



05-Jun-2018

Mike Gardner
Terra Energy Partners, LLC
1058 Country Rd 215
Parachute, CO 81635

Re: **RGU 14-16-198**

Work Order: **18052001**

Dear Mike,

ALS Environmental received 1 sample on 31-May-2018 10:00 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 22.

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

RIGHT SOLUTIONS RIGHT PARTNER

Client: Terra Energy Partners, LLC
Project: RGU 14-16-198
Work Order: 18052001

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>
18052001-01	RGU 14-16-198	Soil		5/30/2018 11:45	5/31/2018 10:00	<input type="checkbox"/>

Client: Terra Energy Partners, LLC**Project:** RGU 14-16-198**Work Order:** 18052001**Case Narrative**

Batch 119106, Method ICP_6010_S, Sample 18052001-01A MS/MSD: The MS/MSD recovery was outside of the control limit for Barium; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

<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	Milligrams per Kilogram
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

ALS Group, USA

Date: 05-Jun-18

Client: Terra Energy Partners, LLC
Project: RGU 14-16-198
Sample ID: RGU 14-16-198
Collection Date: 5/30/2018 11:45 AM

Work Order: 18052001
Lab ID: 18052001-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	6.5		SW8015C		Prep: SW3546 5/31/18 15:16	Analyst: MEB
<i>Surr: 4-Terphenyl-d14</i>	<i>40.5</i>		<i>5.7</i>	<i>mg/Kg-dry</i>	<i>1</i>	5/31/2018 04:31 PM
			<i>34-130</i>	<i>%REC</i>	<i>1</i>	5/31/2018 04:31 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 5/31/18 09:12	Analyst: MEB
<i>Surr: Toluene-d8</i>	<i>106</i>		<i>6.6</i>	<i>mg/Kg</i>	<i>1</i>	6/1/2018 05:37 PM
			<i>71-123</i>	<i>%REC</i>	<i>1</i>	6/1/2018 05:37 PM
MERCURY BY CVAA						
Mercury	ND		SW7471B		Prep: SW7471 6/5/18 07:40	Analyst: RSB
			<i>0.021</i>	<i>mg/Kg-dry</i>	<i>1</i>	6/5/2018 08:18 AM
METALS ANALYSIS BY ICP						
Arsenic	6.8		SW846 6010C		Prep: SW3050B 5/31/18 17:34	Analyst: RH
Barium	360		0.48	mg/Kg-dry	1	6/1/2018 09:47 AM
Cadmium	ND		0.48	mg/Kg-dry	1	6/1/2018 09:47 AM
Chromium	24		0.96	mg/Kg-dry	1	6/1/2018 09:47 AM
Copper	8.1		0.48	mg/Kg-dry	1	6/1/2018 09:47 AM
Lead	5.7		0.96	mg/Kg-dry	1	6/1/2018 09:47 AM
Nickel	8.7		0.48	mg/Kg-dry	1	6/1/2018 09:47 AM
Selenium	ND		0.96	mg/Kg-dry	1	6/1/2018 09:47 AM
Silver	ND		0.48	mg/Kg-dry	1	6/1/2018 09:47 AM
Zinc	35		0.96	mg/Kg-dry	1	6/1/2018 09:47 AM
SOLUBLE CATIONS FOR SAR						
Calcium	39		SW6020A		Prep: USDA Method 20B 6/3/18 13:53	Analyst: JF
Magnesium	4.6		5.0	mg/L	10	6/4/2018 01:35 PM
Sodium	580		2.0	mg/L	10	6/4/2018 01:35 PM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	24		USDA H60 MET		Prep: USDA Method 20B 6/3/18 13:53	Analyst: RH
			0.010	none	1	6/4/2018
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 5/31/18 15:16	Analyst: RM
Anthracene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Benzo(a)anthracene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Benzo(a)pyrene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Benzo(b)fluoranthene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Benzo(k)fluoranthene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Chrysene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Dibenzo(a,h)anthracene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Fluoranthene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM

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

ALS Group, USA

Date: 05-Jun-18

Client: Terra Energy Partners, LLC
Project: RGU 14-16-198
Sample ID: RGU 14-16-198
Collection Date: 5/30/2018 11:45 AM

Work Order: 18052001
Lab ID: 18052001-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Indeno(1,2,3-cd)pyrene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Naphthalene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Pyrene	ND		0.048	mg/Kg-dry	1	6/1/2018 04:42 PM
Surr: 2-Fluorobiphenyl	57.6		20-140	%REC	1	6/1/2018 04:42 PM
Surr: 4-Terphenyl-d14	37.5		22-172	%REC	1	6/1/2018 04:42 PM
Surr: Nitrobenzene-d5	43.6		28-140	%REC	1	6/1/2018 04:42 PM
VOLATILE ORGANIC COMPOUNDS			SW8260C	Prep: SW5035	5/31/18 09:12	Analyst: LSY
Benzene	ND		0.040	mg/Kg	1	5/31/2018 03:19 PM
Ethylbenzene	ND		0.040	mg/Kg	1	5/31/2018 03:19 PM
m,p-Xylene	ND		0.080	mg/Kg	1	5/31/2018 03:19 PM
o-Xylene	ND		0.040	mg/Kg	1	5/31/2018 03:19 PM
Toluene	ND		0.040	mg/Kg	1	5/31/2018 03:19 PM
Xylenes, Total	ND		0.12	mg/Kg	1	5/31/2018 03:19 PM
Surr: 1,2-Dichloroethane-d4	112		70-130	%REC	1	5/31/2018 03:19 PM
Surr: 4-Bromofluorobenzene	103		70-130	%REC	1	5/31/2018 03:19 PM
Surr: Dibromofluoromethane	94.6		70-130	%REC	1	5/31/2018 03:19 PM
Surr: Toluene-d8	99.7		70-130	%REC	1	5/31/2018 03:19 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 MET	Prep: USDA Method 20B	6/3/18 13:53	Analyst: JB
Electrical Conductivity @ Saturation	3.5		0.12	mmhos/cm @2	25	6/4/2018 09:00 AM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JB
Chromium, Trivalent	24		1.2	mg/Kg-dry	1	6/4/2018 08:00 AM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A	5/31/18 17:30	Analyst: MB
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	6/1/2018 04:50 PM
MOISTURE			SW3550C			Analyst: NW
Moisture	14		0.050	% of sample	1	5/31/2018 01:00 PM
PH			SW9045D	Prep: EXTRACT	6/1/18 14:33	Analyst: RZM
pH	8.70		0.100	s.u.	1	6/1/2018 03:50 PM

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119095** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKS1-119095-119095				Units: mg/Kg		Analysis Date: 6/1/2018 08:52 AM		
Client ID:		Run ID: GC8_180531A				SeqNo: 5065667		Prep Date: 5/31/2018		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>	1.9	0	3.33	0	57.1	34-130	0			

LCS		Sample ID: DLCSS1-119095-119095				Units: mg/Kg		Analysis Date: 5/31/2018 04:02 PM		
Client ID:		Run ID: GC8_180531A				SeqNo: 5065663		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	325.2	5.0	333	0	97.7	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	2.45	0	3.33	0	73.6	34-130	0			

MS		Sample ID: 18052001-01A MS				Units: mg/Kg		Analysis Date: 5/31/2018 05:00 PM		
Client ID: RGU 14-16-198		Run ID: GC8_180531A				SeqNo: 5065665		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	310.7	4.9	328.2	5.589	93	65-122	0			
<i>Surr: 4-Terphenyl-d14</i>	1.889	0	3.282	0	57.6	34-130	0			

MSD		Sample ID: 18052001-01A MSD				Units: mg/Kg		Analysis Date: 5/31/2018 05:30 PM		
Client ID: RGU 14-16-198		Run ID: GC8_180531A				SeqNo: 5065666		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	317.3	4.8	321.1	5.589	97.1	65-122	310.7	2.08	30	
<i>Surr: 4-Terphenyl-d14</i>	2.057	0	3.211	0	64.1	34-130	1.889	8.53	30	

The following samples were analyzed in this batch:

18052001-01A

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119066** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-119066-119066				Units: µg/Kg-dry		Analysis Date: 6/1/2018 05:08 PM		
Client ID:		Run ID: GC9_180601A				SeqNo: 5069277		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	5,000								
Surr: Toluene-d8	5698	0	5000	0	114	71-123	0			

LCS		Sample ID: LCS-119066-119066				Units: µg/Kg-dry		Analysis Date: 6/1/2018 04:09 PM		
Client ID:		Run ID: GC9_180601A				SeqNo: 5069276		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	463800	5,000	500000	0	92.8	71-123	0			
Surr: Toluene-d8	5759	0	5000	0	115	71-123	0			

MS		Sample ID: 18052001-01A MS				Units: µg/Kg-dry		Analysis Date: 6/1/2018 04:32 AM		
Client ID: RGU 14-16-198		Run ID: GC9_180531A				SeqNo: 5066894		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	641800	6,600	662800	0	96.8	71-123	0			
Surr: Toluene-d8	7322	0	6628	0	110	71-123	0			

MSD		Sample ID: 18052001-01A MSD				Units: µg/Kg-dry		Analysis Date: 6/1/2018 05:02 AM		
Client ID: RGU 14-16-198		Run ID: GC9_180531A				SeqNo: 5066895		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	662100	6,600	662800	0	99.9	71-123	641800	3.11	30	
Surr: Toluene-d8	7417	0	6628	0	112	71-123	7322	1.29	30	

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
 Work Order: 18052001
 Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: 119256 Instrument ID HG1 Method: SW7471B

MBLK		Sample ID: MBLK-119256-119256				Units: mg/Kg		Analysis Date: 6/5/2018 08:10 AM		
Client ID:		Run ID: HG1_180605A				SeqNo: 5072444		Prep Date: 6/5/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

LCS		Sample ID: LCS-119256-119256				Units: mg/Kg		Analysis Date: 6/5/2018 08:13 AM		
Client ID:		Run ID: HG1_180605A				SeqNo: 5072445		Prep Date: 6/5/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.175 0.020 0.1665 0 105 80-120 0

MS		Sample ID: 18052001-01AMS				Units: mg/Kg		Analysis Date: 6/5/2018 08:20 AM		
Client ID: RGU 14-16-198		Run ID: HG1_180605A				SeqNo: 5072448		Prep Date: 6/5/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1536 0.018 0.1505 0.006822 97.6 75-125 0

MSD		Sample ID: 18052001-01AMSD				Units: mg/Kg		Analysis Date: 6/5/2018 08:23 AM		
Client ID: RGU 14-16-198		Run ID: HG1_180605A				SeqNo: 5072449		Prep Date: 6/5/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1637 0.018 0.1507 0.006822 104 75-125 0.1536 6.33 35

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119106** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: MBLK-119106-119106				Units: mg/Kg		Analysis Date: 6/1/2018 09:34 AM				
Client ID:		Run ID: ICP2_180531A		SeqNo: 5066075		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.50								
Chromium	ND	0.25								
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	0.06059	0.25								J
Zinc	ND	0.50								

LCS Sample ID: LCS-119106-119106				Units: mg/Kg		Analysis Date: 6/1/2018 09:41 AM				
Client ID:		Run ID: ICP2_180531A		SeqNo: 5066076		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.501	0.25	5	0	90	80-120	0			
Barium	5.281	0.25	5	0	106	80-120	0			
Cadmium	4.868	0.50	5	0	97.4	80-120	0			
Chromium	5.058	0.25	5	0	101	80-120	0			
Copper	5.097	0.50	5	0	102	80-120	0			
Lead	4.873	0.25	5	0	97.5	80-120	0			
Nickel	4.994	0.25	5	0	99.9	80-120	0			
Selenium	4.596	0.50	5	0	91.9	80-120	0			
Silver	4.856	0.25	5	0	97.1	80-120	0			
Zinc	4.746	0.50	5	0	94.9	80-120	0			

MS Sample ID: 18052001-01AMS				Units: mg/Kg		Analysis Date: 6/1/2018 09:53 AM				
Client ID: RGU 14-16-198		Run ID: ICP2_180531A		SeqNo: 5066078		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.87	0.41	8.278	5.823	85.1	75-125	0			
Barium	305.6	0.41	8.278	308.1	-29.8	75-125	0			SO
Cadmium	7.712	0.83	8.278	0.03032	92.8	75-125	0			
Chromium	29.44	0.41	8.278	20.54	107	75-125	0			
Copper	15.74	0.83	8.278	6.96	106	75-125	0			
Lead	11.56	0.41	8.278	4.869	80.8	75-125	0			
Nickel	15.16	0.41	8.278	7.458	93	75-125	0			
Selenium	7.629	0.83	8.278	0.1756	90	75-125	0			
Silver	8.338	0.41	8.278	-0.1066	102	75-125	0			
Zinc	36.65	0.83	8.278	29.71	83.9	75-125	0			

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119106** Instrument ID **ICP2** Method: **SW846 6010C**

MSD				Sample ID: 18052001-01AMSD			Units: mg/Kg		Analysis Date: 6/1/2018 09:59 AM	
Client ID: RGU 14-16-198				Run ID: ICP2_180531A			SeqNo: 5066079		Prep Date: 5/31/2018	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.25	0.41	8.264	5.823	89.8	75-125	12.87	2.89	20	
Barium	295	0.41	8.264	308.1	-159	75-125	305.6	3.54	20	SO
Cadmium	7.708	0.83	8.264	0.03032	92.9	75-125	7.712	0.0613	20	
Chromium	29.85	0.41	8.264	20.54	113	75-125	29.44	1.4	20	
Copper	15.26	0.83	8.264	6.96	100	75-125	15.74	3.05	20	
Lead	11.51	0.41	8.264	4.869	80.4	75-125	11.56	0.395	20	
Nickel	14.86	0.41	8.264	7.458	89.6	75-125	15.16	2	20	
Selenium	7.725	0.83	8.264	0.1756	91.3	75-125	7.629	1.24	20	
Silver	8.391	0.41	8.264	-0.1066	103	75-125	8.338	0.628	20	
Zinc	36.12	0.83	8.264	29.71	77.5	75-125	36.65	1.48	20	

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119206** Instrument ID **ICPMS3** Method: **SW6020A**

DUP					Sample ID: 18052001-01ADUP			Units: mg/L		Analysis Date: 6/4/2018 01:37 PM	
Client ID: RGU 14-16-198			Run ID: ICPMS3_180604A			SeqNo: 5070897		Prep Date: 6/3/2018		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Calcium	37.79	5.0	0	0	0	0-0	38.74	2.48			
Magnesium	4.629	2.0	0	0	0	0-0	4.632	0.0729			
Sodium	563.7	2.0	0	0	0	0-0	582.7	3.33			

The following samples were analyzed in this batch:

18052001-01A

Batch ID: **119206** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP				Sample ID: 18052001-01ADUP				Units: none			Analysis Date: 6/4/2018			
Client ID: RGU 14-16-198				Run ID: SAR_180604A				SeqNo: 5073134			Prep Date: 6/3/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Sodium Adsorption Ratio	23.03	0.010	0	0	0		23.56	2.28	50					

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119064** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-119064-119064				Units: µg/Kg		Analysis Date: 6/1/2018 03:17 PM		
Client ID:		Run ID: SVMS6_180601A				SeqNo: 5067694		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	42								
Anthracene	ND	42								
Benzo(a)anthracene	ND	42								
Benzo(a)pyrene	ND	42								
Benzo(b)fluoranthene	ND	42								
Benzo(k)fluoranthene	ND	42								
Chrysene	ND	42								
Dibenzo(a,h)anthracene	ND	42								
Fluoranthene	ND	42								
Fluorene	ND	42								
Indeno(1,2,3-cd)pyrene	ND	42								
Naphthalene	ND	42								
Pyrene	ND	42								
<i>Surr: 2-Fluorobiphenyl</i>	2485	0	3333	0	74.6	20-140	0			
<i>Surr: 4-Terphenyl-d14</i>	3169	0	3333	0	95.1	22-172	0			
<i>Surr: Nitrobenzene-d5</i>	3254	0	3333	0	97.6	28-140	0			

