

**REVIEWED**

*By CHernandez at 8:51 am, Oct 22, 2018*



**REMEDIATION WORK PLAN**

Property:

**Mack Energy Corporation  
MA B #4  
Lea County, New Mexico  
Unit Letter "H", Section 31, Township 17 South, Range 33 East  
Latitude 32.7936, Longitude -103.6966  
API Number: 30-025-36494  
1RP-5115**

September 2018

Prepared for:

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

Prepared by:

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Thomas Franklin  
Environmental Manager

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Ryan Reich  
Environmental Project Manager

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## **WORK PLAN**

**Mack Energy Corporation  
MA B #4  
Lea County, New Mexico  
Unit Letter "H", Section 31, Township 17 South, Range 33 East  
Latitude 32.7936, Longitude -103.6966  
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September 2018  
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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) MA B #4 (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 "H", Section 31, Township 17 South, Range 33 East, Lea County, New Mexico (GPS 32.7936, -103.6966). 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 *Release Notification*. These documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with 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	0
	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 0. This ranking is based on the following:

- The depth to the initial groundwater-bearing zone is greater than 100 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 0, 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) and 2,500 mg/Kg for Total Petroleum Hydrocarbons (TPH).

Figure 4 shows the location of the Site in Lea Co, New Mexico and surrounding topography.

### **3.0 INITIAL RESPONSE & SAMPLING ACTIVITIES**

#### **3.1 Initial Response**

On June 25, 2018, Mack personnel performed a site inspection in response to a release of produced water and crude oil at the Site. The site inspection was in response to a release (1RP-5115) directly to the ground of forty (40) barrels (bbls) of combined fluids. Ten (10) bbls of fluid were recovered. The release impacted approximately three-thousand (3,000) square feet of production pad and adjacent pasture area.

#### **3.2 Sampling Activities**

Sampling activities were conducted on July 10, 2018 by ASSI personnel, using a stainless-steel hand auger. Five (5) auger holes were installed, using a stainless-steel hand auger to a depth of three (3) feet below ground surface (bgs). Table 1 (Appendix B) presents analytical results and Figure 3 (Appendix A) shows the sample point locations. Soil was field screened for Chloride utilizing electro conductivity during sampling activities.

#### **3.3 Soil Sampling Analytical Results**

Twelve (12) soil samples were collected from Auger Hole-1 through Auger Hole -5 July 10, 2018 by ASSI personnel for laboratory analysis. The samples were analyzed for BTEX, TPH, and Chloride (Table 1). Analytical results were compared to *Table 1 of NMAC 19.15.29.12* and show TPH, BTEX and Chloride concentration do not exist above guidance clean-up goals at all auger hole locations. Vertical and horizontal delineation has been achieved at the Site.

### **4.0 LABORATORY ANALYTICAL METHODS**

The samples were analyzed for TPH utilizing EPA method SW-846 8015, BTEX using EPA method SW-846 8021B, and Chloride utilizing EPA method SW-846 300.1. Laboratory analysis is provided in Appendix D. Table 1 in Appendix B shows analytical results.

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.

Figure 3 (Appendix A) indicates the approximate location of the auger holes previously installed in relation to pertinent land features and 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 vertically and horizontally delineated.

Based on the analytical data presented in Table I, Mack Energy and ASSI propose to perform a surficial tilling action in the area adjacent and around Auger Hole-1, to address visual staining. All actions conducted during remediation will be conducted according to NMAC 19.15.29 and the Site will be returned to original conditions.



## APPENDIX A



### Figures

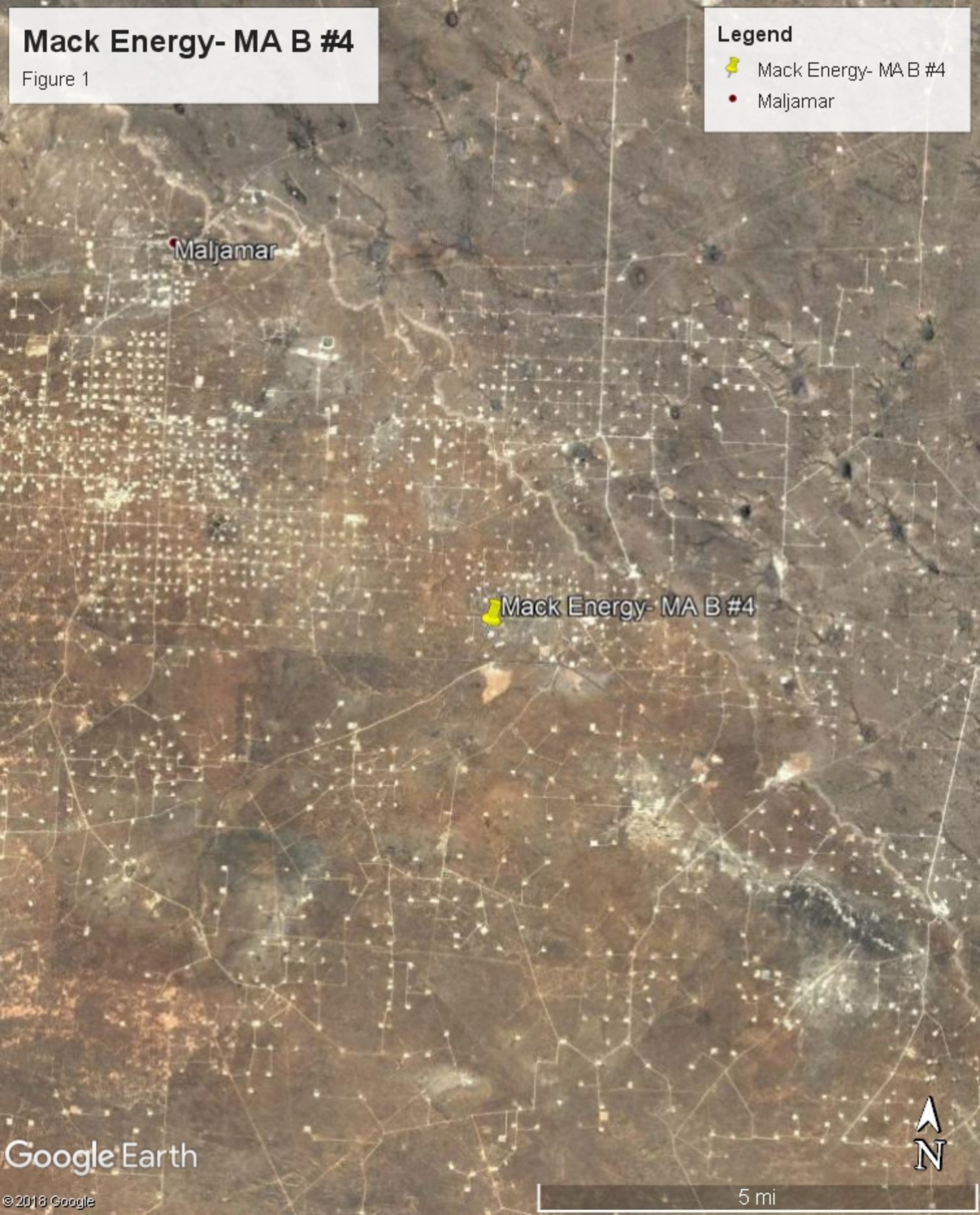


# Mack Energy- MA B #4

Figure 1

## Legend

-  Mack Energy- MA B #4
-  Maljamar






# Mack Energy- MA B #4

Figure 2

## Legend

 Mack Energy- MA B #4








# Mack Energy- MA B #4

Figure 3

## Legend

-  Mack Energy- MA B #4
-  Release Footprint
-  Sample Point







# Mack Energy- MA B #4

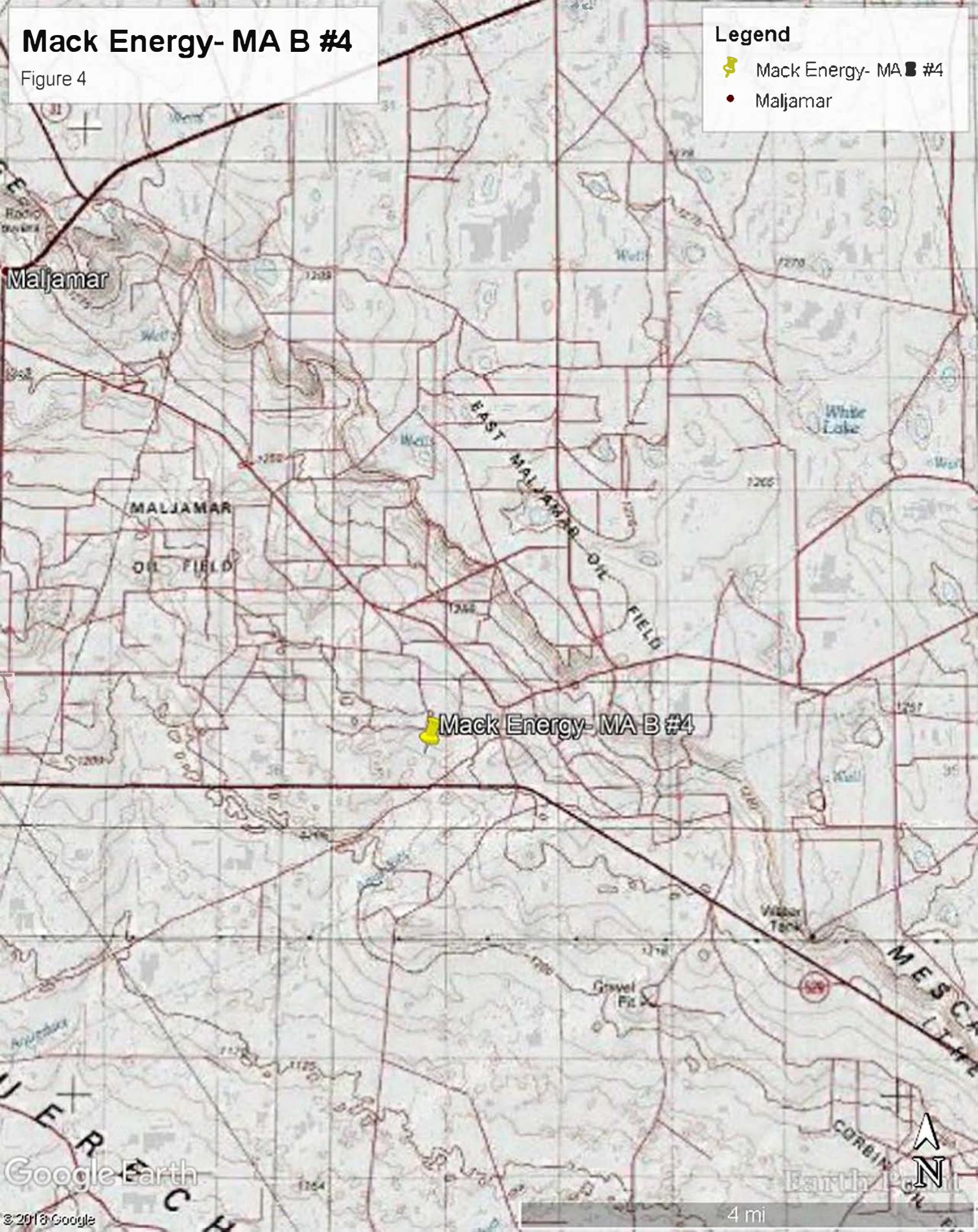
Figure 4

Legend

 Mack Energy- MA B #4



Maljamar





## APPENDIX B

### Table 1

TABLE 1 Summary of Delineation Sampling Analytical Results Concentrations of Benzene, BTEX, TPH & Chloride in Soil													
Mack Energy MA B #4 Lea County, New Mexico 1RP-5115													
SAMPLE LOCATION	SAMPLE DEPTH (bgs)	SAMPLE DATE	SOIL STATUS	8021B					8015M			300.0	
				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)
NMOCD - Guidelines for Remediation of Leaks, Spills and Releases				10	NE	NE	NE	50	NE	NE	NE	2,500	20,000
Vertical Delineation Sampling													
Auger Hole-1	0-0.5'	7/10/2018	In-Situ	ND	ND	ND	ND	ND	ND	273	64.4	338	7,680
Auger Hole-1	0.5'-1'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	2,750
Auger Hole-1	1'-1.5'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	409
Auger Hole-1	1.5'-2'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	703
Auger Hole-1	2'-2.5'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	371
Auger Hole-1	2.5'-3'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	234
Auger Hole-2	0-0.5'	7/10/2018	In-Situ	ND	ND	ND	ND	ND	ND	220	71.4	292	ND
Auger Hole-2	1.5'-1'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	ND
Auger Hole-3	0-0.5'	7/10/2018	In-Situ	ND	ND	ND	ND	ND	ND	376	123	498	5.48
Auger Hole-3	1.5'-1'	7/10/2018	In-Situ	-	-	-	-	-	-	-	-	-	ND
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	77.9	32.6	110	ND

In-situ = sample collected in place

mg/Kg - milligrams per Kilogram

— = Not Established

Concentrations in **BOLD** exceed the NMOCD Guidelines



## APPENDIX C

### Photo Page





View Northeast– Origin of spill. Release caused by failed gasket on a heater treater.



View Northeast– A portion of the spill flow path caused by the fluid release. Note the hydrocarbon staining (dark brown).





View North – Area of Auger Hole-1 (flagged in middle of photograph).



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





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



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





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





## APPENDIX D

### Laboratory Analysis

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



# Analytical Report

**Prepared for:**

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

Project: Mack energy - MA B #4

Project Number: [none]

Location: Lea Co. NM

Lab Order Number: 8G12007



NELAP/TCEQ # T104704516-17-8

Report Date: 07/31/18

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

Project: Mack energy - MA B #4  
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')	8G12007-01	Soil	07/10/18 12:30	07-12-2018 08:50
Auger Hole 1 (0.5'-1.0')	8G12007-02	Soil	07/10/18 12:32	07-12-2018 08:50
Auger Hole 1 (1.0'-1.5')	8G12007-03	Soil	07/10/18 12:34	07-12-2018 08:50
Auger Hole 1 (1.5'-2.0')	8G12007-04	Soil	07/10/18 12:36	07-12-2018 08:50
Auger Hole 1 (2.0'-2.5')	8G12007-05	Soil	07/10/18 12:38	07-12-2018 08:50
Auger Hole 1 (2.5'-3.0')	8G12007-06	Soil	07/10/18 12:40	07-12-2018 08:50
Auger Hole 2 (0.0'-0.5')	8G12007-09	Soil	07/10/18 12:49	07-12-2018 08:50
Auger Hole 2 (0.5'-1.0')	8G12007-10	Soil	07/10/18 12:51	07-12-2018 08:50
Auger Hole 3 (0.0'-0.5')	8G12007-11	Soil	07/10/18 12:56	07-12-2018 08:50
Auger Hole 3 (0.5'-1.0')	8G12007-12	Soil	07/10/18 12:58	07-12-2018 08:50
Auger Hole 4 (0.0'-0.5')	8G12007-13	Soil	07/10/18 13:03	07-12-2018 08:50
Auger Hole 5 (0.0'-0.5')	8G12007-14	Soil	07/10/18 13:08	07-12-2018 08:50

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Project: Mack energy - MA B #4  
Project Number: [none]  
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**Auger Hole 1 (0.0'-0.5')**

**8G12007-01 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Organics by GC**

Benzene	ND	0.00115	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Toluene	ND	0.0115	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Ethylbenzene	ND	0.00575	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (p/m)	ND	0.0230	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (o)	ND	0.0115	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 4-Bromofluorobenzene		102 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 1,4-Difluorobenzene		99.6 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	7680	28.7	mg/kg dry	25	P8G1608	07/16/18	07/17/18	EPA 300.0
% Moisture	13.0	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	28.7	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C12-C28	273	28.7	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C28-C35	64.4	28.7	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: 1-Chlorooctane		98.6 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: o-Terphenyl		109 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	338	28.7	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	07/19/18	EPA 8021B
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/19/18	EPA 8021B



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

Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

Fax: (432) 363-0198

**Auger Hole 1 (0.5'-1.0')**  
**8G12007-02 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

<b>Chloride</b>	<b>2750</b>	11.2	mg/kg dry	10	P8G2502	07/25/18	07/26/18	EPA 300.0
<b>% Moisture</b>	<b>11.0</b>	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216

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Project: Mack energy - MA B #4  
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**Auger Hole 1 (1.0'-1.5')**  
**8G12007-03 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

<b>Chloride</b>	<b>409</b>	1.20	mg/kg dry	1	P8G2502	07/25/18	07/26/18	EPA 300.0	
<b>% Moisture</b>	<b>17.0</b>	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc  
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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 1 (1.5'-2.0')**  
**8G12007-04 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

<b>Chloride</b>	<b>703</b>	1.18	mg/kg dry	1	P8G2502	07/25/18	07/26/18	EPA 300.0
<b>% Moisture</b>	<b>15.0</b>	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216

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Odessa TEXAS, 79765

Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 1 (2.0'-2.5')**  
**8G12007-05 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

<b>Chloride</b>	<b>371</b>	1.12	mg/kg dry	1	P8G1608	07/16/18	07/17/18	EPA 300.0	
<b>% Moisture</b>	<b>11.0</b>	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 1 (2.5'-3.0')**  
**8G12007-06 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	234	1.14	mg/kg dry	1	P8G2502	07/25/18	07/26/18	EPA 300.0	
% Moisture	12.0	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216	

American Safety Services, Inc  
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**Auger Hole 2 (0.0'-0.5')**  
**8G12007-09 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Organics by GC**

Benzene	ND	0.00104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Toluene	ND	0.0104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Ethylbenzene	ND	0.00521	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (p/m)	ND	0.0208	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (o)	ND	0.0104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 1,4-Difluorobenzene		84.6 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 4-Bromofluorobenzene		90.0 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	ND	1.04	mg/kg dry	1	P8G1608	07/16/18	07/17/18	EPA 300.0
% 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	P8G1306	07/13/18	07/13/18	TPH 8015M
>C12-C28	220	26.0	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C28-C35	71.4	26.0	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: 1-Chlorooctane		104 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: o-Terphenyl		115 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	292	26.0	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

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**Auger Hole 2 (0.5'-1.0')**  
**8G12007-10 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	ND	1.04	mg/kg dry	1	P8G1608	07/16/18	07/17/18	EPA 300.0
% Moisture	4.0	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216



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Project Manager: Thomas Franklin

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**Auger Hole 3 (0.0'-0.5')**  
**8G12007-11 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Organics by GC**

Benzene	ND	0.00104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Toluene	ND	0.0104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Ethylbenzene	ND	0.00521	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Xylene (p/m)	ND	0.0208	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Xylene (o)	ND	0.0104	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		89.9 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		98.0 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B	

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	5.48	1.04	mg/kg dry	1	P8G1608	07/16/18	07/17/18	EPA 300.0	
% 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	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C12-C28	376	26.0	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
>C28-C35	123	26.0	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	498	26.0	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	07/19/18	EPA 8021B	
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/19/18	EPA 8021B	

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8715 Andrews Hwy  
Odessa TEXAS, 79765

Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 3 (0.5'-1.0')**  
**8G12007-12 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	ND	1.04	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0
% Moisture	4.0	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 4 (0.0'-0.5')**  
**8G12007-13 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Organics by GC**

Benzene	ND	0.00101	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Toluene	ND	0.0101	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Ethylbenzene	ND	0.00505	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (p/m)	ND	0.0202	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Xylene (o)	ND	0.0101	mg/kg dry	1	P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 1,4-Difluorobenzene		88.6 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 4-Bromofluorobenzene		107 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	ND	1.01	mg/kg dry	1	P8G1706	07/17/18	07/18/18	EPA 300.0
% Moisture	1.0	0.1	%	1	P8G1604	07/16/18	07/16/18	ASTM D2216

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	25.3	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C12-C28	ND	25.3	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C28-C35	ND	25.3	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: 1-Chlorooctane		101 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: o-Terphenyl		112 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	ND	25.3	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	07/19/18	EPA 8021B
Total BTEX	ND	0.0460	mg/kg	1	[CALC]	07/17/18	07/19/18	EPA 8021B

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**Auger Hole 5 (0.0'-0.5')**  
**8G12007-14 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**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		108 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B
Surrogate: 1,4-Difluorobenzene		91.5 %	75-125		P8G1702	07/17/18	07/19/18	EPA 8021B

**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

**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	77.9	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
>C28-C35	32.6	25.5	mg/kg dry	1	P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: 1-Chlorooctane		108 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Surrogate: o-Terphenyl		118 %	70-130		P8G1306	07/13/18	07/13/18	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	110	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

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Project: Mack energy - MA B #4  
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Project Manager: Thomas Franklin

Fax: (432) 363-0198

**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
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**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: 1,4-Difluorobenzene	0.0458		"	0.0600		76.4	75-125			
Surrogate: 4-Bromofluorobenzene	0.0577		"	0.0600		96.2	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			

**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: 4-Bromofluorobenzene	0.0649		"	0.0600		108	75-125			
Surrogate: 1,4-Difluorobenzene	0.0627		"	0.0600		104	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			

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Project: Mack energy - MA B #4  
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Project Manager: Thomas Franklin

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**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
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**Batch P8G1702 - General Preparation (GC)**

**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			

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**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
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**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 P8G1608 - \*\*\* DEFAULT PREP \*\*\***

**Blank (P8G1608-BLK1)**

Prepared: 07/16/18 Analyzed: 07/17/18

Chloride ND 1.00 mg/kg wet



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**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
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**Batch P8G1608 - \*\*\* DEFAULT PREP \*\*\***

<b>LCS (P8G1608-BS1)</b>				Prepared: 07/16/18 Analyzed: 07/17/18						
Chloride	399	1.00	mg/kg wet	400		99.7	80-120			
<b>LCS Dup (P8G1608-BSD1)</b>				Prepared: 07/16/18 Analyzed: 07/17/18						
Chloride	404	1.00	mg/kg wet	400		101	80-120	1.36	20	
<b>Duplicate (P8G1608-DUP1)</b>				<b>Source: 8G12023-18</b>		Prepared: 07/16/18 Analyzed: 07/17/18				
Chloride	9120	28.1	mg/kg dry		9120			0.0154	20	
<b>Duplicate (P8G1608-DUP2)</b>				<b>Source: 8G12023-25</b>		Prepared: 07/16/18 Analyzed: 07/17/18				
Chloride	18700	54.3	mg/kg dry		18800			0.396	20	
<b>Matrix Spike (P8G1608-MS1)</b>				<b>Source: 8G12023-18</b>		Prepared: 07/16/18 Analyzed: 07/17/18				
Chloride	11600	28.1	mg/kg dry	2250	9120	109	80-120			

**Batch P8G1706 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P8G1706-BLK1)</b>				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	ND	1.00	mg/kg wet							
<b>LCS (P8G1706-BS1)</b>				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	378	1.00	mg/kg wet	400		94.6	80-120			
<b>LCS Dup (P8G1706-BSD1)</b>				Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	380	1.00	mg/kg wet	400		95.1	80-120	0.525	20	
<b>Duplicate (P8G1706-DUP1)</b>				<b>Source: 8G12007-12</b>		Prepared: 07/17/18 Analyzed: 07/18/18				
Chloride	ND	1.04	mg/kg dry		ND				20	

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**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
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**Batch P8G1706 - \*\*\* DEFAULT PREP \*\*\***

<b>Duplicate (P8G1706-DUP2)</b>		<b>Source: 8G13001-08</b>		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	397	1.06	mg/kg dry		398			0.0963	20	
<b>Matrix Spike (P8G1706-MS1)</b>		<b>Source: 8G12007-12</b>		Prepared: 07/17/18 Analyzed: 07/18/18						
Chloride	1040	1.04	mg/kg dry	1040	ND	99.8	80-120			

**Batch P8G2502 - \*\*\* DEFAULT PREP \*\*\***

<b>Blank (P8G2502-BLK1)</b>				Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	ND	1.00	mg/kg wet							
<b>LCS (P8G2502-BS1)</b>				Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	377	1.00	mg/kg wet	400		94.2	80-120			
<b>LCS Dup (P8G2502-BSD1)</b>				Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	375	1.00	mg/kg wet	400		93.8	80-120	0.407	20	
<b>Duplicate (P8G2502-DUP1)</b>		<b>Source: 8G12007-02</b>		Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	2760	11.2	mg/kg dry		2750			0.420	20	
<b>Duplicate (P8G2502-DUP2)</b>		<b>Source: 8G19002-09</b>		Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	2.74	1.05	mg/kg dry		3.82			33.1	20	
<b>Matrix Spike (P8G2502-MS1)</b>		<b>Source: 8G12007-02</b>		Prepared: 07/25/18 Analyzed: 07/26/18						
Chloride	3870	11.2	mg/kg dry	1120	2750	100	80-120			

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Project: Mack energy - MA B #4  
Project Number: [none]  
Project Manager: Thomas Franklin

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**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
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**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			

### Notes and Definitions

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:



Date:

7/31/2018

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

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

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

Sampler Signature: *Mack* e-mail: *latta@americansafety.net*

(lab use only)

ORDER #: 8612007

Project Name: Mack Energy- MA B #4

Project #:

Project Loc: Lee Co. *N/M*

PO #:

Report Format: ☐ Standard ☐ TRRP ☐ NPDES

*latta@americansafety.net*  
*latta@americansafety.net*  
*reich@americansafety.net*  
*mdial@americansafety.net*

Preservation & # of Containers

Matrix

TPH: 418.1 8015M 8015B  
TPH: TX 1005 TX 1006  
Calibns (Ca, Mg, Na, K)  
Anions (Cl, SO4, Alkalinity)  
SAR / ESP / CEC  
Metals: As Ag Ba Cd Cr Pb Hg Se  
Volatiles  
Semivolatiles  
BTX 8021B 5030 or BTEX 8260  
RCI  
N.O.R.M.  
Chloride EPA-300  
Hold

RUSH TAT (Pre-Schedule) 24, 48, 72 hrs  
Standard TAT

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO <sub>3</sub>	HCl	H <sub>2</sub> SO <sub>4</sub>	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	None	Other ( Specify)	DW=Drinking Water SL=Sludge	GW = Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	TPH: 418.1 8015M 8015M	TPH: TX 1005 TX 1006	Catibns (Ca, Mg, Na, K)	Anions (Cl, SO <sub>4</sub> , Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg	Volatiles	Semivolatiles	BTEX 8021B 5030 or BTEX 8260	RCI	N.O.R.M.	Chloride EPA 300	Hold	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT	
		</																																

Special Instructions: 20 Barrels exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg run deeper sample.  
If TPA Exceeds 2,500 mg/kg run deeper sample.

Relinquished by: *Mack* Date: 7/10/18 Time: 0650 Received by: *Mack* Date: 7/12/18 Time: 8:50

Relinquished by: *Mack* Date: 7/10/18 Time: 0650 Received by: *Mack* Date: 7/12/18 Time: 8:50

Relinquished by: *Mack* Date: 7/10/18 Time: 0650 Received by: *Mack* Date: 7/12/18 Time: 8:50

Relinquished by: *Mack* Date: 7/10/18 Time: 0650 Received by: *Mack* Date: 7/12/18 Time: 8:50

Laboratory Comments: Sample Containers intact? ☒ VOCs Free of Headspace? ☒ Labels on containers? ☒ Custody seals on containers? ☒ Sample Hand Delivered by Sampler/Client Rep.? ☒ Temperature Upon Receipt: *0.4* °C Factor: *0.4*

Laboratory Comments: Sample Containers intact? ☒ VOCs Free of Headspace? ☒ Labels on containers? ☒ Custody seals on containers? ☒ Sample Hand Delivered by Sampler/Client Rep.? ☒ Temperature Upon Receipt: *0.4* °C Factor: *0.4*

Laboratory Comments: Sample Containers intact? ☒ VOCs Free of Headspace? ☒ Labels on containers? ☒ Custody seals on containers? ☒ Sample Hand Delivered by Sampler/Client Rep.? ☒ Temperature Upon Receipt: *0.4* °C Factor: *0.4*

Laboratory Comments: Sample Containers intact? ☒ VOCs Free of Headspace? ☒ Labels on containers? ☒ Custody seals on containers? ☒ Sample Hand Delivered by Sampler/Client Rep.? ☒ Temperature Upon Receipt: *0.4* °C Factor: *0.4*

Laboratory Comments: Sample Containers intact? ☒ VOCs Free of Headspace? ☒ Labels on containers? ☒ Custody seals on containers? ☒ Sample Hand Delivered by Sampler/Client Rep.? ☒ Temperature Upon Receipt: *0.4* °C Factor: *0.4*

Project Name: Maek Energy MA-15-H-9

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☐ NPDES

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[illegible]

St

1

[illegible]

2

22

1. **Leads** - Leads are the initial contacts that are made with potential customers. They are the first step in the sales process.

Factor 17.4



## APPENDIX E

Initial C-141

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

### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Mack Energy Corporation	Contact	Matt Buckles
Address	11344 Lovington Highway	Telephone No.	575-748-1288
Facility Name	MA B #4	Facility Type	Tank Battery
Surface Owner	Concho Land LLC	Mineral Owner	Private
		API No.	30-025-36494

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	31	17S	33E	1650	North	990	East	Lea

Latitude 32.79361111 Longitude -103.69666667 NAD83

### NATURE OF RELEASE

Type of Release	Oil/PW	Volume of Release	40 bbls	Volume Recovered	10 Bbls
Source of Release	Heater Treater	Date and Hour of Occurrence	6/25/2018 6:00 am	Date and Hour of Discovery	6/25/2018 10:00 am
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Olivia Yu		
By Whom?	Matt Buckles	Date and Hour	6/26/18 7:53 am		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

**RECEIVED**

**By Olivia Yu at 10:43 am, Jul 05, 2018**

If a Watercourse was Impacted, Describe Fully.\*


Describe Cause of Problem and Remedial Action Taken.\*

A gasket on an 8'x20' heater treater developed a leak on the top side of the clean out plate. Immediately upon discovery we removed any standing fluid 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 south of the TB. The release is approximately 100 feet south and 50 feet wide. 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	
Printed Name: Matt Buckles		Approved by Environmental Specialist: 	
Title: Environmental	Approval Date: 7/5/2018	Expiration Date:	
E-mail Address: mattbuckles@mec.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>	
Date: 7/3/2017	Phone: 575-748-1288		

1RP-5115

nOY1818639026

pOY1818639485





## APPENDIX F

### Groundwater Data



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,  
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
<a href="#">L 13909 POD1</a>	L	LE		4	1	4	31	17S	33E	621735	3628514	240	240	0

Average Depth to Water: **240 feet**

Minimum Depth: **240 feet**

Maximum Depth: **240 feet**

Record Count: 1

### PLSS Search:

Section(s): 31

Township: 17S

Range: 33E