APPROVED
By Olivia Yu at 5:10 pm, Aug 23, 2017

August 11, 2017

Ms. Olivia Yu
Environmental Specialist
NMOCD, District 1
1625 N. French Drive
Hobbs, New Mexico 88240

NMOCD approves of the delineation completed for 1RP-1849 and of the proposed remediation.

Re: Angell #1 Tank Battery (IRP #1849) Release Characterization Report - Addendum 1

Ms. Yu,

Pike Energy Services, LLC (Pike) conducted release characterization (delineation) sampling activities at the Angell #1 Tank Battery on April 26 and 27, 2017. Upon review of the Release Characterization Report dated May 31, 2017, the New Mexico Oil Conservation Division (OCD) requested additional vertical delineation to at least 30 feet below grade based on the results of the previous attempt. The report also recommended additional horizontal delineation on the south and southeast sides of the tank battery. This letter report details the additional delineation activities conducted at the site.

Additional Release Characterization

1. ***Horizontal Delineation Sampling*** – Additional horizontal delineation sampling was conducted on June 7, 2017. Sample locations were placed laterally east of soil boring ES2 and south of soil boring S2 where levels of chloride above the Remedial Action Level (RAL) were identified during the initial characterization event. Sample locations were advanced with the use of a mini-excavator with samples collected at the surface and at refusal, typically encountered at 3 to 3.5 feet below grade in all locations. Results of the sample analysis indicated contamination of shallow surface soils above RALs to be addressed during the remediation process. Sample locations are presented in **Figure 1** with a corresponding analytical summary provided in **Table 1**.
2. ***Vertical Delineation Sampling*** – Additional horizontal delineation sampling was conducted on June 26, 2017. A single soil boring (V1R) was advanced next to soil boring V1, this time utilizing an air rotary drilling rig with 2-foot stainless steel split spoon core barrel to ensure better sample capture. The first sample was collected at 5 feet below grade with sample intervals of 5 feet thereafter to 30 feet below grade. Returns in the first 30-foot sample consisted of slough from the top and sides of the hole and was discarded. The hole was cleaned out with compressed air and the drill bit before attempting a second retrieval. The second attempt at a 30-foot sample was hard to capture as the rock at this depth was very hard only producing a 1-foot return with observed possible slough in that sample as well presumably the reason for the retrieval of slough in the first attempt. Results of sample analysis indicated contamination below RALs at 15 feet below grade that were maintained to 30 feet below grade. The sample location for V1R is presented in **Figure 1** with the corresponding analytical summary provided in **Table 1**.
3. ***Sampling and Analysis*** - Generally accepted soil sampling procedures and decontamination of reusable sampling equipment were employed during the sampling at this site. Soil samples were collected and homogenized in decontaminated stainless-steel bowls. Soil was then collected in clean laboratory supplied glass. Each sample was given a unique name, time and date, packed on ice in laboratory supplied coolers and submitted under chain of custody via FedEx to ESC Lab Sciences in

Mount Juliet, TN for analysis of: Total Petroleum Hydrocarbons (TPH (DRO/MRO)) by EPA method 8015, Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and (TPH (GRO) by EPA method 8021, and Chloride by EPA method 9056.

Copies of the laboratory analytical data packages are provided in **Attachment A**. Additionally, a photograph log and a copy of the field logbook are provided in **Attachment B**.

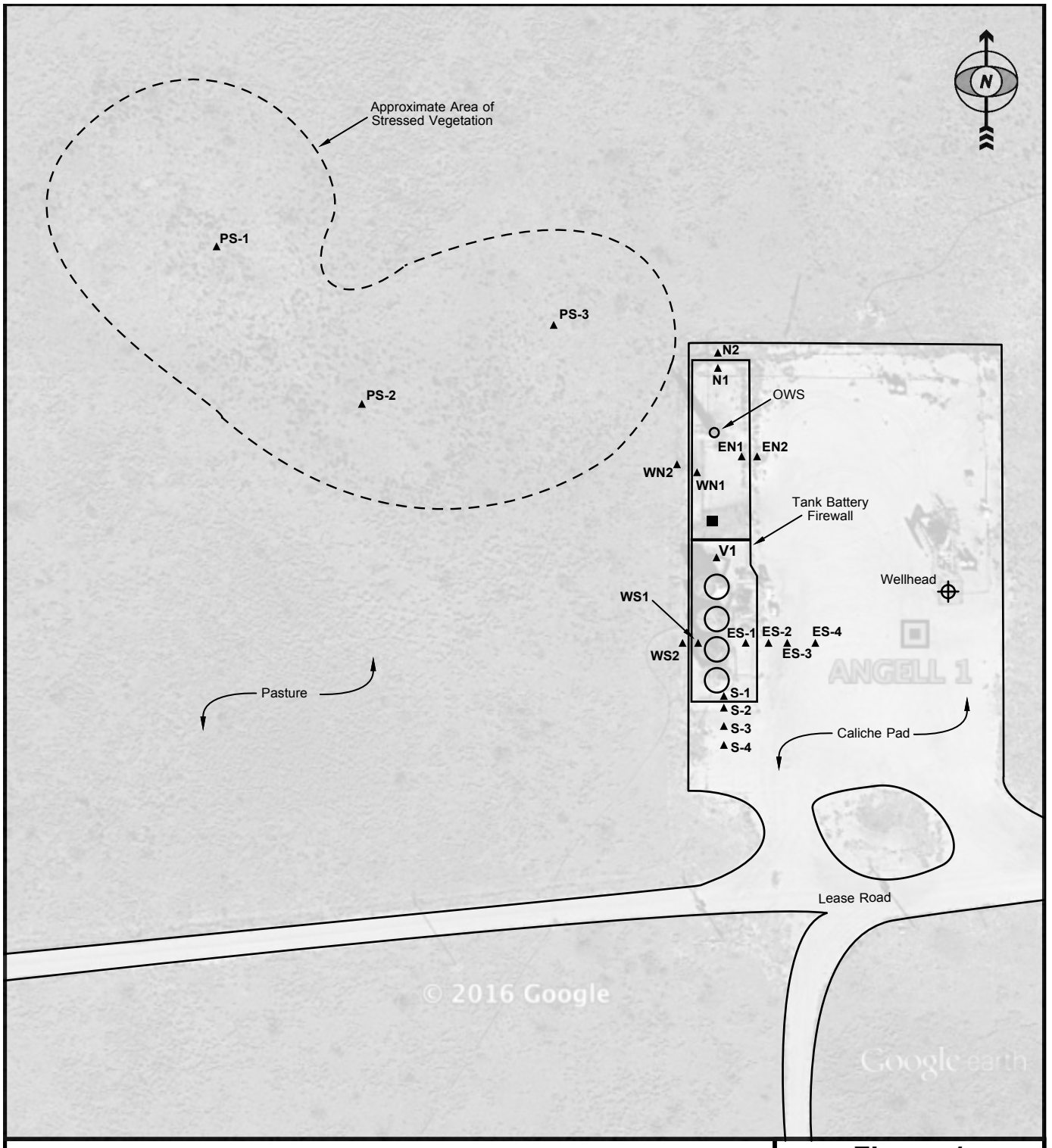
4. ***Conclusions and Recommendations*** – Additional horizontal delineation sampling for chloride lateral of soil borings S2 and ES2 outside of the berm wall has been completed indicating that shallow contamination of Chloride above RALs remains on site and will be included during the remediation process. Vertical delineation sampling of soil boring V1R has been completed to 30 feet below grade with contaminant concentrations below RALs for more than ten feet and above the water table as prescribed in the Conditions of Approval issued by the OCD. Recommended remedial actions include removal of the tank battery including the berm walls with excavation of identified contaminated soil for disposal to 4 feet below grade with shallow removal of soils as necessary on the south and southeast sides of the tank battery.

We appreciated your review of this report and would like to discuss BC Operating's options for closure of the site. Please call me if you have any questions, comments, or concerns at (210) 363-2431.

Respectfully Yours,

Frank Engallina

Attachments:
Figure 1
Table 1
Attachment A – Laboratory Reports
Attachment B – Photograph Log and Field Logbook



LEGEND

▲ Sample Locations

SCALE

0 50 100

FEET

Aerial Photo by Google Earth Pro 2/1/2017

Figure 1

Angell #1H

Sample Location Map

April 27 - June 28, 2017

PIKE ENERGY SERVICES

TABLE 1
SUMMARY OF LABORATORY ANALYTICAL RESULTS

BC Operating - Angell #1
Lea County, New Mexico

Sample ID[1]	Depth	Date Collected	Benzene[2] (mg/kg)	BTEX[3] (mg/kg)	TPH[4] (mg/kg)	Chloride[5] (mg/kg)
S3-0	0-4"	6/7/17	<0.01	<0.01	257	363
S3-3.5	3.5'	6/7/17	<0.01	<0.01	9.02	200
S4-0	0-4"	6/7/17	<0.01	<0.01	13.5	**703**
S4-3	3'	6/7/17	<0.01	<0.01	5.63	86
ES3-0	0-4"	6/7/17	<0.01	<0.01	799	**9800**
ES3-3	3'	6/7/17	<0.01	<0.01	10.6	462
ES4-0	0-4"	6/7/17	<0.01	<0.01	24.55	**890**
ES4-3	3'	6/7/17	<0.01	<0.01	7.39	151
V1R-5	5'	6/26/17	<0.01	<0.01	36.7	**6490**
V1R-10	10'	6/26/17	<0.01	<0.01	ND	**3030**
V1R-15	15'	6/26/17	<0.01	<0.01	9.74	285
V1R-20	20'	6/26/17	<0.01	<0.01	0.761	44
V1R-25	25'	6/26/17	ND	<0.1	172.74	318
V1R-30	30'	6/26/17	<0.01	<0.01	71.6	557
		Action Level[6]	10 mg/kg	50 mg/kg	1,000 mg/kg	600 mg/kg

Bold Print Indicates Sample Results Above the RAL

Notes:

ND - Non Detected at the Sample Detection Limit

[1]Samples collected by PES and analyzed by ESC Lab Sciences in Mt. Juliet, TN.

[2]Benzene by Method 8021.

[3]BTEX by Method 8021, value is sum of Benzene, Toluene, Ethylbenzene and Total Xylene.

[4]Total Petroleum Hydrocarbons (TPH) by Method 8015/8021, value is sum of Gas Range (Low Fraction = C_6-C_{10}), Diesel Range (C_{10}-C_{28}), and Oil Range (C_{28}-C_{40}).

[5]Chloride by U. S. EPA Method 9056A.

[6]Site Specific Remediation Action Levels (RAL)

Attachment A
Laboratory Reports

ANALYTICAL REPORT

June 13, 2017

Pike Energy Services - San Antonio, TX

Sample Delivery Group:	L914785
Samples Received:	06/09/2017
Project Number:	BC-004
Description:	BC-Angell #1 - Delin.
Site:	ANGELL #1
Report To:	Frank Engallina 321 Pike Rd. San Antonio, TX 78209

Entire Report Reviewed By:

Chris McCord
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

S3-0 L914785-01 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 11:35 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 16:44	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/10/17 19:08	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/12/17 14:07	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	5	06/10/17 05:44	06/12/17 16:53	ACM

S3-3.5 L914785-02 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 11:50 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 16:53	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/10/17 19:30	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/12/17 13:39	ACM

S4-0 L914785-03 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 12:15 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 17:02	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 02:00	ACG
Volatile Organic Compounds (GC) by Method 8021	WG988016	1	06/10/17 11:37	06/12/17 09:33	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/10/17 18:57	ACM

S4-3 L914785-04 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 12:30 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 17:11	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 02:22	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/10/17 19:12	ACM

ES3-0 L914785-05 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 12:50 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	25	06/10/17 11:16	06/10/17 17:20	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 02:44	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/10/17 19:27	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	5	06/10/17 05:44	06/12/17 14:35	ACM

ES3-3 L914785-06 Solid

Collected by: Frank Engallina | Collected date/time: 06/07/17 13:00 | Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 17:29	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 03:06	ACG

ES3-3 L914785-06 Solid

Collected by: Frank Engallina
Collected date/time: 06/07/17 13:00
Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/12/17 13:53	ACM

ES4-0 L914785-07 Solid

Collected by: Frank Engallina
Collected date/time: 06/07/17 13:15
Received date/time: 06/09/17 08:45

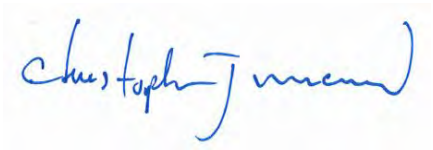
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 17:38	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 04:31	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/10/17 19:55	ACM

ES4-3 L914785-08 Solid

Collected by: Frank Engallina
Collected date/time: 06/07/17 13:20
Received date/time: 06/09/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG987654	1	06/09/17 15:34	06/09/17 15:42	MLW
Wet Chemistry by Method 9056A	WG987651	1	06/10/17 11:16	06/10/17 17:47	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG988016	1	06/10/17 11:37	06/11/17 04:53	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG987743	1	06/10/17 05:44	06/10/17 20:08	ACM

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Technical Service Representative

Project Narrative

The carbon range for TPH (GC/FID) Low Fraction is C6 - C10.

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.4		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	363		0.899	10.0	11.3	1	06/10/2017 16:44	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000206	J	0.000136	0.000500	0.000565	1	06/10/2017 19:08	WG988016
Toluene	0.000629	B J	0.000170	0.00500	0.00565	1	06/10/2017 19:08	WG988016
Ethylbenzene	0.000215	J	0.000124	0.000500	0.000565	1	06/10/2017 19:08	WG988016
Total Xylene	U	J6	0.000520	0.00150	0.00170	1	06/10/2017 19:08	WG988016
TPH (GC/FID) Low Fraction	U		0.0245	0.100	0.113	1	06/10/2017 19:08	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*96.5*				*77.0-120*		*06/10/2017 19:08*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*89.4*				*75.0-128*		*06/10/2017 19:08*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	16.1		2.53	4.00	4.52	1	06/12/2017 14:07	WG987743
C20-C36 Hydrocarbons	241		3.85	4.00	22.6	5	06/12/2017 16:53	WG987743
(S) o-Terphenyl	*83.5*				*18.0-148*		*06/12/2017 16:53*	WG987743
(S) o-Terphenyl	*77.0*				*18.0-148*		*06/12/2017 14:07*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.1		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	200		0.873	10.0	11.0	1	06/10/2017 16:53	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000552		0.000132	0.000500	0.000549	1	06/10/2017 19:30	WG988016
Toluene	0.000209	B J	0.000165	0.00500	0.00549	1	06/10/2017 19:30	WG988016
Ethylbenzene	U		0.000121	0.000500	0.000549	1	06/10/2017 19:30	WG988016
Total Xylene	U		0.000505	0.00150	0.00165	1	06/10/2017 19:30	WG988016
TPH (GC/FID) Low Fraction	U		0.0238	0.100	0.110	1	06/10/2017 19:30	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*95.5*				*77.0-120*		*06/10/2017 19:30*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*88.0*				*75.0-128*		*06/10/2017 19:30*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.46	4.00	4.39	1	06/12/2017 13:39	WG987743
C20-C36 Hydrocarbons	9.02		0.747	4.00	4.39	1	06/12/2017 13:39	WG987743
(S) o-Terphenyl	*102*				*18.0-148*		*06/12/2017 13:39*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.3		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	703		0.910	10.0	11.4	1	06/10/2017 17:02	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000151	J	0.000137	0.000500	0.000572	1	06/11/2017 02:00	WG988016
Toluene	0.000480	B J	0.000172	0.00500	0.00572	1	06/11/2017 02:00	WG988016
Ethylbenzene	0.000244	J	0.000126	0.000500	0.000572	1	06/11/2017 02:00	WG988016
Total Xylene	U		0.000527	0.00150	0.00172	1	06/12/2017 09:33	WG988016
TPH (GC/FID) Low Fraction	U		0.0248	0.100	0.114	1	06/11/2017 02:00	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*95.9*				*77.0-120*		*06/12/2017 09:33*	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*96.8*				*77.0-120*		*06/11/2017 02:00*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*87.9*				*75.0-128*		*06/12/2017 09:33*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*88.7*				*75.0-128*		*06/11/2017 02:00*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.56	4.00	4.58	1	06/10/2017 18:57	WG987743
C20-C36 Hydrocarbons	13.5		0.780	4.00	4.58	1	06/10/2017 18:57	WG987743
(S) o-Terphenyl	*97.5*				*18.0-148*		*06/10/2017 18:57*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.6		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	86.0		0.878	10.0	11.0	1	06/10/2017 17:11	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000577		0.000132	0.000500	0.000552	1	06/11/2017 02:22	WG988016
Toluene	0.000331	B J	0.000166	0.00500	0.00552	1	06/11/2017 02:22	WG988016
Ethylbenzene	0.000169	J	0.000121	0.000500	0.000552	1	06/11/2017 02:22	WG988016
Total Xylene	U		0.000508	0.00150	0.00166	1	06/11/2017 02:22	WG988016
TPH (GC/FID) Low Fraction	U		0.0240	0.100	0.110	1	06/11/2017 02:22	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*96.3*				*77.0-120*		*06/11/2017 02:22*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*89.7*				*75.0-128*		*06/11/2017 02:22*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.47	4.00	4.42	1	06/10/2017 19:12	WG987743
C20-C36 Hydrocarbons	5.63		0.752	4.00	4.42	1	06/10/2017 19:12	WG987743
(S) o-Terphenyl	*88.0*				*18.0-148*		*06/10/2017 19:12*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.9		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	9800		22.1	10.0	278	25	06/10/2017 17:20	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000229	J	0.000133	0.000500	0.000556	1	06/11/2017 02:44	WG988016
Toluene	0.000651	B J	0.000167	0.00500	0.00556	1	06/11/2017 02:44	WG988016
Ethylbenzene	0.000165	J	0.000122	0.000500	0.000556	1	06/11/2017 02:44	WG988016
Total Xylene	U		0.000511	0.00150	0.00167	1	06/11/2017 02:44	WG988016
TPH (GC/FID) Low Fraction	U		0.0241	0.100	0.111	1	06/11/2017 02:44	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*93.5*				*77.0-120*		*06/11/2017 02:44*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*86.2*				*75.0-128*		*06/11/2017 02:44*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	146		2.49	4.00	4.45	1	06/10/2017 19:27	WG987743
C20-C36 Hydrocarbons	653		3.79	4.00	22.2	5	06/12/2017 14:35	WG987743
(S) o-Terphenyl	*52.0*				*18.0-148*		*06/12/2017 14:35*	WG987743
(S) o-Terphenyl	*36.5*				*18.0-148*		*06/10/2017 19:27*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.0		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	462		0.846	10.0	10.6	1	06/10/2017 17:29	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000875		0.000128	0.000500	0.000532	1	06/11/2017 03:06	WG988016
Toluene	0.000365	B J	0.000160	0.00500	0.00532	1	06/11/2017 03:06	WG988016
Ethylbenzene	U		0.000117	0.000500	0.000532	1	06/11/2017 03:06	WG988016
Total Xylene	U		0.000489	0.00150	0.00160	1	06/11/2017 03:06	WG988016
TPH (GC/FID) Low Fraction	U		0.0231	0.100	0.106	1	06/11/2017 03:06	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*95.4*				*77.0-120*		*06/11/2017 03:06*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*87.7*				*75.0-128*		*06/11/2017 03:06*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.38	4.00	4.25	1	06/12/2017 13:53	WG987743
C20-C36 Hydrocarbons	10.6		0.724	4.00	4.25	1	06/12/2017 13:53	WG987743
(S) o-Terphenyl	*97.0*				*18.0-148*		*06/12/2017 13:53*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.8		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	890		0.905	10.0	11.4	1	06/10/2017 17:38	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000201	J	0.000137	0.000500	0.000569	1	06/11/2017 04:31	WG988016
Toluene	0.000514	B J	0.000171	0.00500	0.00569	1	06/11/2017 04:31	WG988016
Ethylbenzene	0.000239	J	0.000125	0.000500	0.000569	1	06/11/2017 04:31	WG988016
Total Xylene	U		0.000524	0.00150	0.00171	1	06/11/2017 04:31	WG988016
TPH (GC/FID) Low Fraction	U		0.0247	0.100	0.114	1	06/11/2017 04:31	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*96.5*				*77.0-120*		*06/11/2017 04:31*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*88.4*				*75.0-128*		*06/11/2017 04:31*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	5.45		2.55	4.00	4.55	1	06/10/2017 19:55	WG987743
C20-C36 Hydrocarbons	19.1		0.775	4.00	4.55	1	06/10/2017 19:55	WG987743
(S) o-Terphenyl	*89.6*				*18.0-148*		*06/10/2017 19:55*	WG987743

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.3		1	06/09/2017 15:42	WG987654

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	151		0.843	10.0	10.6	1	06/10/2017 17:47	WG987651

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000839		0.000127	0.000500	0.000530	1	06/11/2017 04:53	WG988016
Toluene	0.000544	B J	0.000159	0.00500	0.00530	1	06/11/2017 04:53	WG988016
Ethylbenzene	U		0.000117	0.000500	0.000530	1	06/11/2017 04:53	WG988016
Total Xylene	U		0.000488	0.00150	0.00159	1	06/11/2017 04:53	WG988016
TPH (GC/FID) Low Fraction	U		0.0230	0.100	0.106	1	06/11/2017 04:53	WG988016
(S) a,a,a-Trifluorotoluene(FID)	*95.6*				*77.0-120*		*06/11/2017 04:53*	WG988016
(S) a,a,a-Trifluorotoluene(PID)	*88.7*				*75.0-128*		*06/11/2017 04:53*	WG988016

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.38	4.00	4.24	1	06/10/2017 20:08	WG987743
C20-C36 Hydrocarbons	7.39		0.722	4.00	4.24	1	06/10/2017 20:08	WG987743
(S) o-Terphenyl	*90.4*				*18.0-148*		*06/10/2017 20:08*	WG987743

Method Blank (MB)

(MB) R3224588-1 06/09/17 15:42

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000300			

L914746-11 Original Sample (OS) • Duplicate (DUP)

(OS) L914746-11 06/09/17 15:42 • (DUP) R3224588-3 06/09/17 15:42

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	86.7	87.5	1	0.944		5

Laboratory Control Sample (LCS)

(LCS) R3224588-2 06/09/17 15:42

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3224793-1 06/10/17 11:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	U		0.795	10.0

L914588-01 Original Sample (OS) • Duplicate (DUP)

(OS) L914588-01 06/10/17 13:53 • (DUP) R3224793-4 06/10/17 14:01

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1410	1260	5	11		15

L914785-08 Original Sample (OS) • Duplicate (DUP)

(OS) L914785-08 06/10/17 17:47 • (DUP) R3224793-7 06/10/17 17:56

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	151	149	1	1		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3224793-2 06/10/17 12:08 • (LCSD) R3224793-3 06/10/17 12:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	200	204	207	102	103	80-120			1	15

L914588-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L914588-02 06/10/17 14:10 • (MS) R3224793-5 06/10/17 14:19 • (MSD) R3224793-6 06/10/17 14:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	100	1010	1620	1590	121	115	5	80-120	J5		2	15

Method Blank (MB)

(MB) R3224775-5 06/10/17 17:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000331	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*90.9*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3224775-1 06/10/17 15:17 • (LCSD) R3224775-2 06/10/17 15:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0543	0.0476	109	95.2	71.0-121			13.1	20
Toluene	0.0500	0.0536	0.0469	107	93.8	72.0-120			13.3	20
Ethylbenzene	0.0500	0.0551	0.0482	110	96.4	76.0-121			13.4	20
Total Xylene	0.150	0.173	0.150	115	99.8	75.0-124			14.4	20
(S) a,a,a-Trifluorotoluene(FID)				*97.7*	*97.9*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*95.7*	*99.4*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3224775-3 06/10/17 16:31 • (LCSD) R3224775-4 06/10/17 17:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.18	6.22	94.2	113	70.0-136			18.1	20
(S) a,a,a-Trifluorotoluene(FID)				*98.0*	*100*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*106*	*108*	*75.0-128*				

L914785-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L914785-01 06/10/17 19:08 • (MS) R3224775-6 06/11/17 05:15 • (MSD) R3224775-7 06/11/17 05:37

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0565	0.000206	0.0417	0.0396	73.4	69.6	1	10.0-146			5.30	29
Toluene	0.0565	0.000629	0.0391	0.0363	68.0	63.0	1	10.0-143			7.45	30
Ethylbenzene	0.0565	0.000215	0.0375	0.0334	66.0	58.7	1	10.0-147			11.6	31
Total Xylene	0.170	U	0.118	0.106	69.8	62.7	1	10.0-149	J6	J6	10.8	30

L914785-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L914785-01 06/10/17 19:08 • (MS) R3224775-6 06/11/17 05:15 • (MSD) R3224775-7 06/11/17 05:37

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*96.0*	*96.4*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*94.4*	*94.2*		*75.0-128*				

L914785-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L914785-01 06/10/17 19:08 • (MS) R3224775-8 06/11/17 05:59 • (MSD) R3224775-9 06/11/17 06:21

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.22	U	4.37	3.95	70.3	63.4	1	10.0-147			10.2	30
(S) a,a,a-Trifluorotoluene(FID)					*95.5*	*94.4*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*103*	*104*		*75.0-128*				

Method Blank (MB)

(MB) R3224841-1 06/10/17 12:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10 - C20 Hydrocarbons	U		2.24	4.00
C20-C36 Hydrocarbons	U		0.681	4.00
(S) o-Terphenyl	*93.8*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3224841-2 06/10/17 12:22 • (LCSD) R3224841-3 06/10/17 12:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10 - C20 Hydrocarbons	30.0	22.4	23.3	74.6	77.7	50.0-150			4.06	20
C20-C36 Hydrocarbons	30.0	23.6	25.0	78.6	83.4	50.0-150			6.02	20
(S) o-Terphenyl				*81.2*	*85.9*	*18.0-148*				

L914746-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L914746-01 06/12/17 14:49 • (MS) R3224965-1 06/12/17 15:02 • (MSD) R3224965-2 06/12/17 15:17

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10 - C20 Hydrocarbons	3.23	1430	848	996	0.000	0.000	10	50.0-150	V	V	16.1	20
C20-C36 Hydrocarbons	3.23	819	512	587	0.000	0.000	10	50.0-150	V	V	13.7	20
(S) o-Terphenyl					*126*	*124*		*18.0-148*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
U	Not detected at the Sample Detection Limit.
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
SDL (dry)	Sample Detection Limit.
MQL (dry)	Method Quantitation Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC	100789
DOD	1461.01
USDA	S-67674

[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

Pike Energy Services - San Antonio, TX
321 Pike Rd.
San Antonio, TX 78209

Billing Information: **Same**

Pres Chk

Report to: **Frank Engallina**

Email To: **pikeenergyservices@gmail.com**

Project Description: BC - ANGELL #1 - DELIN.

City/State Collected: LOVINGTON, NM

Phone: **210-363-2431**
Fax:

Client Project # BC-004

Lab Project #

Collected by (print): FRANK ENGALLINA

Site/Facility ID # ANGELL #1

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
X Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CHLORIDE 9056	DRO/MRO 8015	BTEX/GRO 8021	Remarks	Sample # (lab only)
S3-0	GRAB	SS	0-4"	6/7/2017	1135	2	X	X	X		-01
S3-3.5			3.5'		1150	2	X	X	X		-02
S4-0			0-4"		1215	2	X	X	X		-03
S4-3			3'		1230	2	X	X	X		-04
ES3-0			0-4"		1250	2	X	X	X		-05
ES3-3			3'		1300	2	X	X	X		-06
ES4-0			0-4"		1315	2	X	X	X		-07
ES4-3			3'		1320	2	X	X	X		-08

Chain of Custody Page ___ of ___

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Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1914785
B228

Acctnum: **PIKEENGSATX**
Template:
Prelogin:
TSR: **Chris McCord**
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other ___

Remarks: NEXT DAY RUSH!

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS __ FedEx __ Courier __ ___

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	6/8/2017	1700			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 3.1 IR 16 4oz	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Marina Malone	Date: 6-9-17 Time: 0845	Hold: Condition: NCF / OK

ANALYTICAL REPORT

June 30, 2017

Pike Energy Services - San Antonio, TX

Sample Delivery Group:	L919137
Samples Received:	06/28/2017
Project Number:	BC-004
Description:	BC-Angell #1 - Delin.
Site:	ANGELL #1
Report To:	Frank Engallina 321 Pike Rd. San Antonio, TX 78209

Entire Report Reviewed By:

Chris McCord
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

V1R-5 L919137-01 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 14:40
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	20	06/29/17 10:23	06/29/17 14:26	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 06:22	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 15:49	DMG

V1R-10 L919137-02 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 14:50
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	10	06/29/17 10:23	06/29/17 14:35	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 06:44	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 14:47	DMG

V1R-15 L919137-03 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 14:55
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	1	06/29/17 10:23	06/29/17 14:44	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 07:05	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 15:23	DMG

V1R-20 L919137-04 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 15:00
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	1	06/29/17 10:23	06/29/17 14:53	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 07:27	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 15:36	DMG

V1R-25 L919137-05 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 15:05
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	1	06/29/17 10:23	06/29/17 15:02	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 07:48	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 16:28	DMG

V1R-30 L919137-06 Solid

Collected by: Frank Engallina
Collected date/time: 06/26/17 15:30
Received date/time: 06/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG993943	1	06/28/17 16:06	06/28/17 16:16	MLW
Wet Chemistry by Method 9056A	WG993924	1	06/29/17 10:23	06/29/17 15:11	DR
Volatile Organic Compounds (GC) by Method 8015/8021	WG994481	1	06/29/17 17:34	06/30/17 08:10	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG994602	1	06/29/17 20:32	06/30/17 16:15	DMG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris McCord
Technical Service Representative

Project Narrative

TPH Low Fraction is C6 - C10.

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.5		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	6490		17.8	10.0	223	20	06/29/2017 14:26	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000277	J	0.000134	0.000500	0.000559	1	06/30/2017 06:22	WG994481
Toluene	0.000407	J	0.000168	0.00500	0.00559	1	06/30/2017 06:22	WG994481
Ethylbenzene	0.00366		0.000123	0.000500	0.000559	1	06/30/2017 06:22	WG994481
Total Xylene	0.00454	B	0.000514	0.00150	0.00168	1	06/30/2017 06:22	WG994481
TPH (GC/FID) Low Fraction	U		0.0242	0.100	0.112	1	06/30/2017 06:22	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*97.9*				*77.0-120*		*06/30/2017 06:22*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*88.6*				*75.0-128*		*06/30/2017 06:22*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	17.1		2.50	4.00	4.47	1	06/30/2017 15:49	WG994602
C20-C36 Hydrocarbons	19.6		0.761	4.00	4.47	1	06/30/2017 15:49	WG994602
(S) o-Terphenyl	*97.7*				*18.0-148*		*06/30/2017 15:49*	WG994602

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.1		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	3030		8.72	10.0	110	10	06/29/2017 14:35	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000178	J	0.000132	0.000500	0.000549	1	06/30/2017 06:44	WG994481
Toluene	0.000699	J	0.000165	0.00500	0.00549	1	06/30/2017 06:44	WG994481
Ethylbenzene	0.000305	J	0.000121	0.000500	0.000549	1	06/30/2017 06:44	WG994481
Total Xylene	0.00113	B J	0.000505	0.00150	0.00165	1	06/30/2017 06:44	WG994481
TPH (GC/FID) Low Fraction	U		0.0238	0.100	0.110	1	06/30/2017 06:44	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*97.6*				*77.0-120*		*06/30/2017 06:44*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*89.6*				*75.0-128*		*06/30/2017 06:44*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.46	4.00	4.39	1	06/30/2017 14:47	WG994602
C20-C36 Hydrocarbons	U		0.747	4.00	4.39	1	06/30/2017 14:47	WG994602
(S) o-Terphenyl	*94.3*				*18.0-148*		*06/30/2017 14:47*	WG994602

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	95.1		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	285		0.836	10.0	10.5	1	06/29/2017 14:44	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000213	J	0.000126	0.000500	0.000526	1	06/30/2017 07:05	WG994481
Toluene	0.000617	J	0.000158	0.00500	0.00526	1	06/30/2017 07:05	WG994481
Ethylbenzene	0.000251	J	0.000116	0.000500	0.000526	1	06/30/2017 07:05	WG994481
Total Xylene	0.000670	B J	0.000484	0.00150	0.00158	1	06/30/2017 07:05	WG994481
TPH (GC/FID) Low Fraction	U		0.0228	0.100	0.105	1	06/30/2017 07:05	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*96.8*				*77.0-120*		*06/30/2017 07:05*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*88.8*				*75.0-128*		*06/30/2017 07:05*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	2.93	J	2.35	4.00	4.21	1	06/30/2017 15:23	WG994602
C20-C36 Hydrocarbons	6.81		0.716	4.00	4.21	1	06/30/2017 15:23	WG994602
(S) o-Terphenyl	*88.5*				*18.0-148*		*06/30/2017 15:23*	WG994602

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.9		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	44.2		0.865	10.0	10.9	1	06/29/2017 14:53	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	U		0.000131	0.000500	0.000544	1	06/30/2017 07:27	WG994481
Toluene	0.000318	J	0.000163	0.00500	0.00544	1	06/30/2017 07:27	WG994481
Ethylbenzene	U		0.000120	0.000500	0.000544	1	06/30/2017 07:27	WG994481
Total Xylene	U		0.000500	0.00150	0.00163	1	06/30/2017 07:27	WG994481
TPH (GC/FID) Low Fraction	U		0.0236	0.100	0.109	1	06/30/2017 07:27	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*98.0*				*77.0-120*		*06/30/2017 07:27*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*88.6*				*75.0-128*		*06/30/2017 07:27*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	U		2.44	4.00	4.35	1	06/30/2017 15:36	WG994602
C20-C36 Hydrocarbons	0.761	J	0.741	4.00	4.35	1	06/30/2017 15:36	WG994602
(S) o-Terphenyl	*96.7*				*18.0-148*		*06/30/2017 15:36*	WG994602

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.5		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	318		0.842	10.0	10.6	1	06/29/2017 15:02	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	U		0.000127	0.000500	0.000529	1	06/30/2017 07:48	WG994481
Toluene	0.000980	J	0.000159	0.00500	0.00529	1	06/30/2017 07:48	WG994481
Ethylbenzene	0.0155		0.000116	0.000500	0.000529	1	06/30/2017 07:48	WG994481
Total Xylene	0.0239		0.000487	0.00150	0.00159	1	06/30/2017 07:48	WG994481
TPH (GC/FID) Low Fraction	1.04		0.0230	0.100	0.106	1	06/30/2017 07:48	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*97.1*				*77.0-120*		*06/30/2017 07:48*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*88.0*				*75.0-128*		*06/30/2017 07:48*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	87.2		2.37	4.00	4.23	1	06/30/2017 16:28	WG994602
C20-C36 Hydrocarbons	84.5		0.721	4.00	4.23	1	06/30/2017 16:28	WG994602
(S) o-Terphenyl	*113*				*18.0-148*		*06/30/2017 16:28*	WG994602

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.1		1	06/28/2017 16:16	WG993943

Wet Chemistry by Method 9056A

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	557	J3	0.893	10.0	11.2	1	06/29/2017 15:11	WG993924

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	0.000183	J	0.000135	0.000500	0.000561	1	06/30/2017 08:10	WG994481
Toluene	0.000444	J	0.000168	0.00500	0.00561	1	06/30/2017 08:10	WG994481
Ethylbenzene	0.000838		0.000124	0.000500	0.000561	1	06/30/2017 08:10	WG994481
Total Xylene	0.00182	B	0.000517	0.00150	0.00168	1	06/30/2017 08:10	WG994481
TPH (GC/FID) Low Fraction	U		0.0244	0.100	0.112	1	06/30/2017 08:10	WG994481
(S) a,a,a-Trifluorotoluene(FID)	*97.3*				*77.0-120*		*06/30/2017 08:10*	WG994481
(S) a,a,a-Trifluorotoluene(PID)	*89.3*				*75.0-128*		*06/30/2017 08:10*	WG994481

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10 - C20 Hydrocarbons	28.6		2.52	4.00	4.49	1	06/30/2017 16:15	WG994602
C20-C36 Hydrocarbons	43.0		0.765	4.00	4.49	1	06/30/2017 16:15	WG994602
(S) o-Terphenyl	*108*				*18.0-148*		*06/30/2017 16:15*	WG994602

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3229734-1 06/28/17 16:16

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000200			

L918493-08 Original Sample (OS) • Duplicate (DUP)

(OS) L918493-08 06/28/17 16:16 • (DUP) R3229734-3 06/28/17 16:16

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	70.8	70.1	1	1.06		5

Laboratory Control Sample (LCS)

(LCS) R3229734-2 06/28/17 16:16

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3229865-1 06/29/17 11:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	U		0.795	10.0

L918677-01 Original Sample (OS) • Duplicate (DUP)

(OS) L918677-01 06/29/17 12:05 • (DUP) R3229865-6 06/29/17 12:14

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	411	384	1	7		15

L919137-06 Original Sample (OS) • Duplicate (DUP)

(OS) L919137-06 06/29/17 15:11 • (DUP) R3229865-9 06/29/17 15:20

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	557	442	1	23	J3	15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3229865-4 06/29/17 11:47 • (LCSD) R3229865-5 06/29/17 11:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	200	162	161	81	81	80-120			1	15

L918677-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L918677-02 06/29/17 12:23 • (MS) R3229865-7 06/29/17 12:32 • (MSD) R3229865-8 06/29/17 12:41

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	587	540	1060	1110	88	98	1	80-120			5	15

Method Blank (MB)

(MB) R3230127-4 06/30/17 00:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.9*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*90.5*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3230127-1 06/29/17 22:30 • (LCSD) R3230127-5 06/30/17 00:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0426	0.0501	85.3	100	71.0-121			16.1	20
Toluene	0.0500	0.0420	0.0491	84.0	98.2	72.0-120			15.7	20
Ethylbenzene	0.0500	0.0416	0.0507	83.1	101	76.0-121			19.8	20
Total Xylene	0.150	0.129	0.156	86.3	104	75.0-124			18.4	20
(S) a,a,a-Trifluorotoluene(FID)				*99.7*	*98.4*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*102*	*98.9*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3230127-2 06/29/17 23:13 • (LCSD) R3230127-3 06/29/17 23:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	4.71	5.09	85.7	92.5	70.0-136			7.66	20
(S) a,a,a-Trifluorotoluene(FID)				*99.6*	*101*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*98.6*	*101*	*75.0-128*				

L918967-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L918967-01 06/30/17 02:04 • (MS) R3230127-6 06/30/17 08:31 • (MSD) R3230127-7 06/30/17 08:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0575	0.529	7.86	7.01	128	113	100	10.0-146			11.4	29
Toluene	0.0575	ND	7.42	6.57	129	114	100	10.0-143			12.1	30
Ethylbenzene	0.0575	2.15	10.7	9.50	148	128	100	10.0-147	J5		11.6	31
Total Xylene	0.172	27.3	24.7	22.1	0.000	0.000	100	10.0-149	J6	J6	10.9	30

L918967-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L918967-01 06/30/17 02:04 • (MS) R3230127-6 06/30/17 08:31 • (MSD) R3230127-7 06/30/17 08:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*103*	*102*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*106*	*106*		*75.0-128*				

L918967-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L918967-01 06/30/17 02:04 • (MS) R3230127-8 06/30/17 09:14 • (MSD) R3230127-9 06/30/17 09:35

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.32	957	1190	1160	36.5	32.2	100	10.0-147			2.32	30
(S) a,a,a-Trifluorotoluene(FID)					*107*	*108*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*111*	*111*		*75.0-128*				

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3230231-3 06/30/17 10:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10 - C20 Hydrocarbons	U		2.24	4.00
C20-C36 Hydrocarbons	U		0.681	4.00
(S) o-Terphenyl	*86.8*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3230231-1 06/30/17 09:58 • (LCSD) R3230231-2 06/30/17 10:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10 - C20 Hydrocarbons	30.0	24.8	27.4	82.8	91.4	50.0-150			9.87	20
C20-C36 Hydrocarbons	30.0	27.0	28.0	90.0	93.4	50.0-150			3.74	20
(S) o-Terphenyl				*92.8*	*103*	*18.0-148*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
U	Not detected at the Sample Detection Limit.
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
SDL (dry)	Sample Detection Limit.
MQL (dry)	Method Quantitation Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

Pike Energy Services
321 Pike Rd.
San Antonio, TX 78209

Billing Information: SAME AS BT

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 91537
D180

Report to: **Frank Engallina**

Email To: PIKEENERGYSERVICES@gmail.com, services@gmail.com

Project Description: **Angell #1 Delineation**

City/State Collected: LOVING, NM

Phone: **(210) 363-2431**
Fax:

Client Project # BC-004

Lab Project #

Collected by (print): FRANK ENGALLINA

Site/Facility ID # ANGELL #1

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CHLORIDE 9056	DRO/MRO 8015	BTEX/GRO 8021	Remarks	Sample # (lab only)
V1R-5	GRAB	SS	5'	6/26/2017	1440	2	X	X	X		01
V1R-10			10'		1450	2	X	X	X		02
V1R-15			15'		1455	2	X	X	X		03
V1R-20			20'		1500	2	X	X	X		04
V1R-25			25'		1505	2	X	X	X		05
V1R-30			33'		1530	2	X	X	X		06

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: ASAP

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__UPS __FedEx __Courier __ _____

Tracking # 6827 1110 0510

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	6/27/2017	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 1.8 JV 11 °C Bottles Received: 12

Date: 6-28-17 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Attachment B
Photograph Log and Field Logbook

Photo 1: Mini-Excavator at sampling location S4.

Photo 2: Air Rotary Rig setting up on V1R (vertical delineation location) inside Tank Battery.

Photo 3: White limestone in the 25 foot interval of sample V1R-25.

Photo 4: Slough materials retrieve in the 30 foot interval where hard rock was encountered.

6/7/2017

1100 RETURN TO ANGELL #1 FOR ADDITIONAL SAMPLE DELINEATION ON S + SE SIDES OF TB. SAMPLING W/ MINI-EX

1130 SETTING UP ON S3 10' SOUTH OF S2

1135 S3-0 SAMPLE TAKEN AT SURFACE HEADSPACE READINGS IN THE ZEROS 0.2, 0.5, ETC.

1150 S3-3.5 SAMPLE TAKEN REFUSAL @ 3.5' (ROCK)

1215 S4-0 SAMPLE TAKEN @ SURFACE

1 HS-0's

1230 S4-3 SAMPLE TAKEN, REFUSAL @ 3' bgs (Rock)

1250 ES2-0 SAMPLE TAKEN @ SURFACE HS = 0's

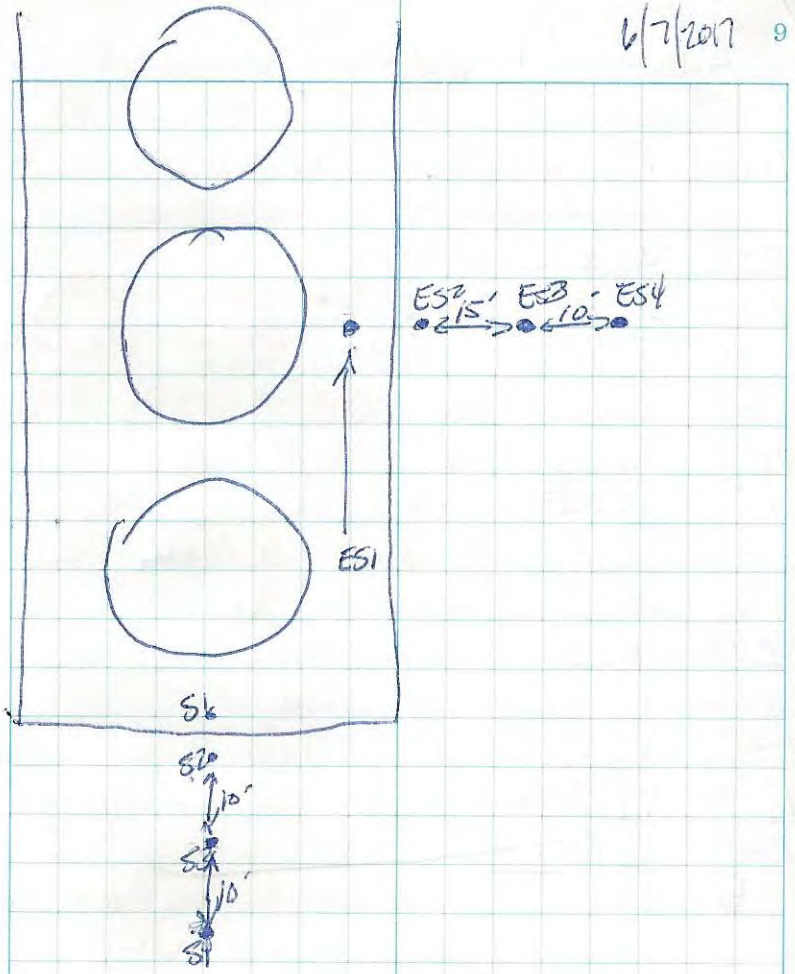
1300 ES2-3 SAMPLE TAKEN REFUSAL @ 3' bgs (Rock)

1315 ES4-0 SAMPLE TAKEN AT SURFACE, HS-0's

1320 ES4-3 SAMPLE TAKEN, REFUSAL @ 3' bgs (ROCK)
ALL SAMPLES PACKED ON ICE AT TIME OF SAMPLE.
BOTTOM SAMPLES TAKEN JUST ABOVE ROCK WHERE REFUSAL ENCOUNTERED W/ MINI EX.

1350 OFF SITE

FB



ANGELL #1 VERT DELIN/ACP SAMPLE 6/26/2017

1145 FE ON SITE MET W/ JUAN CORRIENTES ON ANGELL #2
1230 ACP-001
1235 ACP-002
1240 ACP-003
} 3 SAMPLES TAKEN AT THE ANGELL CALICHE PIT.
1300 DRILLER 1 HR LOAD.
1400 TALON LPE ONSITE, AIR ROTARY W/ CIRCULATION
JOSE DRILLER REICH DRILL TW-650-WII 6"
ALEJANDRO HAND CESAR HAND
1430 BEGIN DRILLING "VIR"
1440 V1R-5 TAKEN @ CLAY/CALICHE INTERFACE
1450 V1R-10 PINK CALICHE
1455 V1R-15 LIGHTER PINK CALICHE LOOSE & SANDY
1500 V1R-20 LIGHTER TO WHITE LOOSE DRY
1505 V1R-25 SOP
1515 V1R-30 FIRST RETRIEVAL WAS SLOUGH*, FROM ABOVE CLEAN OUT HOLE & RE ENTER
1530 V1R-30 TAKEN RETURN WAS ONLY 1' + "HARD" CONSISTED OF WHITE PULVERY CALICHE
* (POSSIBLE SLOUGH) SMALL TO MEDIUM SIZE GRAVEL, DRY
SAMPLES PACKED & PLACED ON ICE IMMEDIATELY AFTER COLLECTION OF EACH SAMPLE.
1645 OFF SITE

FE

REMEDIATION SAMPLING

0900 FE ONSITE. KYLE NUBROUGH (TJB) ON SITE.
- NORTH END OF EXCAVATION IS CLEAR TO SAMPLE 4' DEEP ON EAST SIDE ~2' DEEP ON NORTH & WEST SIDES (EVEN W/ POSTURE)
0930 PREP. TO SAMPLE SIDE WALLS ON N END OF EXCAVATION
0955 N1-2 SAMPLE TAKEN @ SURFACE/2' (POSTURE LEVEL)
1005 WN1-2 SAMPLE TAKEN SAME AS PREVIOUS
1010 EN1-0 SAMPLE TAKEN 0-4" (PAD)
1015 EN1-2 SAMPLE TAKEN @ 2'
SAMPLES PACKED ON ICE FOR SHIPPING TO LABS.
1100 FE OFF SITE.

FE

LEGEND

▲ Sample Locations

4' Excavation Depth

SCALE

0 50 100

FEET

Aerial Photo by Google Earth Pro 2/1/2017

Figure 1

Angell #1H

Confirmation Sample Location Map

June 30 - July 25, 2017

PIKE ENERGY SERVICES

TABLE 1
SUMMARY OF LABORATORY ANALYTICAL RESULTS

BC Operating - Angell #1
Lea County, New Mexico

Sample ID[1]	Depth	Date Collected	Benzene[2] (mg/kg)	BTEX[3] (mg/kg)	TPH[4] (mg/kg)	Chloride[5] (mg/kg)
N1-2	*2 ft.	6/30/17	<0.01	<0.01	4.4	217.0
WN1-2	*2 ft.	6/30/17	<0.01	<0.01	42.32	206.0
EN1-0	0-4 in.	6/30/17	<0.01	<0.01	**1127**	497.0
EN1-2	2 ft.	6/30/17	<0.01	<0.01	5.13	71.0
EC1-0	0-4 in.	7/6/17	ND	<0.01	4.03	**2650.0**
EC1-2	2 ft.	7/6/17	ND	ND	5.26	**2090.0**
WC1-2	*2 ft.	7/6/17	ND	ND	12.22	125.0
WS1-2	*2 ft.	7/6/17	ND	ND	24.51	**2830.0**
SW1-0	0-4 in.	7/6/17	ND	ND	1.40	104.0
SW1-2	2 ft.	7/6/17	ND	ND	8.0	72.7
ESN1-0	0-4 in.	7/6/17	ND	ND	5.43	589.0
ESN1-2	2 ft.	7/6/17	ND	ND	9.6	188
F1-4	4 ft.	7/6/17	ND	ND	527.0	**1050**
F2-4	4 ft.	7/6/17	ND	ND	81	364
F3-4	4 ft.	7/6/17	<0.01	<0.01	**6453**	**2830.0**
F4-4	4 ft.	7/6/17	ND	<0.01	**1118**	**2670.0**
F5-4	4 ft.	7/6/17	ND	ND	24.71	**2570.0**
F6-4	4 ft.	7/6/17	ND	ND	138	**719.0**
SE1-0	0-4 in.	7/6/17	ND	ND	6.29	**1510**
SE1-2	2 ft.	7/6/17	ND	ND	5.34	**700.0**
ESS1-0	0-4 in.	7/6/17	ND	ND	2.89	349.0
ESS1-2	2 ft.	7/6/17	ND	ND	3.8	107.0
EN1-1	1 ft.	7/17/17	<0.01	<0.01	13.8	77.6
EN2-1	1 ft.	7/17/17	<0.01	<0.01	7.52	118.0
EN3-0	0-4 in.	7/17/17	ND	<0.01	26.64	160.0
EC2-1	1 ft.	7/17/17	<0.01	<0.01	7.17	121.0
EC2-2	2 ft.	7/17/17	<0.01	<0.01	10.8	224.0
ESN2-0	0-4 in.	7/17/17	<0.01	<0.01	46.2	272.0
ESN2-2	2 ft.	7/17/17	<0.01	<0.01	9.8	113.0
SE2-0	0-4 in.	7/17/17	<0.01	<0.01	7.41	**1250.0**
SE2-2	2 ft.	7/17/17	<0.01	<0.01	5.44	**1300.0**
WS2-2	*2 ft.	7/17/17	<0.01	<0.01	440	476.0
SC1-0	0-4 in.	7/25/17	ND	ND	6.60	72.4
SC1-2	2 ft.	7/25/17	ND	ND	14.6	521.0
SE3-0	0-4 in.	7/25/17	ND	ND	10.2	173
SE302	2 ft.	7/25/17	ND	ND	8.83	176.0
ESS2-0	0-4 in.	7/25/17	ND	ND	4.73	121.0
ESS2-2	2 ft.	7/25/17	ND	ND	9.55	115
WS3-2	*2 ft.	7/25/17	ND	ND	4	50.9
		Action Level[3]	10 mg/kg	50 mg/kg	1,000 mg/kg	600 mg/kg

Bold Print Indicates Sample Results Above the RAL

Notes:

* Designates 2 foot sample is surface level of surrounding pasture

ND - Non Detected at the Sample Detection Limit

[1]Samples collected by PES and analyzed by ESC Lab Sciences in Mt. Juliet, TN.

[2]Benzene by Method 8021.

[3]BTEX by Method 8021, value is sum of Benzene, Toluene, Ethylbenzene and Total Xylene.

[4]Total Petroleum Hydrocarbons (TPH) by Method 8015/8021, value is sum of Gas Range (Low Fraction = C_6-C_{10}), Diesel Range (C_{10}-C_{28}), and Oil Range (C_{28}-C_{40}).

[5]Chloride by U. S. EPA Method 9056A.

[6]Site Specific Remediation Action Levels (RAL)