	0		14.05	2.16	50	

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

# QC BATCH REPORT

Batch ID: **117738**      Instrument ID **SVMS6**      Method: **SW846 8270D**

MBLK				Sample ID: SBLKS1-117738-117738				Units: µg/Kg			Analysis Date: 5/2/2018 08:03 PM		
Client ID:			Run ID: SVMS6_180502A				SeqNo: 5015645		Prep Date: 5/2/2018		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	2617	0	3333	0	78.5	20-140		0					
Surr: 4-Terphenyl-d14	3283	0	3333	0	98.5	22-172		0					
Surr: Nitrobenzene-d5	2937	0	3333	0	88.1	28-140		0					

LCS				Sample ID: SLCSS1-117738-117738				Units: µg/Kg		Analysis Date: 5/2/2018 08:17 PM	
Client ID:			Run ID: SVMS6_180502A			SeqNo: 5015646		Prep Date: 5/2/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1072	42	1333	0	80.4	40-140	0				
Anthracene	1132	42	1333	0	84.9	40-140	0				
Benzo(a)anthracene	1040	42	1333	0	78	40-140	0				
Benzo(a)pyrene	1303	42	1333	0	97.7	40-140	0				
Benzo(b)fluoranthene	940.6	42	1333	0	70.6	40-140	0				
Benzo(k)fluoranthene	1330	42	1333	0	99.8	40-140	0				
Chrysene	1338	42	1333	0	100	40-140	0				
Dibenzo(a,h)anthracene	1248	42	1333	0	93.6	40-140	0				
Fluoranthene	1359	42	1333	0	102	40-140	0				
Fluorene	1189	42	1333	0	89.2	40-140	0				
Indeno(1,2,3-cd)pyrene	1303	42	1333	0	97.7	40-140	0				
Naphthalene	1161	42	1333	0	87.1	40-140	0				
Pyrene	1179	42	1333	0	88.4	40-140	0				
Surr: 2-Fluorobiphenyl	2542	0	3333	0	76.3	20-140	0				
Surr: 4-Terphenyl-d14	2678	0	3333	0	80.3	22-172	0				
Surr: Nitrobenzene-d5	3432	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:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

# QC BATCH REPORT

Batch ID: **117738**      Instrument ID **SVMS6**      Method: **SW846 8270D**

MS				Sample ID: <b>1805019-03C MS</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>5/2/2018 08:32 PM</b>	
Client ID:				Run ID: <b>SVMS6_180502A</b>			SeqNo: <b>5015647</b>		Prep Date: <b>5/2/2018</b>	
									DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1122	40	1294	0	86.7	40-140	0			
Anthracene	1257	40	1294	0	97.1	40-140	0			
Benzo(a)anthracene	1085	40	1294	0	83.8	40-140	0			
Benzo(a)pyrene	1094	40	1294	0	84.5	40-140	0			
Benzo(b)fluoranthene	1129	40	1294	0	87.3	40-140	0			
Benzo(k)fluoranthene	1337	40	1294	0	103	40-140	0			
Chrysene	1380	40	1294	0	107	40-140	0			
Dibenzo(a,h)anthracene	1197	40	1294	0	92.5	40-140	0			
Fluoranthene	1413	40	1294	0	109	40-140	0			
Fluorene	1267	40	1294	0	97.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1225	40	1294	0	94.7	40-140	0			
Naphthalene	1235	40	1294	0	95.4	40-140	0			
Pyrene	1222	40	1294	0	94.4	40-140	0			
Surr: 2-Fluorobiphenyl	2800	0	3237	0	86.5	20-140	0			
Surr: 4-Terphenyl-d14	2667	0	3237	0	82.4	22-172	0			
Surr: Nitrobenzene-d5	3467	0	3237	0	107	28-140	0			

MSD				Sample ID: <b>1805019-03C MSD</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>5/2/2018 08:46 PM</b>	
Client ID:				Run ID: <b>SVMS6_180502A</b>			SeqNo: <b>5015648</b>		Prep Date: <b>5/2/2018</b>	
									DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1169	41	1324	0	88.3	40-140	1122	4.13	30	
Anthracene	1191	41	1324	0	90	40-140	1257	5.38	30	
Benzo(a)anthracene	1099	41	1324	0	83.1	40-140	1085	1.3	30	
Benzo(a)pyrene	1372	41	1324	0	104	40-140	1094	22.5	30	
Benzo(b)fluoranthene	998.4	41	1324	0	75.4	40-140	1129	12.3	30	
Benzo(k)fluoranthene	1361	41	1324	0	103	40-140	1337	1.77	30	
Chrysene	1405	41	1324	0	106	40-140	1380	1.79	30	
Dibenzo(a,h)anthracene	1247	41	1324	0	94.2	40-140	1197	4.05	30	
Fluoranthene	1425	41	1324	0	108	40-140	1413	0.849	30	
Fluorene	1305	41	1324	0	98.6	40-140	1267	2.96	30	
Indeno(1,2,3-cd)pyrene	1205	41	1324	0	91	40-140	1225	1.68	30	
Naphthalene	1257	41	1324	0	94.9	40-140	1235	1.75	30	
Pyrene	1249	41	1324	0	94.4	40-140	1222	2.22	30	
Surr: 2-Fluorobiphenyl	2951	0	3310	0	89.2	20-140	2800	5.27	0	
Surr: 4-Terphenyl-d14	2754	0	3310	0	83.2	22-172	2667	3.22	0	
Surr: Nitrobenzene-d5	3443	0	3310	0	104	28-140	3467	0.707	0	

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B		

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

# QC BATCH REPORT

Batch ID: **117749**      Instrument ID **SVMS6**      Method: **SW846 8270D**

MBLK				Sample ID: SBLKS1-117749-117749				Units: µg/Kg			Analysis Date: 5/2/2018 09:14 PM		
Client ID:			Run ID: SVMS6_180502A				SeqNo: 5015650		Prep Date: 5/2/2018		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	2813	0	3333	0	84.4	20-140	0						
Surr: 4-Terphenyl-d14	3120	0	3333	0	93.6	22-172	0						
Surr: Nitrobenzene-d5	3152	0	3333	0	94.6	28-140	0						

LCS				Sample ID: SLCSS1-117749-117749			Units: µg/Kg		Analysis Date: 5/2/2018 09:29 PM		
Client ID:			Run ID: SVMS6_180502A			SeqNo: 5015651		Prep Date: 5/2/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1106	42	1333	0	83	40-140	0				
Anthracene	1112	42	1333	0	83.4	40-140	0				
Benzo(a)anthracene	991.4	42	1333	0	74.4	40-140	0				
Benzo(a)pyrene	1355	42	1333	0	102	40-140	0				
Benzo(b)fluoranthene	852.2	42	1333	0	63.9	40-140	0				
Benzo(k)fluoranthene	1388	42	1333	0	104	40-140	0				
Chrysene	1358	42	1333	0	102	40-140	0				
Dibenzo(a,h)anthracene	1208	42	1333	0	90.6	40-140	0				
Fluoranthene	1326	42	1333	0	99.5	40-140	0				
Fluorene	1220	42	1333	0	91.5	40-140	0				
Indeno(1,2,3-cd)pyrene	1207	42	1333	0	90.6	40-140	0				
Naphthalene	1187	42	1333	0	89.1	40-140	0				
Pyrene	1168	42	1333	0	87.6	40-140	0				
Surr: 2-Fluorobiphenyl	2766	0	3333	0	83	20-140	0				
Surr: 4-Terphenyl-d14	3189	0	3333	0	95.7	22-172	0				
Surr: Nitrobenzene-d5	3661	0	3333	0	110	28-140	0				

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117749**      Instrument ID **SVMS6**      Method: **SW846 8270D**

MS				Sample ID: <b>1805075-28B MS</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>5/2/2018 09:43 PM</b>	
Client ID:				Run ID: <b>SVMS6_180502A</b>			SeqNo: <b>5015652</b>		Prep Date: <b>5/2/2018</b>	
									DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1046	40	1272	0	82.2	40-140	0			
Anthracene	1136	40	1272	0	89.3	40-140	0			
Benzo(a)anthracene	841.8	40	1272	0	66.2	40-140	0			
Benzo(a)pyrene	1331	40	1272	0	105	40-140	0			
Benzo(b)fluoranthene	947.5	40	1272	0	74.5	40-140	0			
Benzo(k)fluoranthene	1293	40	1272	0	102	40-140	0			
Chrysene	1380	40	1272	0	108	40-140	0			
Dibenzo(a,h)anthracene	1201	40	1272	0	94.4	40-140	0			
Fluoranthene	1189	40	1272	0	93.4	40-140	0			
Fluorene	1189	40	1272	0	93.4	40-140	0			
Indeno(1,2,3-cd)pyrene	1176	40	1272	0	92.4	40-140	0			
Naphthalene	1140	40	1272	0	89.6	40-140	0			
Pyrene	1222	40	1272	0	96.1	40-140	0			
Surr: 2-Fluorobiphenyl	2950	0	3182	0	92.7	20-140	0			
Surr: 4-Terphenyl-d14	3271	0	3182	0	103	22-172	0			
Surr: Nitrobenzene-d5	3447	0	3182	0	108	28-140	0			

MSD				Sample ID: <b>1805075-28B MSD</b>			Units: <b>µg/Kg</b>		Analysis Date: <b>5/2/2018 09:57 PM</b>	
Client ID:				Run ID: <b>SVMS6_180502A</b>			SeqNo: <b>5015653</b>		Prep Date: <b>5/2/2018</b>	
									DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1097	42	1327	0	82.7	40-140	1046	4.81	30	
Anthracene	1223	42	1327	0	92.2	40-140	1136	7.33	30	
Benzo(a)anthracene	901	42	1327	0	67.9	40-140	841.8	6.8	30	
Benzo(a)pyrene	1353	42	1327	0	102	40-140	1331	1.67	30	
Benzo(b)fluoranthene	1000	42	1327	0	75.4	40-140	947.5	5.43	30	
Benzo(k)fluoranthene	1410	42	1327	0	106	40-140	1293	8.66	30	
Chrysene	1456	42	1327	0	110	40-140	1380	5.38	30	
Dibenzo(a,h)anthracene	1250	42	1327	0	94.2	40-140	1201	3.93	30	
Fluoranthene	1178	42	1327	0	88.8	40-140	1189	0.961	30	
Fluorene	1282	42	1327	0	96.7	40-140	1189	7.57	30	
Indeno(1,2,3-cd)pyrene	1227	42	1327	0	92.5	40-140	1176	4.23	30	
Naphthalene	1272	42	1327	0	95.9	40-140	1140	11	30	
Pyrene	1205	42	1327	0	90.8	40-140	1222	1.47	30	
Surr: 2-Fluorobiphenyl	3059	0	3318	0	92.2	20-140	2950	3.62	0	
Surr: 4-Terphenyl-d14	3297	0	3318	0	99.4	22-172	3271	0.785	0	
Surr: Nitrobenzene-d5	3165	0	3318	0	95.4	28-140	3447	8.53	0	

The following samples were analyzed in this batch:

1805026-05B      1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117722**      Instrument ID **VMS8**      Method: **SW8260B**

<b>MBLK</b>		Sample ID: <b>MBLK-117722-117722</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/8/2018 03:56 AM</b>		
Client ID:		Run ID: <b>VMS8_180507C</b>				SeqNo: <b>5023213</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
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								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1012</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>101</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>985</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>98.5</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Dibromofluoromethane</i>	<i>1012</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>101</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Toluene-d8</i>	<i>995.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99.6</i>	<i>70-130</i>	<i>0</i>			

<b>LCS</b>		Sample ID: <b>LCS-117722-117722</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/8/2018 03:09 AM</b>		
Client ID:		Run ID: <b>VMS8_180507C</b>				SeqNo: <b>5023212</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1096	30	1000	0	110	75-125	0			
Ethylbenzene	1103	30	1000	0	110	75-125	0			
m,p-Xylene	2240	60	2000	0	112	80-125	0			
o-Xylene	1102	30	1000	0	110	75-125	0			
Toluene	1116	30	1000	0	112	70-125	0			
Xylenes, Total	3342	90	3000	0	111	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>990.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>985.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>98.6</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Dibromofluoromethane</i>	<i>955.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>95.6</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Toluene-d8</i>	<i>1002</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>100</i>	<i>70-130</i>	<i>0</i>			

The following samples were analyzed in this batch:

1805026-01A	1805026-02A	1805026-03A
1805026-04A	1805026-05A	1805026-06A

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

Client: Caerus Oil and Gas LLC  
 Work Order: 1805026  
 Project: Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: 117747 Instrument ID WETCHEM Method: SW7196A

<b>MBLK</b>		Sample ID: <b>MBLK-117747-117747</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 11:00 AM</b>		
Client ID:		Run ID: <b>WETCHEM_180504G</b>				SeqNo: <b>5018331</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

<b>LCS</b>		Sample ID: <b>LCS-117747-117747</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 11:00 AM</b>		
Client ID:		Run ID: <b>WETCHEM_180504G</b>				SeqNo: <b>5018330</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.43 0.93 4.673 0 94.8 80-120 0

<b>MS</b>		Sample ID: <b>1805026-01B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 11:00 AM</b>		
Client ID: <b>20180430-26A (CUT-E)</b>		Run ID: <b>WETCHEM_180504G</b>				SeqNo: <b>5018321</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 0.4615 0.96 4.808 -0.1667 13.1 75-125 0 JS

<b>MS</b>		Sample ID: <b>1805026-01B MSI</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 11:00 AM</b>		
Client ID: <b>20180430-26A (CUT-E)</b>		Run ID: <b>WETCHEM_180504G</b>				SeqNo: <b>5018323</b>		Prep Date: <b>5/2/2018</b>		DF: <b>100</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 973.8 97 1531 -0.1667 63.6 75-125 0 S

<b>MSD</b>		Sample ID: <b>1805026-01B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/4/2018 11:00 AM</b>		
Client ID: <b>20180430-26A (CUT-E)</b>		Run ID: <b>WETCHEM_180504G</b>				SeqNo: <b>5018322</b>		Prep Date: <b>5/2/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 0.97 4.854 -0.1667 3.43 75-125 0.4615 0 20 S

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117772** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-117772-117772				Units: s.u.		Analysis Date: 5/3/2018 09:40 AM		
Client ID:		Run ID: WETCHEM_180503A				SeqNo: 5015518		Prep Date: 5/2/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	4	0.10	4	0	100	90-110	0			
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DUP				Sample ID: 1805026-03B DUP				Units: s.u.			Analysis Date: 5/3/2018 09:40 AM		
Client ID: 20180430-26A (CUT-N)				Run ID: WETCHEM_180503A				SeqNo: 5015522		Prep Date: 5/2/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH	8.41	0.10	0	0	0	0-0	8.39	0.238	20	
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DUP				Sample ID: 1805095-01A DUP				Units: s.u.			Analysis Date: 5/3/2018 09:40 AM			
Client ID:				Run ID: WETCHEM_180503A				SeqNo: 5015530			Prep Date: 5/2/2018		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	8.17	0.10	0	0	0	0-0	8.27	1.22	20	
----	------	------	---	---	---	-----	------	------	----	--

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **117824** Instrument ID **Titrator 1** Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>1805026-02BDUP</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>5/4/2018 02:20 PM</b>		
Client ID: <b>20180430-26A (CUT-S)</b>			Run ID: <b>TITRATOR 1_180504F</b>		SeqNo: <b>5018593</b>		Prep Date: <b>5/3/2018</b>		DF: <b>20</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	7.255	0.10	0	0	0		6.617	9.2	50	

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 1805026  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **R235153** Instrument ID **MOIST** Method: **SW3550C**

<b>MBLK</b>		Sample ID: <b>WBLKS-R235153</b>				Units: % of sample		Analysis Date: <b>5/2/2018 05:30 PM</b>		
Client ID:		Run ID: <b>MOIST_180502C</b>				SeqNo: <b>5015708</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.050								J

<b>LCS</b>		Sample ID: <b>LCS-R235153</b>				Units: % of sample		Analysis Date: <b>5/2/2018 05:30 PM</b>		
Client ID:		Run ID: <b>MOIST_180502C</b>				SeqNo: <b>5015707</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

<b>DUP</b>		Sample ID: <b>1805040-02B DUP</b>				Units: % of sample		Analysis Date: <b>5/2/2018 05:30 PM</b>		
Client ID:		Run ID: <b>MOIST_180502C</b>				SeqNo: <b>5015698</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.89	0.050	0	0	0	0-0	14.78	0.741	10	

<b>DUP</b>		Sample ID: <b>1805040-03B DUP</b>				Units: % of sample		Analysis Date: <b>5/2/2018 05:30 PM</b>		
Client ID:		Run ID: <b>MOIST_180502C</b>				SeqNo: <b>5015700</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	18.1	0.050	0	0	0	0-0	17.98	0.665	10	

The following samples were analyzed in this batch:

1805026-01B	1805026-02B	1805026-03B
1805026-04B	1805026-05B	1805026-06B

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





## CHAIN OF CUSTODY

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

1805026  
COC number (for client tracking)

Page 1 of 1

[illegible]

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

ALS Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 Email: [als@als.com.hk](mailto:als@als.com.hk)

5R2 2.8°C

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **01-May-18 09:00**

Work Order: **1805026**

Received by: **KRW**

Checklist completed by Keith Wurenga  
eSignature

01-May-18  
Date

Reviewed by: Chad Whelton  
eSignature

02-May-18  
Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.8/2.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/1/2018 1:09:46 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

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Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: