REMEDIATION WORK PLAN

Property:

Mack Energy Corporation
North Pole Fed TB
Eddy County, New Mexico
Unit Letter "M", Section 15, Township 16 South, Range 28 East
Latitude 32.9163, Longitude -104.1712
API Number: 30-015-36079
2RP-4685

September 2018

Prepared for:

Mack Energy Corporation
11344 Lovington Highway
Artesia, NM 88210
Attn: **Mr. Matt Buckles**

Prepared by:

Thomas Franklin
Environmental Manager

Ryan Reich
Environmental Project Manager

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WORK PLAN

Mack Energy Corporation
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1.0 INTRODUCTION

1.1 Site Description & Background

American Safety Services Inc. (ASSI) has prepared this Work Plan for the Mack Energy Corporation (Mack) North Pole Fed TB (referred to hereinafter as the "Site" or "subject Site"). This Work Plan is based upon the interpretation of the data collected by ASSI.

The Site is located in Unit Letter "M", Section 15, Township 16 South, Range 28 East, Eddy County, New Mexico (GPS 32.9163, -104.1712). Figures 1, 2, and 3 (Appendix A) show the Site location.

Remedial actions will be conducted in accordance with New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), Oil Conservation Division (NMOCD) rules (*NMAC 19.15.29 Release Notification*).

1.2 Project Objective

The objective of the Work Plan is to present documentation of the activities that were performed to date and to request an effective means to remediate the Site.

1.3 Standard of Care

ASSI's services are performed in accordance with standards provided by a firm rendering the same or similar services in the area during the same time frame. ASSI makes no warranties, expressed or implied, as to the services performed hereunder. Additionally, ASSI does not warranty the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services will be performed in accordance with the scope of work agreed with the client.

1.4 Reliance

This report has been prepared for the exclusive use of Mack, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the express written authorization of Mack and ASSI. Any unauthorized distribution or reuse is at the sole risk of Mack. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, the report, and ASSI's Agreement. The limitation of liability defined in the agreement is the aggregate limit of ASSI's liability to the client.

2.0 SITE RANKING & PROPOSED REMEDIAL ACTION GOALS

The Site is subject to regulatory oversight by the Bureau of Land Management (BLM). To address activities related to releases, the NMOCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the NMOCD rules, specifically NMAC 19.15.29.9 *Release Notification*. These documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with the NMAC 19.15.29, ASSI utilized the general site characteristics to determine the appropriate "ranking" for the Site. The ranking criteria and associated scoring are provided in the table below:

Ranking Criteria			Ranking Score
Depth to Groundwater	<50 feet	20	**20**
	50 to 99 feet	10	
	>100 feet	0	
Wellhead Protection Area, <1,000 feet from a water source, or; <200 feet from private domestic water source.	Yes	20	**0**
	No	0	
Distance to Surface Water Body	<200 feet	20	**0**
	200 to 1,000 feet	10	
	>1,000 feet	0	
Total Ranking Score			**20**

Based on ASSI's evaluation of the scoring criteria, the Site would have a Total Ranking Score of 20. This ranking is based on the following:

- The depth to the initial groundwater-bearing zone is less than 50 feet at the Site.
- The impacted area is greater than 200 feet from a private domestic water source.
- Distance to the nearest surface water body is greater than 1,000 ft.

Based on a Total Ranking Score of 20, cleanup goals for soils remaining in place include: 10 milligrams per kilogram (mg/Kg) for Benzene, 50 mg/Kg for Total Benzene, Toluene, Ethylbenzene and Xylene (BTEX), 100 mg/Kg for Total Petroleum Hydrocarbons (TPH) and 600 mg/Kg for Chloride.

Figure 5 shows the location of the Site in Eddy Co, New Mexico and surrounding topography.

3.0 INITIAL RESPONSE & SAMPLING ACTIVITIES

3.1 Initial Response

On July 9, 2018, ASSI personnel performed a site inspection in response to a release of twenty-five (25) barrels (bbls) of oil (2RP-4685). The release was caused when a gasket on an 8' x 20' developed a leak on the top side of the clean out plate causing the release to occur directly to the ground. Ten (10) bbls of the fluid were recovered. The release impacted approximately twenty-three thousand (23,000) square feet of pasture area adjacent to the production pad.

3.2 Sampling Activities

Initial sampling activities were conducted on July 9th by ASSI personnel, using a stainless-steel hand auger. Twenty (20) auger holes were installed at discrete locations collecting material at intervals ranging from surface (0-0.5') to a depth of two and one-half (2.5) foot below ground surface (bgs). Table 1 in Appendix B presents analytical results and Figure 3 in Appendix A shows Auger Hole locations. Soil was field screened for Chloride utilizing electro conductivity during sampling activities

3.3 Soil Sampling Analytical Results

Twenty-six (26) soil samples were collected during initial sampling activities from sample locations Auger Hole-1 through Auger Hole-20. On July 12th, samples were delivered by ASSI personnel for laboratory analysis. The samples were analyzed for BTEX , TPH and Chloride (Table 1). Analytical results were compared to *Table I of 19.15.29.12* and show only elevated TPH concentrations exist above guidance clean-up goals at sample locations Auger Hole-1 and Auger Hole-2. However, vertical and horizontal delineation was achieved during initial sampling efforts.

4.0 LABORATORY ANALYTICAL METHODS

The samples were analyzed for TPH utilizing EPA method SW-846 8015 and BTEX using EPA method SW-846 8021B and Chloride utilizing EPA method SW-846 300.1. Laboratory analysis is provided in Appendix D.

Soil was collected, in laboratory prepared glassware, placed on ice, and packed in a cooler. The sample coolers and completed chain-of-custody forms were relinquished to Xenco Laboratories in Midland, Texas for normal turn-around time.

Under Appendix A, Figure 3 indicates the approximate location of the auger holes previously installed in relation to pertinent land features and Figure 4 indicates general Site boundaries and anticipated excavation depth during the proposed removal action.

5.0 WORK PLAN

Based upon the data collected and the work completed by ASSI, the constituent of concern (COC) has been both vertically and horizontally delineated.

Based on the analytical data presented in Table I, Mack Energy and ASSI propose to excavate impacted soils in the areas adjacent and around sample locations Auger Hole-1 and Auger Hole-2. As shown in the highlighted portions of Table 1 and on Figure 4, the proposed excavated depths for sample location Auger Hole-1 is one (1) foot and two (2) foot bgs for location Auger Hole-2. All material removed from the excavated areas will be stockpiled onsite, sufficiently blended, and sampled for TPH. Upon a sample that confirms the reduction in TPH from the stockpiled material, the native excavated soils will be backfilled into its original locations and the Site will be retuned to its original conditions.

APPENDIX A

Figures

MACK-North Pole Fed TB

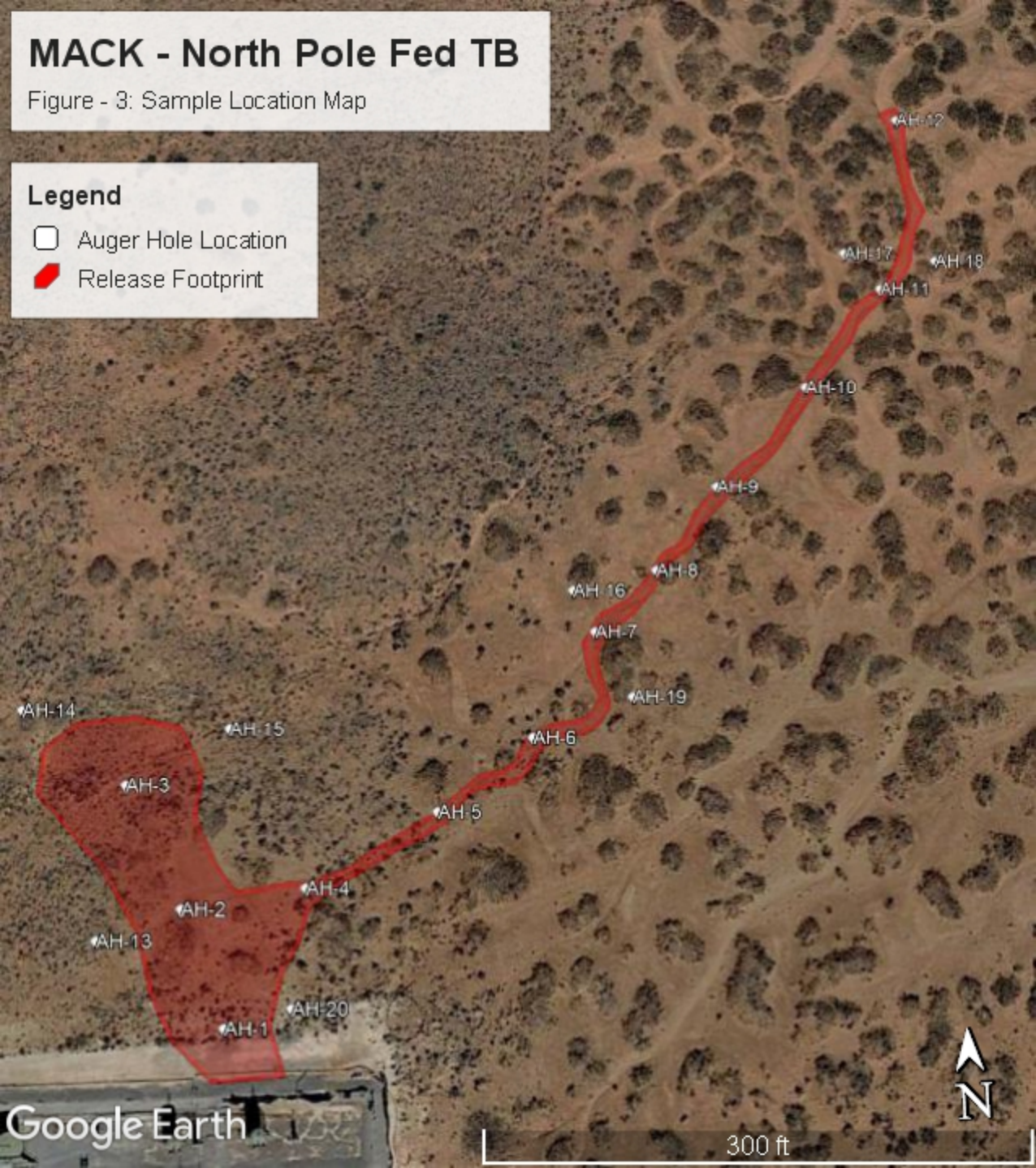
Figure 1

MACK-North Pole Fed TB

Figure 2

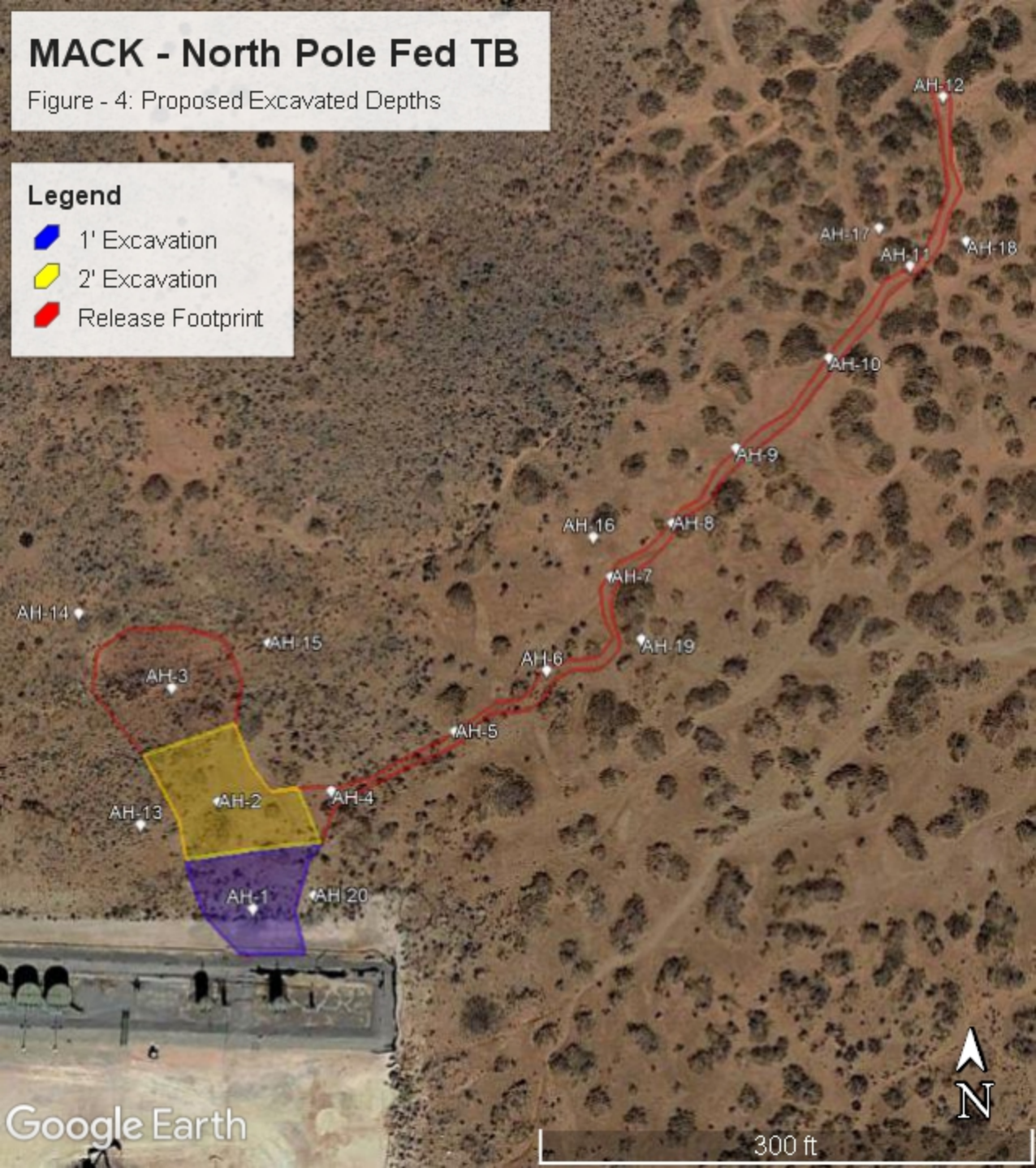
MACK - North Pole Fed TB

Figure - 3: Sample Location Map



MACK - North Pole Fed TB

Figure - 4: Proposed Excavated Depths



MACK-North Pole Fed TB

Figure 5

APPENDIX B

Table 1

TABLE 1
Summary of Delineation Sampling Analytical Results
Concentrations of Benzene, BTEX, TPH & Chloride in Soil
Mack Energy
North Pole Fed TB
Eddy County, New Mexico
2RP-4685

SAMPLE LOCATION	SAMPLE DEPTH (bgs)	SAMPLE DATE	SOIL STATUS	8021B					8015M				300.1
				BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYLBENZENE (mg/Kg)	XYLENES (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	MRO (mg/Kg)	Total TPH (mg/Kg)	CHLORIDE (mg/Kg)
NMAC 19.15.29				10	NE	NE	NE	50	NE	NE	NE	100	600
Delination Sampling													
Auger Hole-1	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	352	81.9	**434**	295
Auger Hole-1	0.5'-1'	7/9/2018	In-Situ	-	-	-	-	-	ND	468	131	**599**	161
Auger Hole-1	1'-1.5'	7/9/2018	In-Situ	-	-	-	-	-	ND	63.7	ND	63.7	-
Auger Hole-2	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	245	49.7	**295**	190
Auger Hole-2	0.5'-1'	7/9/2018	In-Situ	-	-	-	-	-	ND	207	47.3	**254**	-
Auger Hole-2	1'-1.5'	7/9/2018	In-Situ	-	-	-	-	-	ND	135	ND	**135**	-
Auger Hole-2	1.5'-2'	7/9/2018	In-Situ	-	-	-	-	-	ND	158	35	**193**	-
Auger Hole-2	2'-2.5'	7/9/2018	In-Situ	-	-	-	-	-	ND	38	ND	38	-
Auger Hole-3	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	56.8	ND	56.8	3.53
Auger Hole-4	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-5	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-6	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	39.9	ND	39.9	ND
Auger Hole-7	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-8	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-9	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-10	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-11	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-12	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-13	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	33.9	ND	33.9	ND
Auger Hole-14	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	32.2	ND	32.2	ND
Auger Hole-15	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-16	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	48.9	26.2	75.1	ND
Auger Hole-17	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	36.8
Auger Hole-18	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-19	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Auger Hole-20	0-0.5'	7/9/2018	In-Situ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

In-situ = sample collected in place
mg/Kg - milligrams per Kilogram
— = Not Established
Concentrations in **BOLD** exceed the NMOCD Guidelines
Proposed material to be excavated and blended

APPENDIX C

Photo Page

View Northeast– Origin of spill. Release caused by failed gasket on a heater treater. Area of Auger Hole-1 (flagged middle of photograph).

View Northeast– Area of Auger Hole-2 (flagged middle of photograph).

View Southeast – Area of Auger Hole-3 (flagged in middle of photograph).

View Southwest – Area of Auger Hole-4 (flagged in middle of photograph).

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View Southwest – Area of Auger Hole-5 (flagged in middle of photograph).

View Southwest – Area of Auger Hole-6 (flagged in middle of photograph).

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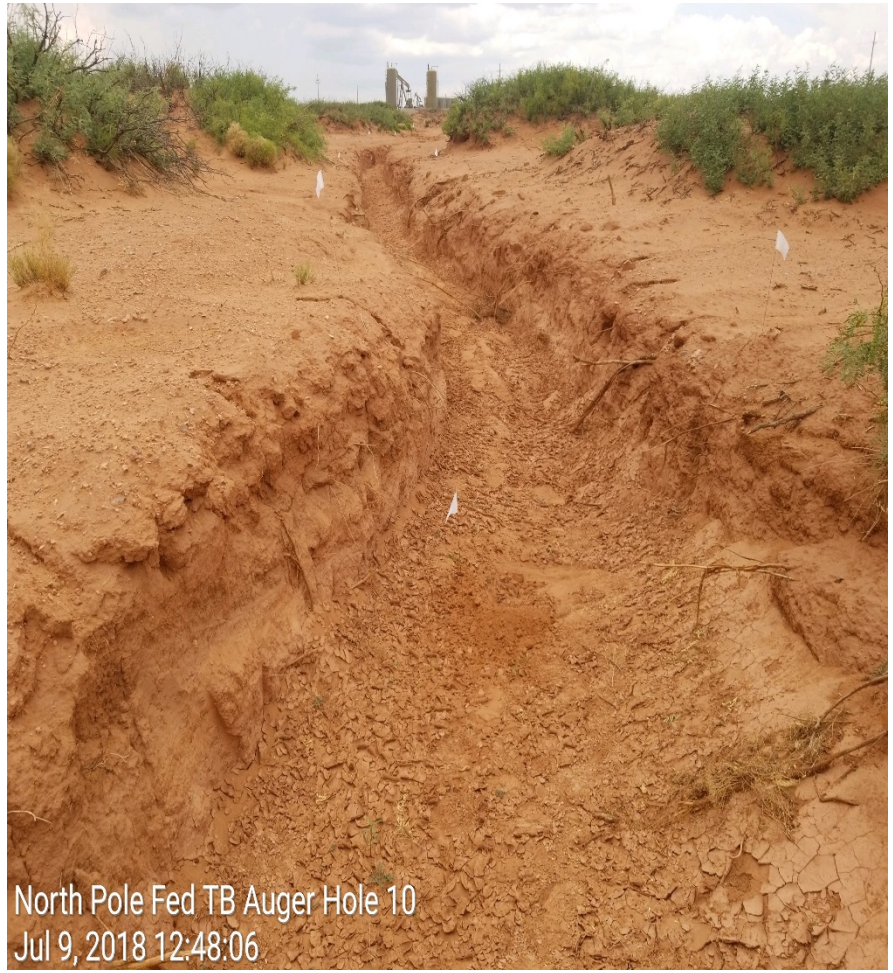
View Southwest – Area of Auger Hole-7 (flagged in middle of photograph).

View Southwest – Area of Auger Hole-8 (flagged in middle of photograph).

MACK Energy Corporation

AMERICAN SAFETY SERVICES INC

View Southwest – Area of Auger Hole-9 (flagged in middle of photograph).



View Southwest – Area of Auger Hole-10 (flagged in middle of photograph).

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View North – Area of Auger Hole-11 (flagged in middle of photograph).

View North – Area of Auger Hole-12 (flagged in middle of photograph).

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APPENDIX D

Laboratory Analysis

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Thomas Franklin
American Safety Services, Inc
8715 Andrews Hwy
Odessa, TEXAS 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Location: Eddy Co. NM

Lab Order Number: 8G12006

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 07/31/18

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 1 (0.0'-0.5')	8G12006-01	Soil	07/09/18 12:30	07-12-2018 08:50
Auger Hole 1 (0.5'-1.0')	8G12006-02	Soil	07/09/18 12:32	07-12-2018 08:50
Auger Hole 1 (1.0'-1.5')	8G12006-03	Soil	07/09/18 12:34	07-12-2018 08:50
Auger Hole 2 (0.0'-0.5')	8G12006-05	Soil	07/09/18 12:41	07-12-2018 08:50
Auger Hole 2 (0.5'-1.0')	8G12006-06	Soil	07/09/18 12:43	07-12-2018 08:50
Auger Hole 2 (1.0'-1.5')	8G12006-07	Soil	07/09/18 12:45	07-12-2018 08:50
Auger Hole 2 (1.5'-2.0')	8G12006-08	Soil	07/09/18 12:47	07-12-2018 08:50
Auger Hole 2 (2.0'-2.5')	8G12006-09	Soil	07/09/18 12:49	07-12-2018 08:50
Auger Hole 3 (0.0'-0.5')	8G12006-11	Soil	07/09/18 12:59	07-12-2018 08:50
Auger Hole 4 (0.0'-0.5')	8G12006-15	Soil	07/09/18 13:07	07-12-2018 08:50
Auger Hole 5 (0.0'-0.5')	8G12006-17	Soil	07/09/18 13:14	07-12-2018 08:50
Auger Hole 6 (0.0'-0.5')	8G12006-19	Soil	07/09/18 13:21	07-12-2018 08:50
Auger Hole 7 (0.0'-0.5')	8G12006-21	Soil	07/09/18 13:28	07-12-2018 08:50
Auger Hole 8 (0.0'-0.5')	8G12006-23	Soil	07/09/18 13:35	07-12-2018 08:50
Auger Hole 9 (0.0'-0.5')	8G12006-25	Soil	07/09/18 13:42	07-12-2018 08:50
Auger Hole 10 (0.0'-0.5')	8G12006-27	Soil	07/09/18 13:49	07-12-2018 08:50
Auger Hole 11 (0.0'-0.5')	8G12006-29	Soil	07/09/18 13:56	07-12-2018 08:50
Auger Hole 12 (0.0'-0.5')	8G12006-31	Soil	07/09/18 14:03	07-12-2018 08:50
Auger Hole 13 (0.0'-0.5')	8G12006-33	Soil	07/10/18 09:50	07-12-2018 08:50
Auger Hole 14 (0.0'-0.5')	8G12006-34	Soil	07/10/18 09:55	07-12-2018 08:50
Auger Hole 15 (0.0'-0.5')	8G12006-35	Soil	07/10/18 10:00	07-12-2018 08:50
Auger Hole 16 (0.0'-0.5')	8G12006-36	Soil	07/10/18 10:05	07-12-2018 08:50
Auger Hole 17 (0.0'-0.5')	8G12006-37	Soil	07/10/18 10:10	07-12-2018 08:50
Auger Hole 18 (0.0'-0.5')	8G12006-38	Soil	07/10/18 10:15	07-12-2018 08:50
Auger Hole 19 (0.0'-0.5')	8G12006-39	Soil	07/10/18 10:20	07-12-2018 08:50
Auger Hole 20 (0.0'-0.5')	8G12006-40	Soil	07/10/18 10:25	07-12-2018 08:50

Auger Hole 1 (0.0'-0.5')

8G12006-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00106	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0106	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00532	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0213	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0106	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*107 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*87.8 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**352**	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	**81.9**	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*121 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*137 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	**434**	26.6	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc	Project: Mack Energy - North Pole Fed TB	Fax: (432) 363-0198
8715 Andrews Hwy	Project Number: [none]	
Odessa TEXAS, 79765	Project Manager: Thomas Franklin	

Auger Hole 1 (0.5'-1.0')

8G12006-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8G2704	07/27/18	07/30/18	TPH 8015M	
>C12-C28	**468**	26.6	mg/kg dry	1	P8G2704	07/27/18	07/30/18	TPH 8015M	
>C28-C35	**131**	26.6	mg/kg dry	1	P8G2704	07/27/18	07/30/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*125 %*	*70-130*		*P8G2704*	*07/27/18*	*07/30/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*129 %*	*70-130*		*P8G2704*	*07/27/18*	*07/30/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**599**	26.6	mg/kg dry	1	[CALC]	07/27/18	07/30/18	calc	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 1 (1.0'-1.5')

8G12006-03 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**4.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C12-C28	**63.7**	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.8 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.8 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**63.7**	26.0	mg/kg dry	1	[CALC]	07/27/18	07/27/18	calc	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 2 (0.0'-0.5')

8G12006-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0105	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00526	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0211	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0105	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*87.0 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**5.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**245**	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	**49.7**	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*98.2 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**295**	26.3	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 2 (0.5'-1.0')

8G12006-06 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**5.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**207**	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	**47.3**	26.3	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*97.0 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*110 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**254**	26.3	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 2 (1.0'-1.5')

8G12006-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**135**	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.2 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*109 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**135**	26.6	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 2 (1.5'-2.0')

8G12006-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C12-C28	**158**	26.6	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C28-C35	**35.0**	26.6	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.2 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.9 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**193**	26.6	mg/kg dry	1	[CALC]	07/27/18	07/27/18	calc	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 2 (2.0'-2.5')

8G12006-09 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**4.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C12-C28	**38.0**	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P8G2704	07/27/18	07/27/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*90.2 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*91.2 %*	*70-130*		*P8G2704*	*07/27/18*	*07/27/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**38.0**	26.0	mg/kg dry	1	[CALC]	07/27/18	07/27/18	calc	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 3 (0.0'-0.5')

8G12006-11 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*90.6 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**56.8**	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*104 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**56.8**	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 4 (0.0'-0.5')

8G12006-15 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*105 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*87.5 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.4 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

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Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 5 (0.0'-0.5')

8G12006-17 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*112 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*92.5 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*91.8 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*104 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

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Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 6 (0.0'-0.5')

8G12006-19 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*83.2 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**39.9**	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*93.2 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**39.9**	25.8	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
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Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 7 (0.0'-0.5')

8G12006-21 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*105 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*88.3 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*93.5 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*106 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 8 (0.0'-0.5')

8G12006-23 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*112 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*91.5 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.9 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 9 (0.0'-0.5')

8G12006-25 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*89.8 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*111 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.1 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*108 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 10 (0.0'-0.5')

8G12006-27 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*112 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*93.2 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*89.5 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 11 (0.0'-0.5')

8G12006-29 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*108 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*73.1 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.3 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*106 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 12 (0.0'-0.5')

8G12006-31 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*89.3 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*107 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 13 (0.0'-0.5')

8G12006-33 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*106 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*85.5 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**33.9**	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*92.0 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**33.9**	25.8	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 14 (0.0'-0.5')

8G12006-34 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*90.2 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C12-C28	**32.2**	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*88.9 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*98.6 %*	*70-130*		*P8G1305*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**32.2**	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 15 (0.0'-0.5')

8G12006-35 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00515	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0206	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0103	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*89.1 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*107 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*96.7 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*106 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	07/13/18	07/14/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 16 (0.0'-0.5')

8G12006-36 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*87.8 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*105 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C12-C28	**48.9**	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C28-C35	**26.2**	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*91.6 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*99.9 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**75.1**	25.5	mg/kg dry	1	[CALC]	07/13/18	07/14/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 17 (0.0'-0.5')

8G12006-37 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00122	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Toluene	ND	0.0122	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Ethylbenzene	ND	0.00610	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (p/m)	ND	0.0244	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Xylene (o)	ND	0.0122	mg/kg dry	1	P8G1701	07/17/18	07/17/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*111 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*91.0 %*	*75-125*		*P8G1701*	*07/17/18*	*07/17/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**18.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	30.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C12-C28	ND	30.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C28-C35	ND	30.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.3 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	30.5	mg/kg dry	1	[CALC]	07/13/18	07/14/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/17/18	EPA 8021B	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 18 (0.0'-0.5')

8G12006-38 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*107 %*	*75-125*		*P8G1702*	*07/17/18*	*07/18/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*85.8 %*	*75-125*		*P8G1702*	*07/17/18*	*07/18/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1305	07/13/18	07/14/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.1 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.7 %*	*70-130*		*P8G1305*	*07/13/18*	*07/14/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/14/18	calc	
BTEX by 8021B									
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/18/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/18/18	EPA 8021B	

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Project: Mack Energy - North Pole Fed TB
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Project Manager: Thomas Franklin

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Auger Hole 19 (0.0'-0.5')

8G12006-39 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/18/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*104 %*	*75-125*		*P8G1702*	*07/17/18*	*07/18/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*86.3 %*	*75-125*		*P8G1702*	*07/17/18*	*07/18/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*96.1 %*	*70-130*		*P8G1306*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*P8G1306*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/18/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/18/18	EPA 8021B	

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Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

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Auger Hole 20 (0.0'-0.5')

8G12006-40 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Toluene	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Ethylbenzene	ND	0.00510	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Xylene (p/m)	ND	0.0204	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Xylene (o)	ND	0.0102	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*92.3 %*	*75-125*		*P8G1702*	*07/17/18*	*07/19/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*83.0 %*	*75-125*		*P8G1702*	*07/17/18*	*07/19/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.0 %*	*70-130*		*P8G1306*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P8G1306*	*07/13/18*	*07/13/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	07/13/18	07/13/18	calc	
BTEX by 8021B									
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/19/18	EPA 8021B	
Xylenes (total)	ND	0.0300	mg/kg	1	[CALC]	07/17/18	07/19/18	EPA 8021B	

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1701 - General Preparation (GC)										
Blank (P8G1701-BLK1)				Prepared & Analyzed: 07/17/18						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.0100	"							
Ethylbenzene	ND	0.00500	"							
Xylene (p/m)	ND	0.0200	"							
Xylene (o)	ND	0.0100	"							
Surrogate: 1,4-Difluorobenzene	*0.0532*		*"*	*0.0600*		*88.6*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0619*		*"*	*0.0600*		*103*	*75-125*			
LCS (P8G1701-BS1)				Prepared & Analyzed: 07/17/18						
Benzene	0.119	0.00100	mg/kg wet	0.100		119	70-130			
Toluene	0.114	0.0100	"	0.100		114	70-130			
Ethylbenzene	0.115	0.00500	"	0.100		115	70-130			
Xylene (p/m)	0.199	0.0200	"				70-130			
Xylene (o)	0.107	0.0100	"				70-130			
Surrogate: 1,4-Difluorobenzene	*0.0593*		*"*	*0.0600*		*98.9*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0606*		*"*	*0.0600*		*101*	*75-125*			
LCS Dup (P8G1701-BSD1)				Prepared & Analyzed: 07/17/18						
Benzene	0.118	0.00100	mg/kg wet	0.100		118	70-130	0.371	20	
Toluene	0.119	0.0100	"	0.100		119	70-130	4.75	20	
Ethylbenzene	0.118	0.00500	"	0.100		118	70-130	3.10	20	
Xylene (p/m)	0.200	0.0200	"				70-130		20	
Xylene (o)	0.109	0.0100	"				70-130		20	
Surrogate: 4-Bromofluorobenzene	*0.0597*		*"*	*0.0600*		*99.5*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0600*		*"*	*0.0600*		*100*	*75-125*			
Matrix Spike (P8G1701-MS1)	**Source: 8G16001-02**			Prepared & Analyzed: 07/17/18						
Benzene	0.0908	0.00102	mg/kg dry	0.102	ND	89.0	80-120			
Toluene	0.0877	0.0102	"	0.102	ND	85.9	80-120			
Ethylbenzene	0.104	0.00510	"	0.102	ND	102	80-120			
Xylene (p/m)	0.160	0.0204	"		ND		80-120			
Xylene (o)	0.0817	0.0102	"		ND		80-120			
Surrogate: 1,4-Difluorobenzene	*0.0623*		*"*	*0.0612*		*102*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0686*		*"*	*0.0612*		*112*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1701 - General Preparation (GC)										
Matrix Spike Dup (P8G1701-MSD1)	**Source: 8G16001-02**			Prepared & Analyzed: 07/17/18						
Benzene	0.103	0.00102	mg/kg dry	0.102	ND	101	80-120	12.4	20	
Toluene	0.0972	0.0102	"	0.102	ND	95.2	80-120	10.3	20	
Ethylbenzene	0.114	0.00510	"	0.102	ND	111	80-120	9.17	20	
Xylene (p/m)	0.173	0.0204	"		ND		80-120		20	
Xylene (o)	0.0940	0.0102	"		ND		80-120		20	
Surrogate: 1,4-Difluorobenzene	*0.0647*		*"*	*0.0612*		*106*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0715*		*"*	*0.0612*		*117*	*75-125*			
Batch P8G1702 - General Preparation (GC)										
Blank (P8G1702-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.0100	"							
Ethylbenzene	ND	0.00500	"							
Xylene (p/m)	ND	0.0200	"							
Xylene (o)	ND	0.0100	"							
Surrogate: 4-Bromofluorobenzene	*0.0577*		*"*	*0.0600*		*96.2*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0458*		*"*	*0.0600*		*76.4*	*75-125*			
LCS (P8G1702-BS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Benzene	0.0953	0.00100	mg/kg wet	0.100		95.3	70-130			
Toluene	0.0948	0.0100	"	0.100		94.8	70-130			
Ethylbenzene	0.110	0.00500	"	0.100		110	70-130			
Xylene (p/m)	0.193	0.0200	"				70-130			
Xylene (o)	0.103	0.0100	"				70-130			
Surrogate: 4-Bromofluorobenzene	*0.0583*		*"*	*0.0600*		*97.2*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0605*		*"*	*0.0600*		*101*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1702 - General Preparation (GC)										
LCS Dup (P8G1702-BSD1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Benzene	0.102	0.00100	mg/kg wet	0.100		102	70-130	6.40	20	
Toluene	0.105	0.0100	"	0.100		105	70-130	10.4	20	
Ethylbenzene	0.121	0.00500	"	0.100		121	70-130	9.54	20	
Xylene (p/m)	0.206	0.0200	"				70-130		20	
Xylene (o)	0.104	0.0100	"				70-130		20	
Surrogate: 1,4-Difluorobenzene	*0.0627*		*"*	*0.0600*		*104*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0649*		*"*	*0.0600*		*108*	*75-125*			
Matrix Spike (P8G1702-MS1)		**Source: 8G12006-38**		Prepared: 07/17/18 Analyzed: 07/19/18						
Benzene	0.0663	0.00102	mg/kg dry	0.102	ND	65.0	80-120			QM-05
Toluene	0.0648	0.0102	"	0.102	ND	63.5	80-120			QM-05
Ethylbenzene	0.0766	0.00510	"	0.102	ND	75.1	80-120			QM-05
Xylene (p/m)	0.130	0.0204	"		ND		80-120			
Xylene (o)	0.0655	0.0102	"		ND		80-120			
Surrogate: 4-Bromofluorobenzene	*0.0688*		*"*	*0.0612*		*112*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0671*		*"*	*0.0612*		*110*	*75-125*			
Matrix Spike Dup (P8G1702-MSD1)		**Source: 8G12006-38**		Prepared: 07/17/18 Analyzed: 07/19/18						
Benzene	0.0915	0.00102	mg/kg dry	0.102	ND	89.7	80-120	31.9	20	QM-05
Toluene	0.0847	0.0102	"	0.102	ND	83.0	80-120	26.6	20	QM-05
Ethylbenzene	0.100	0.00510	"	0.102	ND	98.0	80-120	26.5	20	QM-05
Xylene (p/m)	0.167	0.0204	"		ND		80-120		20	
Xylene (o)	0.0896	0.0102	"		ND		80-120		20	
Surrogate: 4-Bromofluorobenzene	*0.0628*		*"*	*0.0612*		*103*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0642*		*"*	*0.0612*		*105*	*75-125*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1604 - * DEFAULT PREP *** **										
Blank (P8G1604-BLK1)				Prepared & Analyzed: 07/16/18						
% Moisture	ND	0.1	%							
Duplicate (P8G1604-DUP1)		**Source: 8G12006-13**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP2)		**Source: 8G12006-40**		Prepared & Analyzed: 07/16/18						
% Moisture	4.0	0.1	%		2.0			66.7	20	
Duplicate (P8G1604-DUP3)		**Source: 8G13002-13**		Prepared & Analyzed: 07/16/18						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P8G1604-DUP4)		**Source: 8G13004-04**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP5)		**Source: 8G12022-02**		Prepared & Analyzed: 07/16/18						
% Moisture	10.0	0.1	%		10.0			0.00	20	
Duplicate (P8G1604-DUP6)		**Source: 8G12022-08**		Prepared & Analyzed: 07/16/18						
% Moisture	14.0	0.1	%		13.0			7.41	20	
Duplicate (P8G1604-DUP7)		**Source: 8G13001-13**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP8)		**Source: 8G12006-40**		Prepared & Analyzed: 07/16/18						
% Moisture	4.0	0.1	%		2.0			66.7	20	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1305 - General Preparation (GC)										
Blank (P8G1305-BLK1)				Prepared & Analyzed: 07/13/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*95.8*		*"*	*100*		*95.8*	*70-130*			
Surrogate: o-Terphenyl	*55.4*		*"*	*50.0*		*111*	*70-130*			
LCS (P8G1305-BS1)				Prepared & Analyzed: 07/13/18						
C6-C12	937	25.0	mg/kg wet	1000		93.7	75-125			
>C12-C28	1000	25.0	"	1000		100	75-125			
Surrogate: 1-Chlorooctane	*118*		*"*	*100*		*118*	*70-130*			
Surrogate: o-Terphenyl	*51.2*		*"*	*50.0*		*102*	*70-130*			
LCS Dup (P8G1305-BSD1)				Prepared & Analyzed: 07/13/18						
C6-C12	930	25.0	mg/kg wet	1000		93.0	75-125	0.769	20	
>C12-C28	985	25.0	"	1000		98.5	75-125	1.52	20	
Surrogate: 1-Chlorooctane	*117*		*"*	*100*		*117*	*70-130*			
Surrogate: o-Terphenyl	*50.1*		*"*	*50.0*		*100*	*70-130*			
Matrix Spike (P8G1305-MS1)	**Source: 8G12006-38**			Prepared: 07/13/18 Analyzed: 07/14/18						
C6-C12	978	25.5	mg/kg dry	1020	10.1	94.9	75-125			
>C12-C28	1020	25.5	"	1020	ND	99.6	75-125			
Surrogate: 1-Chlorooctane	*131*		*"*	*102*		*129*	*70-130*			
Surrogate: o-Terphenyl	*57.4*		*"*	*51.0*		*113*	*70-130*			
Matrix Spike Dup (P8G1305-MSD1)	**Source: 8G12006-38**			Prepared: 07/13/18 Analyzed: 07/14/18						
C6-C12	1010	25.5	mg/kg dry	1020	10.1	98.4	75-125	3.65	20	
>C12-C28	1030	25.5	"	1020	ND	101	75-125	1.24	20	
Surrogate: 1-Chlorooctane	*126*		*"*	*102*		*123*	*70-130*			
Surrogate: o-Terphenyl	*58.2*		*"*	*51.0*		*114*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1306 - General Preparation (GC)										
Blank (P8G1306-BLK1)				Prepared & Analyzed: 07/13/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*109*		*"*	*100*		*109*	*70-130*			
Surrogate: o-Terphenyl	*60.7*		*"*	*50.0*		*121*	*70-130*			
LCS (P8G1306-BS1)				Prepared & Analyzed: 07/13/18						
C6-C12	1020	25.0	mg/kg wet	1000		102	75-125			
>C12-C28	1090	25.0	"	1000		109	75-125			
Surrogate: 1-Chlorooctane	*103*		*"*	*100*		*103*	*70-130*			
Surrogate: o-Terphenyl	*50.1*		*"*	*50.0*		*100*	*70-130*			
LCS Dup (P8G1306-BSD1)				Prepared & Analyzed: 07/13/18						
C6-C12	1020	25.0	mg/kg wet	1000		102	75-125	0.495	20	
>C12-C28	1100	25.0	"	1000		110	75-125	0.832	20	
Surrogate: 1-Chlorooctane	*102*		*"*	*100*		*102*	*70-130*			
Surrogate: o-Terphenyl	*50.0*		*"*	*50.0*		*99.9*	*70-130*			
Matrix Spike (P8G1306-MS1)	**Source: 8G12006-39**			Prepared: 07/13/18 Analyzed: 07/14/18						
C6-C12	1040	25.5	mg/kg dry	1020	22.7	100	75-125			
>C12-C28	1070	25.5	"	1020	13.9	104	75-125			
Surrogate: 1-Chlorooctane	*115*		*"*	*102*		*112*	*70-130*			
Surrogate: o-Terphenyl	*57.5*		*"*	*51.0*		*113*	*70-130*			
Matrix Spike Dup (P8G1306-MSD1)	**Source: 8G12006-39**			Prepared: 07/13/18 Analyzed: 07/14/18						
C6-C12	1090	25.5	mg/kg dry	1020	22.7	105	75-125	4.97	20	
>C12-C28	1130	25.5	"	1020	13.9	109	75-125	4.92	20	
Surrogate: 1-Chlorooctane	*119*		*"*	*102*		*116*	*70-130*			
Surrogate: o-Terphenyl	*56.7*		*"*	*51.0*		*111*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G2704 - General Preparation (GC)										
Blank (P8G2704-BLK1)				Prepared & Analyzed: 07/27/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*89.0*		*"*	*100*		*89.0*	*70-130*			
Surrogate: o-Terphenyl	*44.7*		*"*	*50.0*		*89.5*	*70-130*			
LCS (P8G2704-BS1)				Prepared & Analyzed: 07/27/18						
C6-C12	877	25.0	mg/kg wet	1000		87.7	75-125			
>C12-C28	944	25.0	"	1000		94.4	75-125			
Surrogate: 1-Chlorooctane	*114*		*"*	*100*		*114*	*70-130*			
Surrogate: o-Terphenyl	*41.7*		*"*	*50.0*		*83.4*	*70-130*			
LCS Dup (P8G2704-BSD1)				Prepared & Analyzed: 07/27/18						
C6-C12	914	25.0	mg/kg wet	1000		91.4	75-125	4.15	20	
>C12-C28	961	25.0	"	1000		96.1	75-125	1.77	20	
Surrogate: 1-Chlorooctane	*118*		*"*	*100*		*118*	*70-130*			
Surrogate: o-Terphenyl	*42.2*		*"*	*50.0*		*84.5*	*70-130*			
Matrix Spike (P8G2704-MS1)	**Source: 8G12007-06**			Prepared: 07/27/18 Analyzed: 07/28/18						
C6-C12	1030	28.4	mg/kg dry	1140	23.8	88.7	75-125			
>C12-C28	1060	28.4	"	1140	15.4	92.2	75-125			
Surrogate: 1-Chlorooctane	*133*		*"*	*114*		*117*	*70-130*			
Surrogate: o-Terphenyl	*50.4*		*"*	*56.8*		*88.7*	*70-130*			
Matrix Spike Dup (P8G2704-MSD1)	**Source: 8G12007-06**			Prepared: 07/27/18 Analyzed: 07/28/18						
C6-C12	1010	28.4	mg/kg dry	1140	23.8	86.4	75-125	2.67	20	
>C12-C28	1060	28.4	"	1140	15.4	91.9	75-125	0.310	20	
Surrogate: 1-Chlorooctane	*129*		*"*	*114*		*113*	*70-130*			
Surrogate: o-Terphenyl	*50.0*		*"*	*56.8*		*88.1*	*70-130*			

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 7/31/2018

Brent Barron, Laboratory Director/Technical Director

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706
Phone: 432-686-7235

Project Manager: Jay Latta
Company Name: American Safety Services Inc.
Company Address: 8715 Andrews Hwy.
City/State/Zip: Odessa, TX 79765
Telephone No: 432-557-9868/432-552-7625
Fax No:
Sampler Signature:
e-mail: ~~jlatta@americansafety.net~~ ~~jzimmerman@americansafety.net~~ rreich@americansafety.net mdial@americansafety.net

Project Name: Mack Energy-North Pole Fed TB
Project #:
Project Loc: Eddy Co. ~~NM~~ NM
PD #:
Report Format: ☐ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 8G12006

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: 8015B	TOTAL: 8015M	418.1	TPH: TX 1005	TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Auger Hole 1	0.0'	0.5'	7/9/2018	1230	N	1	X								S-Grab			X								X					X		
02	Auger Hole 1	0.5'	1.0'	7/9/2018	1232	N	1	X								S-Grab																X		
03	Auger Hole 1	1.0'	1.5'	7/9/2018	1234	N	1	X								S-Grab																X		
04	Auger Hole 1	1.5'	2.0'	7/9/2018	1236	N	1	X								S-Grab																X		
05	Auger Hole 2	0.0'	0.5'	7/9/2018	1241	N	1	X								S-Grab			X								X							
06	Auger Hole 2	0.5'	1.0'	7/9/2018	1243	N	1	X								S-Grab																X		
07	Auger Hole 2	1.0'	1.5'	7/9/2018	1245	N	1	X								S-Grab																X		
08	Auger Hole 2	1.5'	2.0'	7/9/2018	1247	N	1	X								S-Grab																X		
09	Auger Hole 2	2.0'	2.5'	7/9/2018	1249	N	1	X								S-Grab																X		
10	Auger Hole 2	2.5'	3.0'	7/9/2018	1251	N	1	X								S-Grab																X		

Special Instructions:
If Benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg run deeper
If TPH exceeds 100 mg/kg run deeper sample

Relinquished by:	Date	Time	Received by:	Date	Time
	7/12/18	0850			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Mussa Haddock	7/13/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: -1 °C
Adjusted: -0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Project Name: Mack Energy-North Pole Fed TB

Company Name: American Safety Services Inc.

Project #:

Company Address: 8715 Andrews Hwy.

Project Loc: Eddy Co. NM

City/State/Zip: Odessa, TX 79765

PO #:

Telephone No: 432-557-9868/432-552-7625

Fax No:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

Sampler Signature:

e-mail: jlatta@americansafety.net; jzimmerman@americansafety.net; rreich@americansafety.net; mdial@americansafety.net

(lab use only)
ORDER #: 8G12006

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 / 8015M	TOTAL: 8015B	TPH: TX 1005	TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Hold		RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
-11	Auger Hole 3	0.0'	0.5'	7/9/2018	1256	N	1	X								S-Grab	X									X							
-12	Auger Hole 3	0.5'	1.0'	7/9/2018	1258	N	1	X								S-Grab														X			
-13	Auger Hole 3	1.0'	1.5'	7/9/2018	1300	N	1	X								S-Grab														X			
-14	Auger Hole 3	1.5'	2.0'	7/9/2018	1302	N	1	X								S-Grab														X			
-15	Auger Hole 4	0.0'	0.5'	7/9/2018	1307	N	1	X								S-Grab	X										X						
-16	Auger Hole 4	0.5'	1.0'	7/9/2018	1309	N	1	X								S-Grab														X			
-17	Auger Hole 5	0.0'	0.5'	7/9/2018	1314	N	1	X								S-Grab	X										X						
-18	Auger Hole 5	0.5'	1.0'	7/9/2018	1316	N	1	X								S-Grab														X			
-19	Auger Hole 6	0.0'	0.5'	7/9/2018	1321	N	1	X								S-Grab	X										X						
-20	Auger Hole 6	0.5'	1.0'	7/9/2018	1323	N	1	X								S-Grab														X			

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/10/18	0690			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELAB: Mussa Haddock	7/10/18	Time

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	N	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: 1 °C
Adjusted: 0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Project Name: Mack Energy-North Pole Fed TB

Company Name: American Safety Services Inc.

Project #:

Company Address: 8715 Andrews Hwy.

Project Loc: Eddy Co. NM

City/State/Zip: Odessa, TX 79765

PO #:

Telephone No: 432-557-9868/432-552-7625

Fax No:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

Sampler Signature:

e-mail: jlatta@americansafety.net; jzimmerman@americansafety.net; rreich@americansafety.net; mdial@americansafety.net

(lab use only)
ORDER #: 8612006

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: 8015B	TCLP: 8015M	TCLP: 418.1	TOTAL: TPH: TX 1005	TOTAL: TPH: TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
21	Auger Hole 7	0.0'	0.5'	7/9/2018	1328	N	1	X								S-Grab	X											X						
22	Auger Hole 7	0.5'	1.0'	7/9/2018	1330	N	1	X								S-Grab																X		
23	Auger Hole 8	0.0'	0.5'	7/9/2018	1335	N	1	X								S-Grab	X											X						
24	Auger Hole 8	0.5'	1.0'	7/9/2018	1337	N	1	X								S-Grab																X		
25	Auger Hole 9	0.0'	0.5'	7/9/2018	1342	N	1	X								S-Grab	X											X						
26	Auger Hole 9	0.5'	1.0'	7/9/2018	1344	N	1	X								S-Grab																X		
27	Auger Hole 10	0.0'	0.5'	7/9/2018	1349	N	1	X								S-Grab	X											X						
28	Auger Hole 10	0.5'	1.0'	7/9/2018	1351	N	1	X								S-Grab																X		
29	Auger Hole 11	0.0'	0.5'	7/9/2018	1356	N	1	X								S-Grab	X											X						
30	Auger Hole 11	0.5'	1.0'	7/9/2018	1358	N	1	X								S-Grab																X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/12/18	0850			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Mussa Haddad	7/12/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: 7.1 °C
Adjusted: 0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Project Name: Mack Energy-North Pole Fed TB

Company Name: American Safety Services Inc.

Project #:

Company Address: 8715 Andrews Hwy.

Project Loc: Eddy Co. NM

City/State/Zip: Odessa, TX 79765

PO #:

Telephone No: 432-557-9868/432-552-7625

Fax No:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

Sampler Signature:

e-mail: jlatta@americansafety.net; jzimmerman@americansafety.net; rreich@americansafety.net; mdial@americansafety.net

(lab use only)
ORDER #: 8612006

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Greundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: TPH 418.1	8015B	TPH: TX 1005	TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	TOTAL: 8021 B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
31	Auger Hole 12	0.0'	0.5'	7/9/2018	1403	N	1	X								S-Grab	X									X							
32	Auger Hole 12	0.5'	1.0'	7/9/2018	1405	N	1	X								S-Grab															X		
33	Auger Hole 13	0.0'	0.5'	7/10/2018	950	N	1	X								S-Grab	X									X							
34	Auger Hole 14	0.0'	0.5'	7/10/2018	955	N	1	X								S-Grab	X									X					X		
35	Auger Hole 15	0.0'	0.5'	7/10/2018	1000	N	1	X								S-Grab	X									X							
36	Auger Hole 16	0.0'	0.5'	7/10/2018	1005	N	1	X								S-Grab	X									X							
37	Auger Hole 17	0.0'	0.5'	7/10/2018	1010	N	1	X								S-Grab	X									X							
38	Auger Hole 18	0.0'	0.5'	7/10/2018	1015	N	1	X								S-Grab	X									X							
39	Auger Hole 19	0.0'	0.5'	7/10/2018	1020	N	1	X								S-Grab	X									X							
40	Auger Hole 20	0.0'	0.5'	7/10/2018	1025	N	1	X								S-Grab	X									X							

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/11/18	0650			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Munroa Haddock	7/12/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: 7 °C
Adjusted: -0.6 °C Factor 0.4 cf

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Thomas Franklin
American Safety Services, Inc
8715 Andrews Hwy
Odessa, TEXAS 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Location: Eddy Co. NM

Lab Order Number: 8G13001

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 07/24/18

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 1 (0.0'-0.5')	8G13001-01	Soil	07/09/18 12:30	07-12-2018 08:50
Auger Hole 1 (0.5'-1.0')	8G13001-02	Soil	07/09/18 12:32	07-12-2018 08:50
Auger Hole 2 (0.0'-0.5')	8G13001-05	Soil	07/09/18 12:41	07-12-2018 08:50
Auger Hole 3 (0.0'-0.5')	8G13001-11	Soil	07/09/18 12:59	07-12-2018 08:50
Auger Hole 4 (0.0'-0.5')	8G13001-15	Soil	07/09/18 13:07	07-12-2018 08:50
Auger Hole 5 (0.0'-0.5')	8G13001-17	Soil	07/09/18 13:14	07-12-2018 08:50
Auger Hole 6 (0.0'-0.5')	8G13001-19	Soil	07/09/18 13:21	07-12-2018 08:50
Auger Hole 7 (0.0'-0.5')	8G13001-21	Soil	07/09/18 13:28	07-12-2018 08:50
Auger Hole 8 (0.0'-0.5')	8G13001-23	Soil	07/09/18 13:35	07-12-2018 08:50
Auger Hole 9 (0.0'-0.5')	8G13001-25	Soil	07/09/18 13:42	07-12-2018 08:50
Auger Hole 10 (0.0'-0.5')	8G13001-27	Soil	07/09/18 13:49	07-12-2018 08:50
Auger Hole 11 (0.0'-0.5')	8G13001-29	Soil	07/09/18 13:56	07-12-2018 08:50
Auger Hole 12 (0.0'-0.5')	8G13001-31	Soil	07/09/18 14:03	07-12-2018 08:50
Auger Hole 13 (0.0'-0.5')	8G13001-33	Soil	07/09/18 09:50	07-12-2018 08:50
Auger Hole 14 (0.0'-0.5')	8G13001-34	Soil	07/09/18 09:55	07-12-2018 08:50
Auger Hole 15 (0.0'-0.5')	8G13001-35	Soil	07/09/18 10:00	07-12-2018 08:50
Auger Hole 16 (0.0'-0.5')	8G13001-36	Soil	07/09/18 10:05	07-12-2018 08:50
Auger Hole 17 (0.0'-0.5')	8G13001-37	Soil	07/09/18 10:10	07-12-2018 08:50
Auger Hole 18 (0.0'-0.5')	8G13001-38	Soil	07/09/18 10:15	07-12-2018 08:50
Auger Hole 19 (0.0'-0.5')	8G13001-39	Soil	07/09/18 10:20	07-12-2018 08:50
Auger Hole 20 (0.0'-0.5')	8G13001-40	Soil	07/09/18 10:25	07-12-2018 08:50

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 1 (0.0'-0.5')

8G13001-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**295**	1.06	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 1 (0.5'-1.0')

8G13001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**161**	1.06	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 2 (0.0'-0.5')

8G13001-05 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**190**	1.05	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 3 (0.0'-0.5')

8G13001-11 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3.53**	1.02	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc	Project: Mack Energy - North Pole Fed TB	Fax: (432) 363-0198
8715 Andrews Hwy	Project Number: [none]	
Odessa TEXAS, 79765	Project Manager: Thomas Franklin	

Auger Hole 4 (0.0'-0.5')

8G13001-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 5 (0.0'-0.5')

8G13001-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc	Project: Mack Energy - North Pole Fed TB	Fax: (432) 363-0198
8715 Andrews Hwy	Project Number: [none]	
Odessa TEXAS, 79765	Project Manager: Thomas Franklin	

Auger Hole 6 (0.0'-0.5')

8G13001-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc	Project: Mack Energy - North Pole Fed TB	Fax: (432) 363-0198
8715 Andrews Hwy	Project Number: [none]	
Odessa TEXAS, 79765	Project Manager: Thomas Franklin	

Auger Hole 7 (0.0'-0.5')

8G13001-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 8 (0.0'-0.5')

8G13001-23 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.02	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 9 (0.0'-0.5')

8G13001-25 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 10 (0.0'-0.5')

8G13001-27 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 11 (0.0'-0.5')

8G13001-29 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 12 (0.0'-0.5')

8G13001-31 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 13 (0.0'-0.5')

8G13001-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

Auger Hole 14 (0.0'-0.5')

8G13001-34 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 15 (0.0'-0.5')

8G13001-35 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.03	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 16 (0.0'-0.5')

8G13001-36 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 17 (0.0'-0.5')

8G13001-37 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**36.8**	1.22	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**18.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 18 (0.0'-0.5')

8G13001-38 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 19 (0.0'-0.5')

8G13001-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc
8715 Andrews Hwy
Odessa TEXAS, 79765

Project: Mack Energy - North Pole Fed TB
Project Number: [none]
Project Manager: Thomas Franklin

Fax: (432) 363-0198

Auger Hole 20 (0.0'-0.5')

8G13001-40 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P8G1707	07/17/18	07/18/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1604 - * DEFAULT PREP *** **										
Blank (P8G1604-BLK1)				Prepared & Analyzed: 07/16/18						
% Moisture	ND	0.1	%							
Duplicate (P8G1604-DUP1)		**Source: 8G12006-13**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP2)		**Source: 8G12006-40**		Prepared & Analyzed: 07/16/18						
% Moisture	4.0	0.1	%		2.0			66.7	20	
Duplicate (P8G1604-DUP3)		**Source: 8G13002-13**		Prepared & Analyzed: 07/16/18						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P8G1604-DUP4)		**Source: 8G13004-04**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP5)		**Source: 8G12022-02**		Prepared & Analyzed: 07/16/18						
% Moisture	10.0	0.1	%		10.0			0.00	20	
Duplicate (P8G1604-DUP6)		**Source: 8G12022-08**		Prepared & Analyzed: 07/16/18						
% Moisture	14.0	0.1	%		13.0			7.41	20	
Duplicate (P8G1604-DUP7)		**Source: 8G13001-13**		Prepared & Analyzed: 07/16/18						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P8G1604-DUP8)		**Source: 8G12006-40**		Prepared & Analyzed: 07/16/18						
% Moisture	4.0	0.1	%		2.0			66.7	20	
Batch P8G1706 - * DEFAULT PREP *** **										
Blank (P8G1706-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.00	mg/kg wet							

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1706 - * DEFAULT PREP *** **										
LCS (P8G1706-BS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	378	1.00	mg/kg wet	400		94.6	80-120			
LCS Dup (P8G1706-BSD1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	380	1.00	mg/kg wet	400		95.1	80-120	0.525	20	
Duplicate (P8G1706-DUP1)		**Source: 8G12007-12**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.04	mg/kg dry		ND				20	
Duplicate (P8G1706-DUP2)		**Source: 8G13001-08**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	397	1.06	mg/kg dry		398			0.0963	20	
Matrix Spike (P8G1706-MS1)		**Source: 8G12007-12**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	1040	1.04	mg/kg dry	1040	ND	99.8	80-120			
Batch P8G1707 - * DEFAULT PREP *** **										
Blank (P8G1707-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8G1707-BS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	396	1.00	mg/kg wet	400		99.0	80-120			
LCS Dup (P8G1707-BSD1)				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	399	1.00	mg/kg wet	400		99.7	80-120	0.742	20	
Duplicate (P8G1707-DUP1)		**Source: 8G13001-27**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.02	mg/kg dry		ND				20	

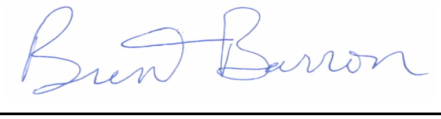
General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G1707 - * DEFAULT PREP *** **										
Duplicate (P8G1707-DUP2)		**Source: 8G13001-40**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.02	mg/kg dry		ND				20	
Matrix Spike (P8G1707-MS1)		**Source: 8G13001-27**		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	952	1.02	mg/kg dry	1020	ND	93.3	80-120			

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:  Date: 7/24/2018

Brent Barron, Laboratory Director/Technical Director

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Company Name: American Safety Services Inc.

Company Address: 8715 Andrews Hwy.

City/State/Zip: Odessa, TX 79765

Telephone No: 432-557-9868/432-552-7625 Fax No:

Sampler Signature:

e-mail: ~~Franklin~~ ~~jlatta@americansafety.net~~ ~~jzimmerman@americansafety.net~~ rreich@americansafety.net mdial@americansafety.net

Project Name: Mack Energy-North Pole Fed TB

Project #:

Project Loc: Eddy Co. ~~NM~~ NM

PO #:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: ~~8613006~~ 8613001

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride 300	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Auger Hole 1	0.0'	0.5'	7/9/2018	1230	N	1	X								S-Grab											X			
02	Auger Hole 1	0.5'	1.0'	7/9/2018	1232	N	1	X								S-Grab												X		
03	Auger Hole 1	1.0'	1.5'	7/9/2018	1234	N	1	X								S-Grab											X			
04	Auger Hole 1	1.5'	2.0'	7/9/2018	1236	N	1	X								S-Grab												X		
05	Auger Hole 2	0.0'	0.5'	7/9/2018	1241	N	1	X								S-Grab											X			
06	Auger Hole 2	0.5'	1.0'	7/9/2018	1243	N	1	X								S-Grab												X		
07	Auger Hole 2	1.0'	1.5'	7/9/2018	1245	N	1	X								S-Grab												X		
08	Auger Hole 2	1.5'	2.0'	7/9/2018	1247	N	1	X								S-Grab												X		
09	Auger Hole 2	2.0'	2.5'	7/9/2018	1249	N	1	X								S-Grab											X			
10	Auger Hole 2	2.5'	3.0'	7/9/2018	1251	N	1	X								S-Grab												X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/11/18	0850			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Melissa Haddock	7/12/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N
by Courier? UPS DHL FedEx Lone Star		

Temperature Upon Receipt:
Received: -1 °C
Adjusted: -0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Company Name: American Safety Services Inc.

Company Address: 8715 Andrews Hwy.

City/State/Zip: Odessa, TX 79765

Telephone No: 432-557-9868/432-552-7625 Fax No:

Sampler Signature:

e-mail: ~~franklin~~ ~~jlatta@americansafety.net~~ ~~jzimmerman@americansafety.net~~ rreich@americansafety.net mdial@americansafety.net

Project Name: Mack Energy-North Pole Fed TB

Project #:

Project Loc: Eddy Co. NM

PO #:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

(lab use only) ORDER #: ~~8G12001~~ 13001

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water GW = Groundwater NP=Non-Potable SL=Sludge S=Soil/Solid Specify Other	Analyze For: TPH: 418.1 / 8015M	TPH: TX 1005 / TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride 300	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
-11	Auger Hole 3	0.0'	0.5'	7/9/2018	1256	N	1	X								S-Grab												X			
-12	Auger Hole 3	0.5'	1.0'	7/9/2018	1258	N	1	X								S-Grab													X		
-13	Auger Hole 3	1.0'	1.5'	7/9/2018	1300	N	1	X								S-Grab												X			
-14	Auger Hole 3	1.5'	2.0'	7/9/2018	1302	N	1	X								S-Grab													X		
-15	Auger Hole 4	0.0'	0.5'	7/9/2018	1307	N	1	X								S-Grab												X			
-16	Auger Hole 4	0.5'	1.0'	7/9/2018	1309	N	1	X								S-Grab													X		
-17	Auger Hole 5	0.0'	0.5'	7/9/2018	1314	N	1	X								S-Grab												X			
-18	Auger Hole 5	0.5'	1.0'	7/9/2018	1316	N	1	X								S-Grab													X		
-19	Auger Hole 6	0.0'	0.5'	7/9/2018	1321	N	1	X								S-Grab												X			
-20	Auger Hole 6	0.5'	1.0'	7/9/2018	1323	N	1	X								S-Grab													X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/10/18	0690			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Mussa Haddock	7/10/18	

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered		N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: -1 °C
Adjusted: 0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midiland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Company Name: American Safety Services Inc.

Company Address: 8715 Andrews Hwy.

City/State/Zip: Odessa, TX 79765

Telephone No: 432-557-9868/432-552-7625

Fax No:

Sampler Signature:

e-mail: ~~Franklin~~ jlatta@americansafety.net, ~~jzimmerman@americansafety.net~~, rreich@americansafety.net, mdial@americansafety.net

Project Name: Mack Energy-North Pole Fed TB

Project #:

Project Loc: Eddy Co. NM

PO #:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 8C13001 ~~12006~~

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride 300	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
21	Auger Hole 7	0.0'	0.5'	7/9/2018	1328	N	1	X								S-Grab												X			
22	Auger Hole 7	0.5'	1.0'	7/9/2018	1330	N	1	X								S-Grab													X		
23	Auger Hole 8	0.0'	0.5'	7/9/2018	1335	N	1	X								S-Grab												X			
24	Auger Hole 8	0.5'	1.0'	7/9/2018	1337	N	1	X								S-Grab													X		
25	Auger Hole 9	0.0'	0.5'	7/9/2018	1342	N	1	X								S-Grab												X			
26	Auger Hole 9	0.5'	1.0'	7/9/2018	1344	N	1	X								S-Grab													X		
27	Auger Hole 10	0.0'	0.5'	7/9/2018	1349	N	1	X								S-Grab												X			
28	Auger Hole 10	0.5'	1.0'	7/9/2018	1351	N	1	X								S-Grab													X		
29	Auger Hole 11	0.0'	0.5'	7/9/2018	1356	N	1	X								S-Grab												X			
30	Auger Hole 11	0.5'	1.0'	7/9/2018	1358	N	1	X								S-Grab													X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/12/18	0850			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Mussa Haddock	7/12/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: 0.6 °C
Adjusted: 0.6 °C Factor 0.4

PBELAB

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PG 1 of 1

Permian Basin Environmental Lab, LP
10014 S. County Road 1213
Midland, Texas 79706

Phone: 432-686-7235

Project Manager: Jay Latta

Company Name: American Safety Services Inc.

Company Address: 8715 Andrews Hwy.

City/State/Zip: Odessa, TX 79765

Telephone No: 432-557-9868/432-552-7625 Fax No:

Sampler Signature:

e-mail: jlatta@americansafety.net; jzimmerman@americansafety.net; rreich@americansafety.net; mdial@americansafety.net

Project Name: Mack Energy-North Pole Fed TB

Project #:

Project Loc: Eddy Co. NM

PO #:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 8G13001 ~~8G12006~~

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride 300	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
-31	Auger Hole 12	0.0'	0.5'	7/9/2018	1403	N	1	X								S-Grab											X				
-32	Auger Hole 12	0.5'	1.0'	7/9/2018	1405	N	1	X								S-Grab											X	X			
-33	Auger Hole 13	0.0'	0.5'	7/10/2018	950	N	1	X								S-Grab											X				
-34	Auger Hole 14	0.0'	0.5'	7/10/2018	955	N	1	X								S-Grab											X	X	TPH		
-35	Auger Hole 15	0.0'	0.5'	7/10/2018	1000	N	1	X								S-Grab											X				
-36	Auger Hole 16	0.0'	0.5'	7/10/2018	1005	N	1	X								S-Grab											X				
-37	Auger Hole 17	0.0'	0.5'	7/10/2018	1010	N	1	X								S-Grab											X				
-38	Auger Hole 18	0.0'	0.5'	7/10/2018	1015	N	1	X								S-Grab											X				
-39	Auger Hole 19	0.0'	0.5'	7/10/2018	1020	N	1	X								S-Grab											X				
-40	Auger Hole 20	0.0'	0.5'	7/10/2018	1025	N	1	X								S-Grab											X				

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7/11/18	0650			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by PBEL: Aurora Haddock	7/12/18	8:50

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt:
Received: -0.6 °C
Adjusted: -0.6 °C Factor 0.9 cl

APPENDIX E

Initial C-141

NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 28 2018
RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

nAB1809355913

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Mack Energy Corporation 13837	Contact Matt Buckles
Address 11344 Lovington Highway	Telephone No. 575-748-1288
Facility Name North Pole Fed TB	Facility Type Tank Battery

Surface Owner BLM	Mineral Owner BLM	API No. 30-015-36079

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	15	16S	28E	330	South	330	West	Eddy

Latitude 32.916374 **Longitude** -104.171295 NAD83

NATURE OF RELEASE

Type of Release Oil	Volume of Release 25 bbls	Volume Recovered 10 Bbls
Source of Release Heater Treater	Date and Hour of Occurrence 3/21/2018 1:00 am	Date and Hour of Discovery 3/21/2018 9:00 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher and Shelly Tucker	
By Whom? Matt Buckles	Date and Hour 3/21/18 7:42 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
A gasket on an 8' x 20' heater treater developed a leak on the top side of the clean out plate. Immediately upon discovery we dug out and hauled any saturated oily dirt to an approved disposal site to prevent further leaching.

Describe Area Affected and Cleanup Action Taken.*
The area affected is directly North of the North Pole TB. The oil followed a path of 240 yards northeast less than 1 yard wide and an area northwest of the heater treater 65 yards by 35 yards. This area northwest was caused by oil spraying. The area is approximately 23,000 sq ft. We will fully delineate and discuss remediation plans.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Matt Buckles	OIL CONSERVATION DIVISION Signed By Approved by Environmental Specialist:
Printed Name: Matt Buckles	
Title: Environmental	Approval Date: 4/2/18 Expiration Date: N/A
E-mail Address: mattbuckles@mec.com	Conditions of Approval: See attached Attached ☐ 2RP-4185
Date: 3/28/2017 Phone: 575-748-1288	

4/2/18 AB

APPENDIX F

Groundwater Data

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Please see news on new formats
- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 325448104071801

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

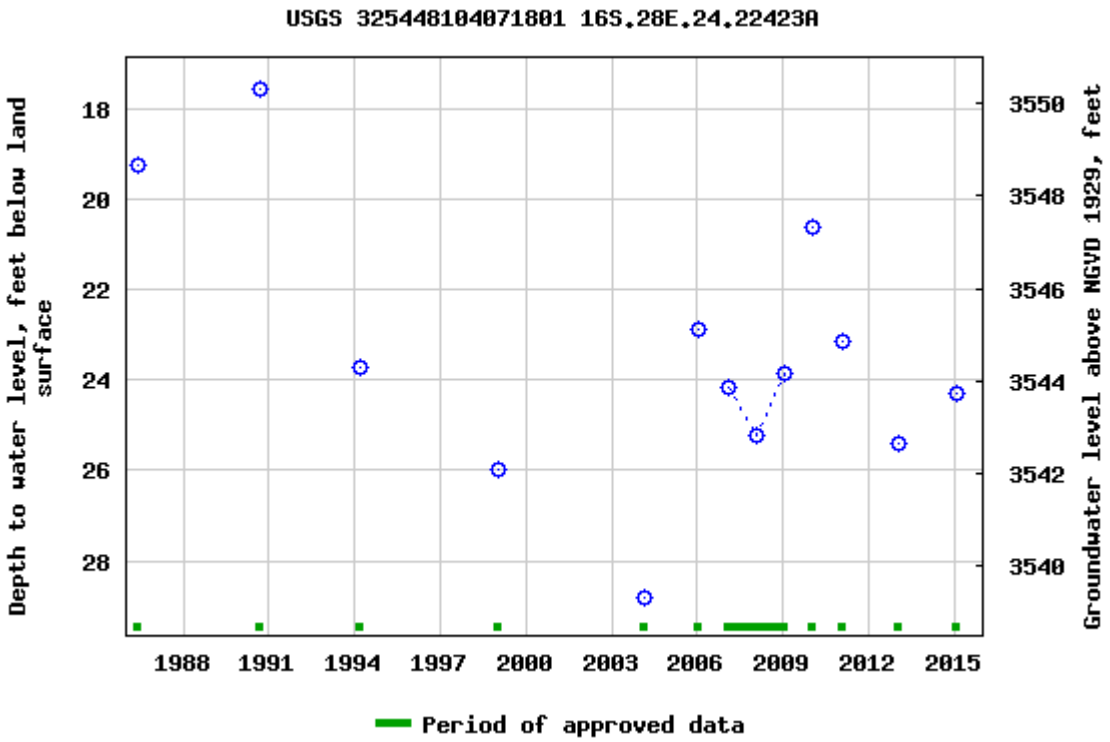
USGS 325448104071801 16S.28E.24.22423A

Available data for this site Groundwater: Field measurements ▼ GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°54'48", Longitude 104°07'18" NAD27
Land-surface elevation 3,568 feet above NGVD29
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
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Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
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