LCS		Sample ID: SLCSS1-119064-119064				Units: µg/Kg		Analysis Date: 6/1/2018 03:31 PM		
Client ID:		Run ID: SVMS6_180601A				SeqNo: 5067695		Prep Date: 5/31/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1089	42	1333	0	81.7	40-140	0			
Anthracene	1244	42	1333	0	93.3	40-140	0			
Benzo(a)anthracene	1070	42	1333	0	80.3	40-140	0			
Benzo(a)pyrene	1151	42	1333	0	86.3	40-140	0			
Benzo(b)fluoranthene	954.2	42	1333	0	71.6	40-140	0			
Benzo(k)fluoranthene	1205	42	1333	0	90.4	40-140	0			
Chrysene	1196	42	1333	0	89.7	40-140	0			
Dibenzo(a,h)anthracene	1178	42	1333	0	88.4	40-140	0			
Fluoranthene	1143	42	1333	0	85.8	40-140	0			
Fluorene	1129	42	1333	0	84.7	40-140	0			
Indeno(1,2,3-cd)pyrene	1234	42	1333	0	92.5	40-140	0			
Naphthalene	1211	42	1333	0	90.8	40-140	0			
Pyrene	1120	42	1333	0	84	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	2408	0	3333	0	72.2	20-140	0			
<i>Surr: 4-Terphenyl-d14</i>	3026	0	3333	0	90.8	22-172	0			
<i>Surr: Nitrobenzene-d5</i>	3252	0	3333	0	97.6	28-140	0			

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119064** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 18051832-03B MS			Units: µg/Kg		Analysis Date: 6/1/2018 03:45 PM	
Client ID:				Run ID: SVMS6_180601A			SeqNo: 5067696		Prep Date: 5/31/2018	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	771.5	41	1301	0	59.3	40-140	0			
Anthracene	861.9	41	1301	0	66.2	40-140	0			
Benzo(a)anthracene	746.4	41	1301	0	57.4	40-140	0			
Benzo(a)pyrene	795.3	41	1301	0	61.1	40-140	0			
Benzo(b)fluoranthene	643.4	41	1301	0	49.4	40-140	0			
Benzo(k)fluoranthene	829.7	41	1301	0	63.8	40-140	0			
Chrysene	841.7	41	1301	0	64.7	40-140	0			
Dibenzo(a,h)anthracene	769.1	41	1301	0	59.1	40-140	0			
Fluoranthene	792.5	41	1301	0	60.9	40-140	0			
Fluorene	801.8	41	1301	0	61.6	40-140	0			
Indeno(1,2,3-cd)pyrene	862.5	41	1301	0	66.3	40-140	0			
Naphthalene	910.1	41	1301	0	69.9	40-140	0			
Pyrene	787.8	41	1301	0	60.5	40-140	0			
Surr: 2-Fluorobiphenyl	1744	0	3254	0	53.6	20-140	0			
Surr: 4-Terphenyl-d14	2221	0	3254	0	68.3	22-172	0			
Surr: Nitrobenzene-d5	2360	0	3254	0	72.5	28-140	0			

MSD				Sample ID: 18051832-03B MSD			Units: µg/Kg		Analysis Date: 6/1/2018 03:59 PM	
Client ID:				Run ID: SVMS6_180601A			SeqNo: 5067697		Prep Date: 5/31/2018	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1049	41	1306	0	80.3	40-140	771.5	30.5	30	R
Anthracene	1178	41	1306	0	90.2	40-140	861.9	31	30	R
Benzo(a)anthracene	1001	41	1306	0	76.6	40-140	746.4	29.1	30	
Benzo(a)pyrene	1045	41	1306	0	80	40-140	795.3	27.2	30	
Benzo(b)fluoranthene	886.8	41	1306	0	67.9	40-140	643.4	31.8	30	R
Benzo(k)fluoranthene	1093	41	1306	0	83.6	40-140	829.7	27.3	30	
Chrysene	1120	41	1306	0	85.7	40-140	841.7	28.4	30	
Dibenzo(a,h)anthracene	999.2	41	1306	0	76.5	40-140	769.1	26	30	
Fluoranthene	1103	41	1306	0	84.4	40-140	792.5	32.8	30	R
Fluorene	1091	41	1306	0	83.5	40-140	801.8	30.6	30	R
Indeno(1,2,3-cd)pyrene	996.4	41	1306	0	76.3	40-140	862.5	14.4	30	
Naphthalene	1157	41	1306	0	88.6	40-140	910.1	23.9	30	
Pyrene	1055	41	1306	0	80.8	40-140	787.8	29	30	
Surr: 2-Fluorobiphenyl	2209	0	3267	0	67.6	20-140	1744	23.6	0	
Surr: 4-Terphenyl-d14	2864	0	3267	0	87.7	22-172	2221	25.3	0	
Surr: Nitrobenzene-d5	2944	0	3267	0	90.1	28-140	2360	22	0	

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119065** Instrument ID **VMS8** Method: **SW8260C**

MBLK				Sample ID: MBLK-119065-119065			Units: µg/Kg-dry		Analysis Date: 5/31/2018 02:05 PM	
Client ID:		Run ID: VMS8_180531A			SeqNo: 5066044		Prep Date: 5/31/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30	0	0	0	0-0	0			
Ethylbenzene	ND	30	0	0	0	0-0	0			
m,p-Xylene	ND	60	0	0	0	0-0	0			
o-Xylene	ND	30	0	0	0	0-0	0			
Toluene	ND	30	0	0	0	0-0	0			
Xylenes, Total	ND	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	979	0	1000	0	97.9	70-130	0			
Surr: 4-Bromofluorobenzene	945	0	1000	0	94.5	70-130	0			
Surr: Dibromofluoromethane	978.5	0	1000	0	97.8	70-130	0			
Surr: Toluene-d8	966.5	0	1000	0	96.6	70-130	0			

LCS				Sample ID: LCS-119065-119065			Units: µg/Kg-dry		Analysis Date: 5/31/2018 01:16 PM	
Client ID:		Run ID: VMS8_180531A			SeqNo: 5066042		Prep Date: 5/31/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1014	30	1000	0	101	75-125	0			
Ethylbenzene	1030	30	1000	0	103	75-125	0			
m,p-Xylene	1998	60	2000	0	99.9	80-125	0			
o-Xylene	986	30	1000	0	98.6	75-125	0			
Toluene	1009	30	1000	0	101	70-125	0			
Xylenes, Total	2984	90	3000	0	99.5	75-125	0			
Surr: 1,2-Dichloroethane-d4	984.5	0	1000	0	98.4	70-130	0			
Surr: 4-Bromofluorobenzene	946	0	1000	0	94.6	70-130	0			
Surr: Dibromofluoromethane	1013	0	1000	0	101	70-130	0			
Surr: Toluene-d8	946.5	0	1000	0	94.6	70-130	0			

MS				Sample ID: 18051998-08A MS			Units: µg/Kg-dry		Analysis Date: 5/31/2018 08:07 PM	
Client ID:		Run ID: VMS8_180531A			SeqNo: 5066056		Prep Date: 5/31/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1034	34	1134	0	91.2	75-125	0			
Ethylbenzene	1061	34	1134	0	93.5	75-125	0			
m,p-Xylene	2091	68	2269	0	92.2	80-125	0			
o-Xylene	1032	34	1134	0	91	75-125	0			
Toluene	1059	34	1134	0	93.4	70-125	0			
Xylenes, Total	3123	100	3403	0	91.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	974.5	0	1134	0	85.9	70-130	0			
Surr: 4-Bromofluorobenzene	1061	0	1134	0	93.5	70-130	0			
Surr: Dibromofluoromethane	920.6	0	1134	0	81.2	70-130	0			
Surr: Toluene-d8	1065	0	1134	0	93.8	70-130	0			

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119065** Instrument ID **VMS8** Method: **SW8260C**

MSD				Sample ID: 18051998-08A MSD			Units: µg/Kg-dry		Analysis Date: 5/31/2018 08:23 PM		
Client ID:			Run ID: VMS8_180531A			SeqNo: 5066057		Prep Date: 5/31/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	968.8	34	1134	0	85.4	75-125	1034	6.51	30		
Ethylbenzene	992.1	34	1134	0	87.4	75-125	1061	6.69	30		
m,p-Xylene	2006	68	2269	0	88.4	80-125	2091	4.13	30		
o-Xylene	976.2	34	1134	0	86	75-125	1032	5.59	30		
Toluene	1004	34	1134	0	88.5	70-125	1059	5.33	30		
Xylenes, Total	2983	100	3403	0	87.6	75-125	3123	4.61	30		
Surr: 1,2-Dichloroethane-d4	930.8	0	1134	0	82	70-130	974.5	4.58	30		
Surr: 4-Bromofluorobenzene	1045	0	1134	0	92.2	70-130	1061	1.45	30		
Surr: Dibromofluoromethane	917.8	0	1134	0	80.9	70-130	920.6	0.309	30		
Surr: Toluene-d8	1104	0	1134	0	97.3	70-130	1065	3.61	30		

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
 Work Order: 18052001
 Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119162** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-119162-119162				Units: mg/Kg		Analysis Date: 6/1/2018 04:50 PM		
Client ID:		Run ID: WETCHEM_180601O		SeqNo: 5067709		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 1.0

LCS		Sample ID: LCS-119162-119162				Units: mg/Kg		Analysis Date: 6/1/2018 04:50 PM		
Client ID:		Run ID: WETCHEM_180601O		SeqNo: 5067708		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.22 1.0 5 0 84.4 80-120 0

MS		Sample ID: 18052001-01A MS				Units: mg/Kg		Analysis Date: 6/1/2018 04:50 PM		
Client ID: RGU 14-16-198		Run ID: WETCHEM_180601O		SeqNo: 5067704		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.753 1.0 5.155 -0.0381 92.9 75-125 0

MS		Sample ID: 18052001-01A MSI				Units: mg/Kg		Analysis Date: 6/1/2018 04:50 PM		
Client ID: RGU 14-16-198		Run ID: WETCHEM_180601O		SeqNo: 5067706		Prep Date: 5/31/2018		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2798 100 2494 -0.0381 112 75-125 0

MSD		Sample ID: 18052001-01A MSD				Units: mg/Kg		Analysis Date: 6/1/2018 04:50 PM		
Client ID: RGU 14-16-198		Run ID: WETCHEM_180601O		SeqNo: 5067705		Prep Date: 5/31/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.788 1.0 5.051 -0.0381 95.6 75-125 4.753 0.74 20

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119177** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-119177-119177				Units: s.u.			Analysis Date: 6/1/2018 03:50 PM			
Client ID:				Run ID: WETCHEM_180601K				SeqNo: 5067443			Prep Date: 6/1/2018		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		4.03	0.10	4	0	101	90-110	0						

DUP				Sample ID: 18052001-01A DUP				Units: s.u.		Analysis Date: 6/1/2018 03:50 PM			
Client ID: RGU 14-16-198				Run ID: WETCHEM_180601K				SeqNo: 5067445		Prep Date: 6/1/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH	9.04	0.10	0	0	0	0-0	8.7	3.83	20				

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
Work Order: 18052001
Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **119206** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 18052001-01A DUP				Units: mmhos/cm @25°		Analysis Date: 6/4/2018 09:00 AM		
Client ID: RGU 14-16-198		Run ID: WETCHEM_180604B		SeqNo: 5069332		Prep Date: 6/3/2018		DF: 25		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	3.538	0.12	0	0	0		3.53	0.212	50	

The following samples were analyzed in this batch:

18052001-01A

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

Client: Terra Energy Partners, LLC
 Work Order: 18052001
 Project: RGU 14-16-198

QC BATCH REPORT

Batch ID: **R237090** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R237090				Units: % of sample		Analysis Date: 5/31/2018 01:00 PM		
Client ID:		Run ID: MOIST_180531A				SeqNo: 5065316		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-R237090				Units: % of sample		Analysis Date: 5/31/2018 01:00 PM		
Client ID:		Run ID: MOIST_180531A				SeqNo: 5065315		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 99.99 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 18051974-01A DUP				Units: % of sample		Analysis Date: 5/31/2018 01:00 PM		
Client ID:		Run ID: MOIST_180531A				SeqNo: 5065300		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.76 0.050 0 0 0 0-0 15.59 1.08 10

DUP		Sample ID: 18052001-01A DUP				Units: % of sample		Analysis Date: 5/31/2018 01:00 PM		
Client ID: RGU 14-16-198		Run ID: MOIST_180531A				SeqNo: 5065314		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 14.21 0.050 0 0 0 0-0 13.91 2.13 10

The following samples were analyzed in this batch:

18052001-01A


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





Form 202r8

[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: Charge to RGU 14-16-198 LOE 	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		Mike Gardner	5/30/2018	1800
RECEIVED BY		W.M.	5-30-18	1800
RELINQUISHED BY		W.M.	5-30-18	1830
RECEIVED BY		Diane F. Shan	5/31/18	1000
RELINQUISHED BY				
RECEIVED BY				

Sample Receipt Checklist

Client Name: **TERRAENERGY**

Date/Time Received: **31-May-18 10:00**

Work Order: **18052001**

Received by: **DS**

Checklist completed by Diane Shaw 31-May-18
eSignature Date

Reviewed by: Chad Whelton 31-May-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>2.2/2.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/31/2018 11:54:51 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: