



05-Jul-2018

Jake Janicek  
Caerus Oil and Gas LLC  
143 Diamond Ave.  
Parachute, CO 81635

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

Work Order: **18061931**

Dear Jake,

ALS Environmental received 6 samples on 28-Jun-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 13.

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

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER



**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Work Order:** 18061931

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
18061931-01	20180626-Puckett 697-26A (CUTE)	Soil		6/26/2018 14:45	6/28/2018 09:30	<input type="checkbox"/>
18061931-02	20180626-Puckett 697-26A (CUTN)	Soil		6/26/2018 15:40	6/28/2018 09:30	<input type="checkbox"/>
18061931-03	20180626-Puckett 697-26A (CUTMID)	Soil		6/26/2018 16:00	6/28/2018 09:30	<input type="checkbox"/>
18061931-04	20180626-Puckett 697-26A (CUTMID01)	Soil		6/26/2018 16:30	6/28/2018 09:30	<input type="checkbox"/>
18061931-05	20180626-Puckett 697-26A (CUTMID02)	Soil		6/26/2018 16:50	6/28/2018 09:30	<input type="checkbox"/>
18061931-06	20180626-Puckett 697-26A (CUTS)	Soil		6/26/2018 17:20	6/28/2018 09:30	<input type="checkbox"/>



**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**WorkOrder:** 18061931

## QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
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.

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

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTE)  
**Collection Date:** 6/26/2018 02:45 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>BG</b>
<b>Benzene</b>	<b>0.87</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	7/3/2018 05:36
Surr: 1,2-Dichloroethane-d4	109			70-130	%REC	1	7/3/2018 05:36
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	7/3/2018 05:36
Surr: Dibromofluoromethane	89.2			70-130	%REC	1	7/3/2018 05:36
Surr: Toluene-d8	104			70-130	%REC	1	7/3/2018 05:36
<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	7/3/2018 16:50

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



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTN)  
**Collection Date:** 6/26/2018 03:40 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-02  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>BG</b>
<b>Benzene</b>	<b>0.72</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	7/3/2018 05:58
Surr: 1,2-Dichloroethane-d4	109			70-130	%REC	1	7/3/2018 05:58
Surr: 4-Bromofluorobenzene	97.2			70-130	%REC	1	7/3/2018 05:58
Surr: Dibromofluoromethane	88.8			70-130	%REC	1	7/3/2018 05:58
Surr: Toluene-d8	105			70-130	%REC	1	7/3/2018 05:58
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	7/3/2018 16:50

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



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTMID)  
**Collection Date:** 6/26/2018 04:00 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-03  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>BG</b>
<b>Benzene</b>	<b>0.69</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	7/3/2018 07:28
Surr: 1,2-Dichloroethane-d4	109			70-130	%REC	1	7/3/2018 07:28
Surr: 4-Bromofluorobenzene	98.7			70-130	%REC	1	7/3/2018 07:28
Surr: Dibromofluoromethane	87.2			70-130	%REC	1	7/3/2018 07:28
Surr: Toluene-d8	104			70-130	%REC	1	7/3/2018 07:28
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	7/3/2018 16:50

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



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTMID01)  
**Collection Date:** 6/26/2018 04:30 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-04  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>BG</b>
<b>Benzene</b>	<b>0.52</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	7/3/2018 07:50
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	7/3/2018 07:50
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	7/3/2018 07:50
Surr: Dibromofluoromethane	86.0			70-130	%REC	1	7/3/2018 07:50
Surr: Toluene-d8	107			70-130	%REC	1	7/3/2018 07:50
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>12</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	7/3/2018 16:50

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



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTMID02)  
**Collection Date:** 6/26/2018 04:50 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-05  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>LSY</b>
<b>Benzene</b>	<b>0.31</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	6/29/2018 20:21
Surr: 1,2-Dichloroethane-d4	109			70-130	%REC	1	6/29/2018 20:21
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	6/29/2018 20:21
Surr: Dibromofluoromethane	91.8			70-130	%REC	1	6/29/2018 20:21
Surr: Toluene-d8	96.6			70-130	%REC	1	6/29/2018 20:21
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	7/3/2018 16:50

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



**ALS Group, USA**

Date: 05-Jul-18

**Client:** Caerus Oil and Gas LLC  
**Project:** Puckett 697-26A Cuttings Sampling  
**Sample ID:** 20180626-Puckett 697-26A (CUTS)  
**Collection Date:** 6/26/2018 05:20 PM

**Work Order:** 18061931  
**Lab ID:** 18061931-06  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>							
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 6/29/18		Analyst: <b>LSY</b>
<b>Benzene</b>	<b>1.1</b>		<b>0.0051</b>	<b>0.030</b>	<b>mg/Kg-dry</b>	1	6/29/2018 20:36
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	6/29/2018 20:36
Surr: 4-Bromofluorobenzene	96.6			70-130	%REC	1	6/29/2018 20:36
Surr: Dibromofluoromethane	90.8			70-130	%REC	1	6/29/2018 20:36
Surr: Toluene-d8	93.5			70-130	%REC	1	6/29/2018 20:36
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>NW</b>
<b>Moisture</b>	<b>13</b>		<b>0.025</b>	<b>0.050</b>	<b>% of sample</b>	1	7/3/2018 16:50

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



Client: Caerus Oil and Gas LLC

## QC BATCH REPORT

Work Order: 18061931

Project: Puckett 697-26A Cuttings Sampling

Batch ID: 120645

Instrument ID VMS9

Method: SW8260C

<b>MBLK</b>		Sample ID: <b>MBLK-120645-120645</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>6/29/2018 03:41 PM</b>		
Client ID:		Run ID: <b>VMS9_180629A</b>				SeqNo: <b>5123322</b>		Prep Date: <b>6/29/2018</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								
Surr: 1,2-Dichloroethane-d4	1083	0	1000	0	108	70-130	0			
Surr: 4-Bromofluorobenzene	961	0	1000	0	96.1	70-130	0			
Surr: Dibromofluoromethane	939.5	0	1000	0	94	70-130	0			
Surr: Toluene-d8	977	0	1000	0	97.7	70-130	0			

<b>LCS</b>		Sample ID: <b>LCS-120645-120645</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>6/29/2018 02:55 PM</b>		
Client ID:		Run ID: <b>VMS9_180629A</b>				SeqNo: <b>5123321</b>		Prep Date: <b>6/29/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Benzene	1110	30	1000	0	111	75-125	0			
Surr: 1,2-Dichloroethane-d4	1040	0	1000	0	104	70-130	0			
Surr: 4-Bromofluorobenzene	1021	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	1023	0	1000	0	102	70-130	0			
Surr: Toluene-d8	963	0	1000	0	96.3	70-130	0			

<b>MS</b>		Sample ID: <b>18061977-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>6/29/2018 09:53 PM</b>		
Client ID:		Run ID: <b>VMS9_180629A</b>				SeqNo: <b>5123343</b>		Prep Date: <b>6/29/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Benzene	1368	38	1273	61.73	103	75-125	0			
Surr: 1,2-Dichloroethane-d4	1364	0	1273	0	107	70-130	0			
Surr: 4-Bromofluorobenzene	1289	0	1273	0	101	70-130	0			
Surr: Dibromofluoromethane	1234	0	1273	0	97	70-130	0			
Surr: Toluene-d8	1210	0	1273	0	95.1	70-130	0			

<b>MSD</b>		Sample ID: <b>18061977-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>6/29/2018 10:08 PM</b>		
Client ID:		Run ID: <b>VMS9_180629A</b>				SeqNo: <b>5123344</b>		Prep Date: <b>6/29/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Benzene	1377	38	1273	61.73	103	75-125	1368	0.649	30	
Surr: 1,2-Dichloroethane-d4	1312	0	1273	0	103	70-130	1364	3.95	30	
Surr: 4-Bromofluorobenzene	1317	0	1273	0	103	70-130	1289	2.15	30	
Surr: Dibromofluoromethane	1217	0	1273	0	95.6	70-130	1234	1.4	30	
Surr: Toluene-d8	1240	0	1273	0	97.4	70-130	1210	2.44	30	

The following samples were analyzed in this batch:

18061931-01A	18061931-02A	18061931-03A
18061931-04A	18061931-05A	18061931-06A

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



**Client:** Caerus Oil and Gas LLC  
**Work Order:** 18061931  
**Project:** Puckett 697-26A Cuttings Sampling

## QC BATCH REPORT

Batch ID: **R239569**      Instrument ID **MOIST**      Method: **SW3550C**

<b>MBLK</b>		Sample ID: <b>WBLKS-R239569</b>				Units: % of sample		Analysis Date: <b>7/3/2018 04:50 PM</b>		
Client ID:		Run ID: <b>MOIST_180703C</b>				SeqNo: <b>5128730</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      U      0.050

<b>LCS</b>		Sample ID: <b>LCS-R239569</b>				Units: % of sample		Analysis Date: <b>7/3/2018 04:50 PM</b>		
Client ID:		Run ID: <b>MOIST_180703C</b>				SeqNo: <b>5128729</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>18061923-01A DUP</b>				Units: % of sample		Analysis Date: <b>7/3/2018 04:50 PM</b>		
Client ID:		Run ID: <b>MOIST_180703C</b>				SeqNo: <b>5128704</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      12.44      0.050      0      0      0      0-0      12.65      1.67      10

<b>DUP</b>		Sample ID: <b>18061931-03A DUP</b>				Units: % of sample		Analysis Date: <b>7/3/2018 04:50 PM</b>		
Client ID: <b>20180626-Puckett 697-26A (CUTMID)</b>		Run ID: <b>MOIST_180703C</b>				SeqNo: <b>5128716</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture      13.16      0.050      0      0      0      0-0      13.13      0.228      10

The following samples were analyzed in this batch:

18061931-01A	18061931-02A	18061931-03A
18061931-04A	18061931-05A	18061931-06A

**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.

COC number (for client tracking)

1806193

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 2810 2021

Email: [HonoKono@aol.com](mailto:HonoKono@aol.com)

SP2 3.4.0



Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **28-Jun-18 09:30**

Work Order: **18061931**

Received by: **DS**

Checklist completed by Diane Shaw 28-Jun-18  
eSignature Date

Reviewed by: Chad Whelton 29-Jun-18  
eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.4/3.4 c</u> <u>SR2</u>		
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>6/28/2018 4:10:01 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

-----

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: