

M23 Pit Closure
North Parachute Mountain/Caerus Oil & Gas LLC
Facility ID: 414395
REM: 9307

Caerus Oil and Gas LLC (Caerus) contracted Dirtco LLC. to excavate the northern impacts within the M23 pit that was under active remediation. The pit was previously delineated by a solid stem drill rig using split spoon sampling techniques. Prior to excavation only 1 soil boring exceeded COGCC table 910-1 allowable concentrations for Total Petroleum Hydrocarbons (TPH). The lateral and vertical extent of the excavation was defined by the soil boring data. The northern quarter of the pit was excavated down to competent bedrock and the 4 side walls were excavated to the first set of south wells. (please see pit diagram). The pit bottom was not sampled due excavating to bedrock at 15 feet and pit bottom soil not being present.

- September 19th – 22th the impacted area was excavated by heavy machinery and stockpiled on the working surface until laboratory results confirmed impacts to be below COGCC table 910-1.
- Approximately 800 cubic yards of material was stockpiled on the working surface and cover soil was stripped and stockpiled for future cover.
- Grab samples were collected from the sidewalls (09/19/2017) and lab reports identified TPH to be above the COGCC table 910-1 on the southern wall (571mg/kg).
- The excavated stockpile was mixed and composite sampled and laboratory results identified no exceedances above table 910-1.
- An additional 300 cubic yards was excavated from the south wall (09/22/2017) and it was re-sampled for clearance, laboratory results identified no exceedances above table 910-1.
- The new excavated stockpile was mixed and a composite sample was submitted for laboratory analysis, laboratory results identified no exceedances above COGCC table 910-1.
- The pit was backfilled with the stockpiled material and then capped with five feet of cover on 09/27/2017.

This Sundry is being submitted as the Notification of Completion for Remediation #9307. If the information provided is satisfactory, please provide a letter of No Further Action (NFA) and documentation of the closure for this spill/remediation project. Laboratory reports and a site diagram are attached.

If you have any questions pertaining to this project, please let me know.

Matt Kasten
Dirtco – EHS Manager



- - Grab Sample
- - Composite Sample

- - Previous boring/SVE Well
- - Excavation



Pad: M23 Pit Remediation (Facility ID: 414395 / REM # 9307)
Area: North Parachute Mountain (Garfield County)
Legal: SWSW, Sec. 23, T4S, R96W, 6 th PM

Location	Lab	Sample Date:	Sample Matrix	Matrix Notes	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total
M23	ALS	09/19/17	Pit	N wall 15'	467	57	410				
M23	ALS	09/19/17	Pit	W wall 12'	361	31	330				
M23	ALS	09/19/17	Pit	S wall 12'	571	11	560				
M23	ALS	09/19/17	Pit	E wall 12'	259	19	240				
M23	ALS	09/19/17	Pit	Stockpile	202	22	180	<0.052	<0.053	<0.054	<0.16
M23	ALS	09/22/17	Pit	S wall	47	<6.9	47				
M23	ALS	09/22/17	Pit	Stockpile S	9.3	<7.3	9.3				



21-Sep-2017

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

Re: **M23 Pit Rem**

Work Order: **17091159**

Dear Jake,

ALS Environmental received 5 samples on 20-Sep-2017 02:00 PM for the analyses presented in the following report.

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

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

The total number of pages in this report is 14.

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

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

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

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Caerus Oil and Gas LLC
Project: M23 Pit Rem
Work Order: 17091159

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>
17091159-01	20170919-M23 Pit (Nwall 15')	Soil		9/19/2017 13:45	9/20/2017 14:00	<input type="checkbox"/>
17091159-02	20170919-M23 Pit (Wwall) 12'	Soil		9/19/2017 13:50	9/20/2017 14:00	<input type="checkbox"/>
17091159-03	20170919-M23 Pit (Swall) 12'	Soil		9/19/2017 13:55	9/20/2017 14:00	<input type="checkbox"/>
17091159-04	20170919-M23 (Ewall) 12'	Soil		9/19/2017 14:00	9/20/2017 14:00	<input type="checkbox"/>
17091159-05	20170919-M23 (Stockpile)	Soil		9/19/2017 14:10	9/20/2017 14:00	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC**Project:** M23 Pit Rem**Work Order:** 17091159**Case Narrative**

Batch R220471, Method MOISTURE, Sample 17091159-01A DUP: RPD is outside of test control range for moisture; results should be considered estimated.

Client: Caerus Oil and Gas LLC
Project: M23 Pit Rem
WorkOrder: 17091159

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
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:** 21-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit Rem**Work Order:** 17091159**Sample ID:** 20170919-M23 Pit (Nwall 15')**Lab ID:** 17091159-01**Collection Date:** 9/19/2017 01:45 PM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	410		SW8015C		Prep: SW3546 9/20/17 16:33	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	<i>90.1</i>		<i>6.4</i>	<i>mg/Kg-dry</i>	<i>1</i>	9/20/2017 04:46 PM
			<i>34-130</i>	<i>%REC</i>	<i>1</i>	9/20/2017 04:46 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	57		SW8015D		Prep: SW5035 9/20/17 08:00	Analyst: KB
<i>Surr: Toluene-d8</i>	<i>80.7</i>		<i>7.8</i>	<i>mg/Kg-dry</i>	<i>1</i>	9/20/2017 04:59 PM
			<i>71-123</i>	<i>%REC</i>	<i>1</i>	9/20/2017 04:59 PM
MOISTURE						
Moisture	22		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/20/2017 04:00 PM

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

ALS Group, USA**Date:** 21-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit Rem**Work Order:** 17091159**Sample ID:** 20170919-M23 Pit (Wwall) 12'**Lab ID:** 17091159-02**Collection Date:** 9/19/2017 01:50 PM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	330		SW8015C		Prep: SW3546 9/20/17 16:33	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	<i>86.6</i>		<i>6.0</i>	<i>mg/Kg-dry</i>	<i>1</i>	9/20/2017 05:15 PM
			<i>34-130</i>	<i>%REC</i>	<i>1</i>	9/20/2017 05:15 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	31		SW8015D		Prep: SW5035 9/20/17 08:00	Analyst: KB
<i>Surr: Toluene-d8</i>	<i>95.0</i>		<i>7.8</i>	<i>mg/Kg-dry</i>	<i>1</i>	9/20/2017 05:30 PM
			<i>71-123</i>	<i>%REC</i>	<i>1</i>	9/20/2017 05:30 PM
MOISTURE						
Moisture	22		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/20/2017 04:00 PM

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

ALS Group, USA**Date:** 21-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit Rem**Work Order:** 17091159**Sample ID:** 20170919-M23 Pit (Swall) 12'**Lab ID:** 17091159-03**Collection Date:** 9/19/2017 01:55 PM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	560		SW8015C		Prep: SW3546 9/20/17 16:33	Analyst: KB
			6.8	mg/Kg-dry	1	9/20/2017 05:44 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>86.6</i>		<i>34-130</i>	<i>%REC</i>	<i>1</i>	9/20/2017 05:44 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	11		SW8015D		Prep: SW5035 9/20/17 08:00	Analyst: KB
			9.1	mg/Kg-dry	1	9/20/2017 06:01 PM
<i>Surr: Toluene-d8</i>	<i>93.7</i>		<i>71-123</i>	<i>%REC</i>	<i>1</i>	9/20/2017 06:01 PM
MOISTURE						
Moisture	29		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/20/2017 04:00 PM

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

ALS Group, USA**Date:** 21-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit Rem**Work Order:** 17091159**Sample ID:** 20170919-M23 (Ewall) 12'**Lab ID:** 17091159-04**Collection Date:** 9/19/2017 02:00 PM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	240		SW8015C		Prep: SW3546 9/20/17 16:33	Analyst: KB
<i>Surr: 4-Terphenyl-d14</i>	<i>84.1</i>		6.9	mg/Kg-dry	1	9/20/2017 06:14 PM
			34-130	%REC	1	9/20/2017 06:14 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	19		SW8015D		Prep: SW5035 9/20/17 08:00	Analyst: KB
<i>Surr: Toluene-d8</i>	<i>96.3</i>		9.1	mg/Kg-dry	1	9/20/2017 06:32 PM
			71-123	%REC	1	9/20/2017 06:32 PM
MOISTURE						
Moisture	29		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/20/2017 04:00 PM

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

ALS Group, USA

Date: 21-Sep-17

Client: Caerus Oil and Gas LLC
Project: M23 Pit Rem
Sample ID: 20170919-M23 (Stockpile)
Collection Date: 9/19/2017 02:10 PM

Work Order: 17091159
Lab ID: 17091159-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep: SW3546 9/20/17 16:33	Analyst: KB
DRO (C10-C28)	180		6.6	mg/Kg-dry	1	9/20/2017 06:43 PM
Surr: 4-Terphenyl-d14	91.1		34-130	%REC	1	9/20/2017 06:43 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D		Prep: SW5035 9/20/17 08:00	Analyst: KB
GRO (C6-C10)	22		8.7	mg/Kg-dry	1	9/20/2017 07:03 PM
Surr: Toluene-d8	96.5		71-123	%REC	1	9/20/2017 07:03 PM
VOLATILE ORGANIC COMPOUNDS						
			SW8260B		Prep: SW5035 9/20/17 14:34	Analyst: AK
Benzene	ND		0.052	mg/Kg-dry	1	9/20/2017 03:23 PM
Ethylbenzene	ND		0.052	mg/Kg-dry	1	9/20/2017 03:23 PM
m,p-Xylene	0.15		0.10	mg/Kg-dry	1	9/20/2017 03:23 PM
o-Xylene	ND		0.052	mg/Kg-dry	1	9/20/2017 03:23 PM
Toluene	ND		0.052	mg/Kg-dry	1	9/20/2017 03:23 PM
Xylenes, Total	ND		0.16	mg/Kg-dry	1	9/20/2017 03:23 PM
Surr: 1,2-Dichloroethane-d4	105		70-130	%REC	1	9/20/2017 03:23 PM
Surr: 4-Bromofluorobenzene	98.6		70-130	%REC	1	9/20/2017 03:23 PM
Surr: Dibromofluoromethane	97.4		70-130	%REC	1	9/20/2017 03:23 PM
Surr: Toluene-d8	95.4		70-130	%REC	1	9/20/2017 03:23 PM
MOISTURE						
			SW3550C			Analyst: BTG
Moisture	27		0.050	% of sample	1	9/20/2017 04:00 PM

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

Client: Caerus Oil and Gas LLC
Work Order: 17091159
Project: M23 Pit Rem

QC BATCH REPORT

Batch ID: **107634** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-107634-107634				Units: mg/Kg		Analysis Date: 9/20/2017 07:13 PM		
Client ID:		Run ID: GC8_170920A				SeqNo: 4649320		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	3.033	0	3.33	0	91.1	34-130	0			

LCS		Sample ID: DLCSS1-107634-107634				Units: mg/Kg		Analysis Date: 9/20/2017 07:43 PM		
Client ID:		Run ID: GC8_170920A				SeqNo: 4649321		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	1479	5.0	1665	0	88.9	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.833	0	3.33	0	85.1	34-130	0			

MS		Sample ID: 17091020-04A MS				Units: mg/Kg		Analysis Date: 9/20/2017 08:42 PM		
Client ID:		Run ID: GC8_170920A				SeqNo: 4649323		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	37900	4.9	325.3	38790	-273	65-122	0			SEO
<i>Surr: 4-Terphenyl-d14</i>	14.54	0	3.253	0	447	34-130	0			S

MSD		Sample ID: 17091020-04A MSD				Units: mg/Kg		Analysis Date: 9/20/2017 09:11 PM		
Client ID:		Run ID: GC8_170920A				SeqNo: 4649324		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	39930	4.9	324.8	38790	350	65-122	37900	5.2	30	SEO
<i>Surr: 4-Terphenyl-d14</i>	13.18	0	3.248	0	406	34-130	14.54	9.79	30	S

The following samples were analyzed in this batch:

17091159-01A	17091159-02A	17091159-03A
17091159-04A	17091159-05A	

Client: Caerus Oil and Gas LLC
Work Order: 17091159
Project: M23 Pit Rem

QC BATCH REPORT

Batch ID: **107706** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-107706-107706				Units: µg/Kg-dry		Analysis Date: 9/20/2017 11:45 AM		
Client ID:		Run ID: GC9_170920A				SeqNo: 4649230		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	2682	5,000								J
Surr: Toluene-d8	4884	0	5000	0	97.7	71-123	0			

LCS		Sample ID: LCS-107706-107706				Units: µg/Kg-dry		Analysis Date: 9/20/2017 10:44 AM		
Client ID:		Run ID: GC9_170920A				SeqNo: 4649229		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	410700	5,000	500000	0	82.1	71-123	0			
Surr: Toluene-d8	5294	0	5000	0	106	71-123	0			

MS		Sample ID: 17091159-01A MS				Units: µg/Kg-dry		Analysis Date: 9/20/2017 07:35 PM		
Client ID: 20170919-M23 Pit (Nwall 15')		Run ID: GC9_170920A				SeqNo: 4649236		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	690700	7,800	782100	56670	81.1	71-123	0			
Surr: Toluene-d8	8978	0	7821	0	115	71-123	0			

MSD		Sample ID: 17091159-01A MSD				Units: µg/Kg-dry		Analysis Date: 9/20/2017 08:06 PM		
Client ID: 20170919-M23 Pit (Nwall 15')		Run ID: GC9_170920A				SeqNo: 4649237		Prep Date: 9/20/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	708700	7,800	782100	56670	83.4	71-123	690700	2.57	30	
Surr: Toluene-d8	8790	0	7821	0	112	71-123	8978	2.11	30	

The following samples were analyzed in this batch:

17091159-01A	17091159-02A	17091159-03A
17091159-04A	17091159-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 17091159
Project: M23 Pit Rem

QC BATCH REPORT

Batch ID: **R220471** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R220471				Units: % of sample		Analysis Date: 9/20/2017 04:00 PM			
Client ID:		Run ID: MOIST_170920D				SeqNo: 4649503		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture ND 0.050

LCS		Sample ID: LCS-R220471				Units: % of sample		Analysis Date: 9/20/2017 04:00 PM			
Client ID:		Run ID: MOIST_170920D				SeqNo: 4649502		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17091159-01A DUP				Units: % of sample		Analysis Date: 9/20/2017 04:00 PM			
Client ID: 20170919-M23 Pit (Nwall 15')		Run ID: MOIST_170920D				SeqNo: 4649491		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 26.38 0.050 0 0 0 0-0 21.98 18.2 5 R

The following samples were analyzed in this batch:

17091159-01A	17091159-02A	17091159-03A
17091159-04A	17091159-05A	

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



PROJECT NAME		m23 Pit Rem		SAMPLER		Matt Koster		DATE		TURNAROUND		PAGE		1 of 1	
PROJECT No.				SITE ID		M23		DISPOSAL		By Lab or Return to Client					
COMPANY NAME		Caerus Piceance, LLC		EDD FORMAT											
SEND REPORT TO		Jake Janicek		PURCHASE ORDER											
ADDRESS		143 Diamond Ave		BILL TO COMPANY		Caerus Piceance, LLC									
CITY/STATE/ZIP		Parachute Co 81635		INVOICE ATTN TO		Jake Janicek									
PHONE		970-285-9608		ADDRESS		143 Diamond Ave									
FAX				CITY/STATE/ZIP		Parachute CO 81635									
E-MAIL		jjanicek@caerusoilandgas.com		PHONE		970-285-9608									
				FAX											
				E-MAIL		jjanicek@caerusoilandgas.com									
Lab ID		Field ID		Matrix		Sample Date		Sample Time		# Bottles		Pres.		QC	
1		20170919-M23 Pit (North) 15'		SS		9/19/17		1345		1		-		X	
2		20170919-M23 Pit (North) 12'		SS		↓		1350		1		-		X	
3		20170919-M23 Pit (South) 12'		SS		↓		1355		1		-		X	
4		20170919-M23 Pit (East) 12'		SS		↓		1400		1		-		X	
5		20170919-M23 Pit (Stockpile)		SS		↓		1410		2		-		X X	

Time Zone (Circle): - EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: *SAME DAY TURN rd 28"	QC PACKAGE (check below)	
	X	LEVEL II (Standard QC)
		LEVEL III (Std QC + forms)
		LEVEL IV (Std QC + forms + raw data)
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035		

SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY: [Signature]	MATT KOSTER	9/19/17	1500
RECEIVED BY: [Signature]	[Signature]	9/19/17	1800
RELINQUISHED BY: [Signature]	W-V	9/14/17	1830
RECEIVED BY: [Signature]	KARL W. GREEN	9/20/17	1400
RELINQUISHED BY: [Signature]			
RECEIVED BY: [Signature]			

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **20-Sep-17 14:00**

Work Order: **17091159**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

20-Sep-17
Date

Reviewed by: Alex Coaszar
eSignature

20-Sep-17
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>9/20/2017 2:10:05 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:



26-Sep-2017

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

Re: **M23 Pit**

Work Order: **17091406**

Dear Jake,

ALS Environmental received 2 samples on 23-Sep-2017 09:45 AM for the analyses presented in the following report.

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

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

The total number of pages in this report is 11.

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

Sincerely,

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

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

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

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Caerus Oil and Gas LLC
Project: M23 Pit
Work Order: 17091406

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>
17091406-01	20170922-M23 Pit (S Wall 12')	Soil		9/22/2017 10:30	9/23/2017 09:45	<input type="checkbox"/>
17091406-02	20170922-M23 Pit (Stockpile S)	Soil		9/22/2017 10:35	9/23/2017 09:45	<input type="checkbox"/>

Client: Caerus Oil and Gas LLC**Project:** M23 Pit**Work Order:** 17091406**Case Narrative**

Batch 107859, Method DRLVI_8015_S, Samples 17091406-01A and -02A: The DRO surrogate recoveries were below the lower control limits. The sample results may be biased low.

Client: Caerus Oil and Gas LLC
Project: M23 Pit
WorkOrder: 17091406

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
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:** 26-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit**Work Order:** 17091406**Sample ID:** 20170922-M23 Pit (S Wall 12')**Lab ID:** 17091406-01**Collection Date:** 9/22/2017 10:30 AM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	47		SW8015C		Prep: SW3546 9/24/17 11:14	Analyst: KB
			5.9	mg/Kg-dry	1	9/25/2017 12:19 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>3.85</i>	<i>S</i>	<i>34-130</i>	<i>%REC</i>	<i>1</i>	9/25/2017 12:19 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 9/25/17 15:10	Analyst: KB
			6.9	mg/Kg-dry	1	9/25/2017 08:30 PM
<i>Surr: Toluene-d8</i>	<i>94.0</i>		<i>71-123</i>	<i>%REC</i>	<i>1</i>	9/25/2017 08:30 PM
MOISTURE						
Moisture	16		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/24/2017 05:45 PM

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

ALS Group, USA**Date:** 26-Sep-17**Client:** Caerus Oil and Gas LLC**Project:** M23 Pit**Work Order:** 17091406**Sample ID:** 20170922-M23 Pit (Stockpile S)**Lab ID:** 17091406-02**Collection Date:** 9/22/2017 10:35 AM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	9.3		SW8015C		Prep: SW3546 9/24/17 11:14	Analyst: KB
			6.0	mg/Kg-dry	1	9/25/2017 12:48 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>2.50</i>	<i>S</i>	<i>34-130</i>	<i>%REC</i>	<i>1</i>	9/25/2017 12:48 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 9/25/17 15:10	Analyst: KB
			7.3	mg/Kg-dry	1	9/25/2017 09:00 PM
<i>Surr: Toluene-d8</i>	<i>93.7</i>		<i>71-123</i>	<i>%REC</i>	<i>1</i>	9/25/2017 09:00 PM
MOISTURE						
Moisture	19		SW3550C			Analyst: BTG
			0.050	% of sample	1	9/24/2017 05:45 PM

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

Client: Caerus Oil and Gas LLC
Work Order: 17091406
Project: M23 Pit

QC BATCH REPORT

Batch ID: **107859** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-107859-107859				Units: mg/Kg		Analysis Date: 9/25/2017 01:18 PM		
Client ID:		Run ID: GC8_170925B				SeqNo: 4655971		Prep Date: 9/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.333	0	3.33	0	70.1	34-130	0			

LCS		Sample ID: DLCSS1-107859-107859				Units: mg/Kg		Analysis Date: 9/25/2017 01:47 PM		
Client ID:		Run ID: GC8_170925B				SeqNo: 4655972		Prep Date: 9/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	284.5	5.0	333	0	85.4	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.633	0	3.33	0	79.1	34-130	0			

The following samples were analyzed in this batch:

17091406-01A	17091406-02A
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Client: Caerus Oil and Gas LLC
Work Order: 17091406
Project: M23 Pit

QC BATCH REPORT

Batch ID: **107925** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-107925-107925				Units: µg/Kg-dry		Analysis Date: 9/25/2017 07:31 PM		
Client ID:		Run ID: GC9_170925A				SeqNo: 4656957		Prep Date: 9/25/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
<i>Surr: Toluene-d8</i>	<i>4670</i>	<i>0</i>	<i>5000</i>	<i>0</i>	<i>93.4</i>	<i>71-123</i>	<i>0</i>			

LCS		Sample ID: LCS-107925-107925				Units: µg/Kg-dry		Analysis Date: 9/25/2017 06:31 PM		
Client ID:		Run ID: GC9_170925A				SeqNo: 4656956		Prep Date: 9/25/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	452300	5,000	500000	0	90.5	71-123	0			
<i>Surr: Toluene-d8</i>	<i>5605</i>	<i>0</i>	<i>5000</i>	<i>0</i>	<i>112</i>	<i>71-123</i>	<i>0</i>			

The following samples were analyzed in this batch:

17091406-01A	17091406-02A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC
 Work Order: 17091406
 Project: M23 Pit

QC BATCH REPORT

Batch ID: **R220679** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R220679				Units: % of sample		Analysis Date: 9/24/2017 05:45 PM		
Client ID:		Run ID: MOIST_170924C				SeqNo: 4654883		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

LCS		Sample ID: LCS-R220679				Units: % of sample		Analysis Date: 9/24/2017 05:45 PM		
Client ID:		Run ID: MOIST_170924C				SeqNo: 4654881		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17091302-01A DUP				Units: % of sample		Analysis Date: 9/24/2017 05:45 PM		
Client ID:		Run ID: MOIST_170924C				SeqNo: 4654865		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 43.9 0.050 0 0 0 0-0 44.61 1.6 5

DUP		Sample ID: 17091406-01A DUP				Units: % of sample		Analysis Date: 9/24/2017 05:45 PM		
Client ID: 20170922-M23 Pit (S Wall 12')		Run ID: MOIST_170924C				SeqNo: 4654877		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 16.8 0.050 0 0 0 0-0 16.29 3.08 5

The following samples were analyzed in this batch:

17091406-01A	17091406-02A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

WORKORDER

17091406

PAGE

1 of 1

DISPOSAL

By Lab or Return to Client





[illegible]

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: <div style="text-align: center; font-size: 1.5em;">SP2 3.6'c</div>	QC PACKAGE (check below)	
	<input checked="" type="checkbox"/> X	LEVEL III (Standard QC)
	<input type="checkbox"/>	LEVEL III (Std QC + forms)
	<input type="checkbox"/>	LEVEL IV (Std QC + forms + raw data)
	<input type="checkbox"/>	

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Matt Kesh	9/22/17	1800
RECEIVED BY		Matt Kesh	9-22-17	1810
RELINQUISHED BY		Diane F. Sha	9-21-17	1820
RECEIVED BY		Diane F. Sha	9/23/17	0945
RELINQUISHED BY				
RECEIVED BY				

Sample Receipt Checklist

Client Name: **CAERUS**

Date/Time Received: **23-Sep-17 09:45**

Work Order: **17091406**

Received by: **DS**

Checklist completed by Diane Shaw 23-Sep-17
eSignature Date

Reviewed by: Chad Whelton 26-Sep-17
eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.6/3.6 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>9/23/2017 10:30:26 AM</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: