NJXK1602952866
1RP-4122

Mack Energy Corporation

Closure

MARS STATE #1 TB

03/20/2020

State of New Mexico
Oil Conservation Division

Incident ID	nJXK1602952866
District RP	1RP-4122
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

[X] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

[X] Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

[X] Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

[X] Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: MATT BUCKLES Title: ENVIRONMENTAL

Signature: [signature] Date: June 17, 2019

email: MATTBUCKLES@MEC.COM Telephone: 575-748-1288

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Bradford Billings Date: 03/20/2020

Printed Name: Bradford Billings Title: E.SPEC.A

NOTE: Although RP/Incident is closed, a reminder of .13 of PArt 29 dealing with restoration must eventually be accomplished at location/site P&A pad closure.

HRL COMPLIANCE SOLUTIONS
P.O. Box 1708 • Artesia, NM 88211
www.hrlcomp.com

CLOSURE REPORT

Property:

MACK ENERGY CORPORATION
MARS STATE #1 TB
LEA COUNTY, NEW MEXICO
UNIT LETTER "H", SECTION 5, TOWNSHIP 14 SOUTH, RANGE 34 EAST
LATITUDE 33.13519° N, LONGITUDE 103.52582° W
API NUMBER: 30-025-23172
1RP – 4122

JUNE 2019

Prepared For:

MACK ENERGY CORPORATION
11344 LOVINGTON HIGHWAY
ARTESIA, NM 88210
ATTN: **MR. MATT BUCKLES**

Prepared By:

Natalie Gordon
Project Manager

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ACRONYM LIST

bbl(s)	Barrel(s)
BTEX	Benzene, Toluene, Ethyl benzene, and Xylene
DRO	Diesel Range Organics
GPS	Global positioning system
GRO	Gasoline Range Organics
mg/kg	milligram per kilogram
MRO	Motor Oil Range Organics
NELAP	National Environmental Laboratory Accreditation Program
NMAC	New Mexico Administrative Code
NM OCD	New Mexico Oil Conservation Division
NRCS	National Resources Conservation Service
TB	Tank Battery
TPH	Total Petroleum Hydrocarbons
USDA	United States Department of Agriculture
USGS	United States Geological Survey

EXECUTIVE SUMMARY

This report presents the methods and results of the site evaluation and confirmation sampling conducted at Mars State #1 Tank Battery (Mars State) on May 17, 2019. The objective of the site evaluation was to determine if there were any indications of chloride or hydrocarbon impacts on the well pad as a result of a release that occurred following a valve leak at the wellhead on January 25, 2016. The objective of the site evaluation and confirmation sampling was to demonstrate the efficacy of prior remediation activities, determine that there were no environmental impacts to the area resulting from this release, and verify that remaining contamination at the site, if any, falls within New Mexico Oil Conservation Division (NM OCD) limits for constituents of concern. This report is also intended to serve as a final closure report to obtain approval from NM OCD for closure of the release.

OVERVIEW:

- On January 25, 2016, a leaking valve at the Mars State # 1 wellhead caused a minor release of 5-6 barrels (bbls) of oil on the well pad.
- Upon discovery, the well was shut in to stop the release.
- Contaminated dirt/caliche was removed from around the wellhead and between the wellhead and tank battery.
- Mack Energy Corporation (Mack) contacted HRL Compliance Solutions (HRL) in March 2019 to evaluate the remediation and obtain closure from NM OCD.
- HRL conducted a site evaluation and confirmation sampling on May 17, 2019 in order to prepare this site closure report.

RECOMMENDATION:

Given the location of the spill wholly on the active well pad, in addition to the evaluation and discussion captured in Section 2.4 of this report, HRL recommends that no further action be taken in regards to this release. Certification of the accuracy of information on form C-141 and within this closure report is hereby submitted to NM OCD to obtain closeout of the incident.

1.0 INTRODUCTION

1.1 RELEASE AND INITIAL RESPONSE

On the evening of January 25, 2016, the wellhead at Mack Energy Corporation's (Mack) Mars State #1 Tank Battery developed a valve leak, resulting in a minor release of an estimated 5-6 bbls of oil onto the pad. The release was discovered at approximately 7:00am on January 26, 2016, at which time the well was shut in. An area of dirt and caliche was removed to a depth of one foot for approximately 10 feet around the wellhead and an additional 20 feet toward the tank battery where misting had occurred. The contaminated material was removed offsite for proper disposal.

Mack submitted the initial C-141 Release Notification (Appendix A) to NM OCD District I on January 29, 2016. Aside from the initial contaminated soil removal, no additional remediation work or documentation to obtain closure was completed. HRL was contacted by Mack on March 19, 2019 to evaluate the spill at Mars State and obtain closure from NM OCD per NM regulations governing Releases as outlined in 19.15.29 New Mexico Administrative Code (NMAC).

1.2 PURPOSE OF REPORT

This report, which has been prepared for the exclusive use of Mack Energy Corporation, presents an evaluation of the release incident and environmental conditions at Mars State on May 17, 2019, by HRL Compliance Solutions (HRL). The objective of the report is to establish that remediation is complete, all applicable regulations are met, and to serve as a final closure report for approval from NM OCD for closure of the release that occurred on January 25, 2016.

1.3 SCOPE AND LIMITATIONS

The scope of HRL's services consists of reviewing information related to the release, verification of release remediation, confirmation sampling, regulatory liaison, and preparation of this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

2.0 SITE CHARACTERIZATION

2.1 GENERAL SITE INFORMATION

The following information provides a brief outline of the site location and site conditions.

2.1.1 Site Location

Mars State is located on privately-owned land in the northeast portion of Section 5, Township 14 South, Range 34 East in north-central Lea County (Figure 1). This location is within the Permian Basin in southeast New Mexico.

2.1.2 Site Description

The Mars State site is typical of oil and gas exploration and production sites in the northwestern portion of the Permian Basin and southeast New Mexico. It is currently used for oil and gas production and storage. This closure report discusses an area on the pad immediately around the wellhead and pumpjack on the north side of the pad.

The surrounding landscape is comprised of upland plain grassland used almost exclusively for rangeland. It has an arid to semiarid climate and annual mean precipitation ranging between 14-16 inches. Native vegetation is principally various gramas, little bluestem, buffalograss and other grasses with some low-growing wildflowers, hackberry and javelinabrush (Soil Survey Staff, n.d.).

2.1.3 Topography

Mars State is located at an elevation of 4,156 feet above sea level on flat upland plains.

2.1.4 Geology

According to the United States Department of Agriculture (USDA) Web Soil Survey (Soil Survey Staff, n.d.), the majority of the soil geology at the Mars State site is Kimbrough gravelly loam consisting of shallow well-drained soils comprised principally of gravelly loam with some fine sandy loam over cemented material (calcium carbonate). The soil profile is moderately alkaline with low moisture and moderate permeability and zero to three percent slopes.

2.1.5 Surface Water

There is no surface water located at Mars State. The nearest significant watercourse as defined in Subsection P of 19.15.17.7 NMAC is an intermittent stream located 18 miles south of the release (Figure 1).

2.1.6 Groundwater

Depth-to-groundwater at the release site is estimated to be 72 feet below ground surface as determined using the NM State Engineer's Office water column report for radii of 2,000, 5,000, and 10,000 meters from the origin of release. See Appendix B for additional information pertaining to the depth-to-groundwater determination.

2.1.7 Known Water Sources

There are no known water sources within a half mile of the release, including private and domestic water sources, such as wells, springs, and other sources of fresh water extraction.

2.1.8 Oil and Gas Production/Transfer/Storage Equipment

The release occurred around the pumpjack and wellhead on the north part of the well pad. There are three storage tanks and one heater treater located within a bermed secondary containment to the south of the wellhead. None of the equipment within the secondary containment was affected by the release.

2.2 INVESTIGATION METHODS

The following information discusses the actions performed at Mars State as part of the evaluation and confirmation sampling activities conducted on May 17, 2019.

2.2.1 Confirmation Sampling

Three (3) five-point composite soil samples were collected on May 17, 2019 to be submitted for lab analyses and to serve as confirmation samples, as required by NM OCD for incident closure per Subsection D of 19.15.29.12 NMAC. The confirmation soil samples were collected from within, and at the edges of, the spill footprint as indicated by the visible excavation area on the well pad. The confirmation samples were selected at random, with approximately equal spacing throughout the spill footprint, such that each composite sample was not representative of more than 200 square feet, which meets the NM OCD closure requirement outlined in Subparagraph (c) of Paragraph (1) of Subsection D in 19.15.29.12 NMAC.

A fourth grab sample was collected off-pad near the Mars State site to obtain analytical data about the background chloride and hydrocarbon levels in the native soil in the vicinity.

2.2.2 Soil Sampling Procedures

Samples were collected at between zero and twelve inches below ground surface depending on the depth of the excavation. Soil samples were collected according to sampling methods outlined in the Natural Resources Conservation Service (NRCS) Field Guide. The three confirmation samples and one background sample were placed in laboratory-provided containers, preserved on ice, and shipped to a National Environmental Laboratory Accreditation Program (NELAP)-approved laboratory for chemical analysis.

2.2.3 Sample Location Mapping

A *GeoExplorer 6000 Series* Trimble global positioning system (GPS) unit was used to map the coordinates of all soil confirmation sample locations (Figure 2). Additionally, the suspected release origin and background sample location were mapped.

2.3 INVESTIGATION RESULTS

The following information presents analytical data for soil samples collected at the Mars State site.

2.3.1 Soil Analytical Results

Laboratory analyses of the three confirmation samples and the background sample included Method 300.0/9056A for chlorides, Method 8021B for volatile organics, including Benzene, Toluene, Ethyl benzene and Xylene (BTEX), and EPA Method 8015 for total petroleum hydrocarbons (TPH) including Motor Oil Range Organics (MRO), Diesel Range Organics (DRO), and Gasoline Range Organics (GRO). Final confirmation analytical data is summarized in Table 1. Full lab analyses data and chain of custody forms are included with this report as Appendix C.

TABLE I Confirmation Sample Analytical Data – Mars State #1								
Confirmation Sampling Date: 5/17/2019								
Sample ID	Sample Depth	Chloride	Benzene	BTEX	GRO	DRO	MRO	TPH
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BG 1-0	Surface	28	ND	ND	ND	ND	ND	ND
CS 1-0	6” bgs	349	ND	ND	ND	ND	ND	ND
CS 2-0	12” bgs	5,510	ND	ND	ND	ND	ND	ND
CS 3-0	10” bgs	2,940	ND	ND	ND	510	781	1,291

2.4 EVALUATION OF DATA AND DISCUSSION

This section evaluates the investigation results in respect to NM OCD site closure requirements and guidelines.

2.4.1 NM OCD Closure Criteria for Soils Impacted by this Release

Whenever a release occurs on a surface other than a lined, bermed, or otherwise contained production or storage site, the responsible party must remediate the impacted surface to meet the cleanup standards as put forth by NM OCD in Table I of 19.15.29.12. The closure criteria and maximum allowable contamination limits for soils impacted by a release vary by constituent and are driven largely by the minimum depth to groundwater below the horizontal boundary of the release. As determined in Section 2.1.6, the shallowest average depth-to-groundwater for the Mars State release site is 72 feet. Table 2 shows the NM OCD regulatory closure requirements for soils impacted by a release where minimum depth to groundwater is greater than 50 feet and less than or equal to 100 feet below ground surface.

TABLE II Closure Criteria for Soils Impacted by a Release		
Depth to Groundwater	**Constituent**	**Limit**
51 feet ≥ 100 feet	Chloride	10,000 mg/kg
	TPH (GRO + DRO + MRO)	2,500 mg/kg
	GRO + DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

2.4.2 Mars State #1 Tank Battery

The site evaluation and confirmation sampling conducted on May 17, 2019 revealed no TPH, BTEX, or chlorides concentrations exceeded 19.15.29.12 NMAC closure criteria as shown in Table 2 above, in the area of the release. The inspection confirmed that the spill was confined to the well pad and that the initial soil removal was effective in removing contaminants of concern from the site. The levels of contaminants that remain at the release site fall within NM OCD requirements for sites with a similar depth to groundwater and there are no indications of adverse conditions on or near the site.

3.0 RISK ASSESSMENT

3.1 POTENTIAL RECEPTOR EVALUATION

No potential receptors were identified either on- or off-site based on the following findings.

3.1.1 Human Receptors

There are ongoing oil and gas production operations at the site; however, HRL does not believe there is contamination at the site significant enough to pose a threat to human health so long as existing health and safety guidelines are followed by site personnel. Chlorides are not deemed a human health threat and there is no threat to human health for offsite human receptors due to the fact that the release was entirely contained on the well pad.

3.1.2 Ecological Receptors

There are no ecological receptors identified which may be threatened by the release that occurred on the Mars State well pad. Soil and plant life, to which chlorides present the largest issue, are not generally present on a well pad and thus unaffected by any remaining chlorides at the release site. Off-pad, there are no ecological receptors identified which may be threatened by the minimal presence of hydrocarbons and chlorides remaining on pad.

3.1.3 Wells and Surface Water

There are no potable wells, non-potable wells, or surface bodies on- or offsite that are close enough to be adversely effected by this release. Groundwater is at a sufficient depth below ground surface such that it is not expected to be affected by any chlorides that remain on the pad.

4.0 REMEDIATION ASSESSMENT

4.1 REMEDIATION DRIVERS AND CLEANUP OBJECTIVES

Clear remediation drivers and objectives are required to establish the framework within which potential remedial technologies are evaluated and compared. There is no real remediation driver for this site as it is in compliance with NM OCD regulations and directives to receive closure for the Mars State location. Cleanup objectives are media-specific goals that are protective of human health and the environment and were achieved to meet regulatory requirements as outlined in 19.15.29. NMAC.

4.2 RECOMMENDATION

Given the location of the spill, the producer's immediate removal of contaminated soil from the well pad following the release, and the confirmation sample lab analyses, HRL suggests that no additional remedial action is required to address this spill. The presence of any contaminants-of-concern at the site resulting from the above-referenced spill, are minimal and wholly contained on the active well pad, and will be addressed once well operation ceases, the well is plugged and abandoned, and the site is closed and restored per Subsection D of 19.15.25.10 NMAC. There is no anticipated risk to human, ecological, or hydrological receptors at the Mars State location.

5.0 CLOSURE

Due to the reasons outlined in Section 4.2 above, HRL recommends that Incident 1RP-4122 be closed. All closure requirements as set forth in Subsections D and E of 19.15.29.12 NMAC and closure criteria outlined in Table I of 19.15.29.12 have been met. Photos included in Appendix B of this report demonstrate the remediation activities and site stability. Mack Energy Corporation certifies that all information in this report and the attachments is correct and that Mack has complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NM OCD requirements to obtain closure on the release at the Mars State site.

6.0 REFERENCES

National Soil Survey Center, Natural Resources Conservation Service, United States Department of Agriculture. Field Book for Describing and Sampling Soils. Available online at the following link: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS. Accessed [05/21/2019].

Plugging and Abandonment of Wells, Oil Conservation Commission, 19.15.25 NMAC (12/01/2008).

Releases, Oil Conservation Commission, 19.15.29 NMAC (08/04/2018).

State Engineer, New Mexico Office of the State Engineer. New Mexico Water Rights Reporting System. Available online at the following: http://nmwrrs.ose.state.nm.us/waterColumn.html. Accessed [05/30/2019].

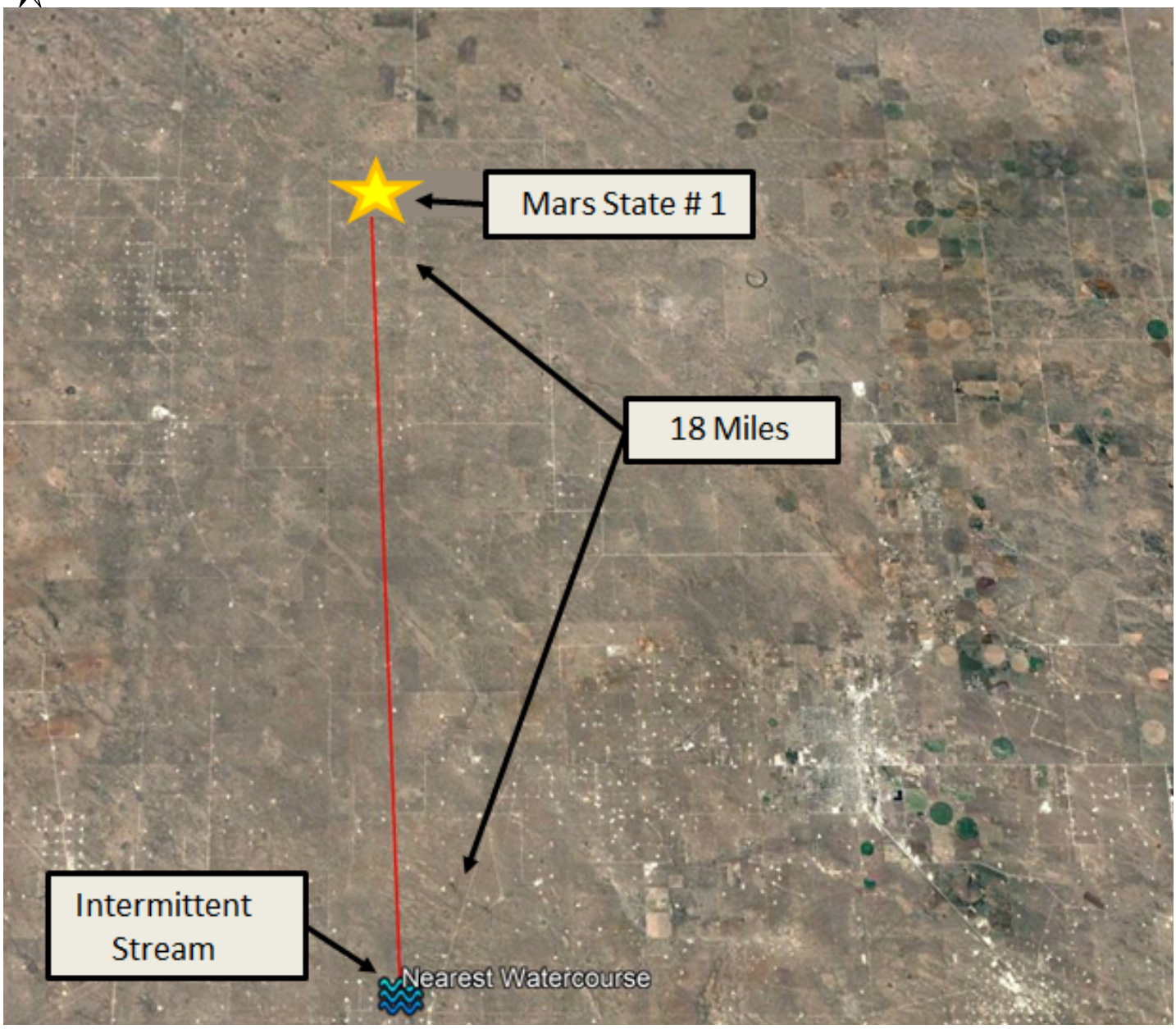
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at the following link: https://websoilsurvey.sc.egov.usda.gov/. Accessed [05/24/2019].

Photograph 1: Mars State # 1 Pumpjack and Location of Release

Photograph 2: Mars State Location of Removed Contaminated Soil

Photograph 3: Remediated Area Around and South of Wellhead

Photograph 4: Remediated Area North of Wellhead



Mapped Features

- Spill Location
- Nearest Watercourse

Figure 1

Site Location Map and Nearest Surface Water

Mars State #1

33.135449378 -103.526412631
Section 5, Township 14 South, Range 34 East

HRL COMPLIANCE SOLUTIONS

Author: N. Gordon
Revision: 0
Date: 6/3/2019

T:\CLIENTS\MACK ENERGY CORP\2019\Mars State #1\MAPS\Mars State #1 Sample Location Map 052419.mxd

Mapped Features

- Point of Release
- Sample Location
- Background Sample Location
- Spill Footprint

Figure 2

Sample Location Map

Mars State #1

33.135449378 -103.526412631
Section 5, Township 14 South, Range 34 East

Site Characterization Analytical Data - Mars State # 1

Sampling Date: 5/17/2019

Sample ID	Sample Depth	Chloride	Benzene	BTEX	GRO	DRO	MRO	TPH
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BG 1-0	Surface	28	ND	ND	ND	ND	ND	ND
CS 1-0	Surface	349	ND	ND	ND	ND	ND	ND
CS 2-0	Surface	5,510	ND	ND	ND	ND	ND	ND
CS 3-0	Surface	2,940	ND	ND	ND	510	781	1,291

HRL COMPLIANCE SOLUTIONS

Author: A. Asay
Revision: 0
Date: 5/24/2019

T:\CLIENTS\MACK ENERGY CORP\2019\Mars State #1\MAPS\Mars State #1 Sample Location Map 052419.mxd

Appendix A: 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

RECEIVED
By JKeyes at 2:44 pm, Jan 29, 2016

Revised August 8, 2011

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 PO Box 960 Artesia, NM 88211-0960	Telephone No. 575-748-1288
Facility Name Mars St #1 Tank Battery	Facility Type Tank Battery

Surface Owner Darr Angel	Mineral Owner Mack Energy	API No. 30-025-23172

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	5	14S	34E	1980	FNL	554	FEL	Lea

Latitude 33.13519 **Longitude** -103.52582

NATURE OF RELEASE

Type of Release Oil	Volume of Release 5-6 BBls	Volume Recovered N/A
Source of Release 1" on Pumping T	Date and Hour of Occurrence 1/25/16 @ approx. 10pm	Date and Hour of Discovery 1/26/16 7:00 am
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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.*
On the Mars State Tank Battery a spill occurred due to a leaking valve. We immediately shut well in upon discovery. Removed one foot of contaminated dirt/caliche. Hauled off location to proper disposal. Will fill in with caliche.

Describe Area Affected and Cleanup Action Taken.*
The area affected was an area of 10 feet directly around the wellhead with a spray/mist towards the tank battery approx. 20' all on the pad.

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: Jamie Kheyes	
Title: Environmental	Approval Date: 01/29/2016	Expiration Date: 03/29/2016
E-mail Address: mattbuckles@mec.com	Conditions of Approval: Discrete site samples only. Delineate and remediate per NMOCD guidelines. Geotagged photos of remediation recommended.	Attached ☐ IRP 4122
Date: 1/28/2016 Phone: 575-748-1288		

* Attach Additional Sheets If Necessary

nJXK1602952866
pJXK1602952969

Appendix B: Depth-to-Groundwater Report

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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 06364		L	LE		2	3	04	14S	34E	638230	3666871*	811	147	65	82
L 05558		L	LE	3	2	3	32	13S	34E	636497	3668359*	1506	140	110	30
L 06383		L	LE		4	4	33	13S	34E	639017	3668093*	1733	135	95	40

Average Depth to Water: **90 feet**

Minimum Depth: **65 feet**

Maximum Depth: **110 feet**

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 637507.51 **Northing (Y):** 3667241.37 **Radius:** 2000

***UTM location was derived from PLSS - see Help**

5/23/19 4:26 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 06364		L	LE		2	3	04	14S	34E	638230	3666871*	811	147	65	82
L 05558		L	LE	3	2	3	32	13S	34E	636497	3668359*	1506	140	110	30
L 06383		L	LE		4	4	33	13S	34E	639017	3668093*	1733	135	95	40
L 06604		L	LE	1	4	4	08	14S	34E	637353	3664948*	2298	208	144	64
L 02069		L	LE	1	3	3	28	13S	34E	637687	3669783*	2547	130	75	55
L 05821		L	LE		2	2	17	14S	34E	637460	3664447*	2794	110	75	35
L 00799 POD4		L	LE	3	3	3	27	13S	34E	639298	3669606*	2966	140	58	82
L 02068		L	LE	2	1	3	28	13S	34E	637882	3670186*	2968	100		
L 05659		L	LE		4	4	30	13S	34E	635777	3669655*	2969	135	65	70
L 09520		L	LE	2	2	2	18	14S	34E	635948	3664524*	3133	130		
L 02702		L	LE	3	3	1	28	13S	34E	637676	3670388*	3151	132	64	68
L 05951		L	LE		2	2	03	14S	34E	640632	3667710*	3159	140	84	56
L 06617		L	LE	2	2	1	34	13S	34E	639906	3669410*	3233	150	65	85
L 09415	R	L	LE	1	2	2	18	14S	34E	635748	3664524*	3237	130		
L 09416		L	LE		2	2	18	14S	34E	635849	3664425*	3268	130		
L 09520 S		L	LE	4	2	2	18	14S	34E	635948	3664324*	3308	180	70	110
L 00799 POD5	R	L	LE	1	1	3	27	13S	34E	639293	3670208*	3462	130	55	75
L 10915		L	LE				16	14S	34E	638483	3663849*	3529	154	54	100
L 11287		L	LE		3	1	02	14S	34E	641022	3667710	3545	79	45	34
L 09757		L	LE		1	3	16	14S	34E	637874	3663648*	3612	165	65	100
L 11605		L	LE	3	3	2	30	13S	34E	635262	3670352*	3836	198	80	118
L 02703		L	LE	1	1	2	28	13S	34E	638477	3671001*	3882	120	57	63
L 04781		L	LE			3	17	14S	34E	636469	3663425*	3955	120	75	45
L 05320		L	LE	3	1	1	27	13S	34E	639283	3670812*	3987	90	58	32
L 10172		L	LE		4	4	20	13S	34E	637364	3671287*	4048	180	65	115
L 03138		L	LE	3	4	3	20	13S	34E	636458	3671173*	4069	160		
L 00799		L	LE	1	1	1	27	13S	34E	639283	3671012*	4167	122	51	71
L 01886 S2		L	LE			3	21	13S	34E	637967	3671494*	4277	110	65	45
L 00690 S		L	LE		4	4	21	13S	34E	638976	3671309*	4324	111	60	51
L 00799 S	R	L	LE		2	1	27	13S	34E	639786	3670919*	4326	130	48	82
L 00096		L	LE	3	1	2	27	13S	34E	640088	3670824*	4415	141		
L 09980		L	LE		3	3	22	13S	34E	639379	3671315*	4482	152	60	92
L 06126		L	LE		1	1	01	14S	33E	632978	3667600*	4543	161	80	81

L 04866		L	LE		4	2	13	14S	33E	634234	3664001*	4606	145	80	65
L 00690	R	L	LE	1	1	4	21	13S	34E	638466	3671805*	4663	105	65	40
L 00690 POD4		L	LE	1	1	4	21	13S	34E	638466	3671805*	4663	120	70	50
L 00096 S		L	LE	2	1	2	27	13S	34E	640288	3671024*	4694	110	60	50
L 00690 S2		L	LE		2	4	21	13S	34E	638971	3671711*	4703	170	70	100
L 06629		L	LE	3	3	3	01	14S	33E	632893	3666293*	4710	241	165	76
L 06756		L	LE	2	2	2	02	14S	33E	642340	3667833*	4868	147	69	78

Average Depth to Water: **72 feet**

Minimum Depth: **45 feet**

Maximum Depth: **165 feet**

Record Count: 40

UTMNAD83 Radius Search (in meters):

Easting (X): 637507.51 **Northing (Y):** 3667241.37 **Radius:** 5000

***UTM location was derived from PLSS - see Help**

5/23/19 4:28 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 06364		L	LE		2	3	04	14S	34E	638230	3666871*	811	147	65	82
L 05558		L	LE	3	2	3	32	13S	34E	636497	3668359*	1506	140	110	30
L 06383		L	LE		4	4	33	13S	34E	639017	3668093*	1733	135	95	40
L 06604		L	LE	1	4	4	08	14S	34E	637353	3664948*	2298	208	144	64
L 02069		L	LE	1	3	3	28	13S	34E	637687	3669783*	2547	130	75	55
L 05821		L	LE		2	2	17	14S	34E	637460	3664447*	2794	110	75	35
L 00799 POD4		L	LE	3	3	3	27	13S	34E	639298	3669606*	2966	140	58	82
L 02068		L	LE	2	1	3	28	13S	34E	637882	3670186*	2968	100		
L 05659		L	LE		4	4	30	13S	34E	635777	3669655*	2969	135	65	70
L 09520		L	LE	2	2	2	18	14S	34E	635948	3664524*	3133	130		
L 02702		L	LE	3	3	1	28	13S	34E	637676	3670388*	3151	132	64	68
L 05951		L	LE		2	2	03	14S	34E	640632	3667710*	3159	140	84	56
L 06617		L	LE	2	2	1	34	13S	34E	639906	3669410*	3233	150	65	85
L 09415	R	L	LE	1	2	2	18	14S	34E	635748	3664524*	3237	130		
L 09416		L	LE		2	2	18	14S	34E	635849	3664425*	3268	130		
L 09520 S		L	LE	4	2	2	18	14S	34E	635948	3664324*	3308	180	70	110
L 00799 POD5	R	L	LE	1	1	3	27	13S	34E	639293	3670208*	3462	130	55	75
L 10915		L	LE				16	14S	34E	638483	3663849*	3529	154	54	100
L 11287		L	LE		3	1	02	14S	34E	641022	3667710	3545	79	45	34
L 09757		L	LE		1	3	16	14S	34E	637874	3663648*	3612	165	65	100
L 11605		L	LE	3	3	2	30	13S	34E	635262	3670352*	3836	198	80	118
L 02703		L	LE	1	1	2	28	13S	34E	638477	3671001*	3882	120	57	63
L 04781		L	LE			3	17	14S	34E	636469	3663425*	3955	120	75	45
L 05320		L	LE	3	1	1	27	13S	34E	639283	3670812*	3987	90	58	32
L 10172		L	LE		4	4	20	13S	34E	637364	3671287*	4048	180	65	115
L 03138		L	LE	3	4	3	20	13S	34E	636458	3671173*	4069	160		
L 00799		L	LE	1	1	1	27	13S	34E	639283	3671012*	4167	122	51	71
L 01886 S2		L	LE			3	21	13S	34E	637967	3671494*	4277	110	65	45
L 00690 S		L	LE		4	4	21	13S	34E	638976	3671309*	4324	111	60	51
L 00799 S	R	L	LE		2	1	27	13S	34E	639786	3670919*	4326	130	48	82
L 00096		L	LE	3	1	2	27	13S	34E	640088	3670824*	4415	141		
L 09980		L	LE		3	3	22	13S	34E	639379	3671315*	4482	152	60	92
L 06126		L	LE		1	1	01	14S	33E	632978	3667600*	4543	161	80	81

L 04866		L	LE		4	2	13	14S	33E	634234	3664001*	4606	145	80	65
L 00690	R	L	LE	1	1	4	21	13S	34E	638466	3671805*	4663	105	65	40
L 00690 POD4		L	LE	1	1	4	21	13S	34E	638466	3671805*	4663	120	70	50
L 00096 S		L	LE	2	1	2	27	13S	34E	640288	3671024*	4694	110	60	50
L 00690 S2		L	LE		2	4	21	13S	34E	638971	3671711*	4703	170	70	100
L 06629		L	LE	3	3	3	01	14S	33E	632893	3666293*	4710	241	165	76
L 06756		L	LE	2	2	2	02	14S	34E	642340	3667833*	4868	147	69	78
L 06539		L	LE		1	3	14	14S	34E	641093	3663695*	5043	110	51	59
L 01886 S		L	LE	4	1	1	21	13S	34E	637849	3672398*	5167	110	53	57
L 00612		L	LE		3	1	22	13S	34E	639369	3672119*	5220	125		
L 00612	R	L	LE		3	1	22	13S	34E	639369	3672119*	5220	125		
L 00690 POD2		L	LE			2	21	13S	34E	638763	3672309*	5220	100	75	25
L 00690 POD5		L	LE			2	21	13S	34E	638763	3672309*	5220	175	60	115
L 05873		L	LE		2	2	35	13S	33E	632558	3669208*	5325	180	95	85
L 04584		L	LE		1	2	02	14S	33E	632173	3667591*	5345	140	100	40
L 01887		L	LE	2	1	1	21	13S	34E	637849	3672598*	5367	100	71	29
L 00612 S2		L	LE		4	1	22	13S	34E	639771	3672125*	5382	140	60	80
L 00612 S2	R	L	LE		4	1	22	13S	34E	639771	3672125*	5382	140	60	80
L 05508		L	LE		2	2	22	14S	34E	640702	3662885*	5402	135	65	70
L 00691	R	L	LE	1	1	2	21	13S	34E	638456	3672609*	5450	105	65	40
L 00691 POD2		L	LE	1	1	2	21	13S	34E	638456	3672609*	5450	137	65	72
L 00691 POD2	R	L	LE	1	1	2	21	13S	34E	638456	3672609*	5450	137	65	72
L 09251		L	LE	3	2	2	14	14S	34E	642185	3664416*	5464	150	64	86
L 05276 S2		L	LE			1	12	14S	34E	642871	3665931*	5521	110	50	60
L 05978		L	LE	3	4	4	26	13S	33E	632453	3669509*	5539	155	95	60
L 05203 X3		L	LE	3	4	4	17	13S	34E	637241	3672794*	5559	100	65	35
L 06879		L	LE	2	3	4	21	14S	34E	638806	3661748	5644	140	63	77
L 09001		L	LE		2	1	02	14S	33E	631771	3667587*	5746	150		
L 00612 S		L	LE		2	1	22	13S	34E	639766	3672527*	5747	122	46	76
L 00612 S	R	L	LE		2	1	22	13S	34E	639766	3672527*	5747	122	46	76
L 05992		L	LE		4	3	35	13S	33E	631765	3667991*	5791	155	93	62
L 05203		L	LE		3	3	17	13S	34E	636134	3672877*	5800	118	58	60
L 00612 S3		L	LE		1	2	22	13S	34E	640168	3672534*	5923	130		
L 00612 S3	R	L	LE		1	2	22	13S	34E	640168	3672534*	5923	130		
L 09357		L	LE	4	3	1	23	14S	34E	641112	3662487	5965	140	60	80
L 02572		L	LE	2	2	1	35	13S	33E	631852	3669297*	6017	140	80	60
L 04847		L	LE		2	2	30	14S	34E	635896	3661208*	6244	150	80	70
L 04766		L	LE		4	1	23	13S	34E	641380	3672150*	6252	100	65	35
L 09950		L	LE	3	4	3	11	14S	33E	631706	3664671*	6345	180	90	90
L 00385		L	LE	2	1	1	23	13S	34E	641071	3672645*	6472			
L 05054		L	LE				23	14S	34E	641725	3662288*	6505	105	90	15
L 06452		L	LE		3	3	14	13S	34E	640967	3672948*	6673	140	75	65

L 02787	L	LE	4	1	1	14	14S	33E	631509	3664264*	6696	150	100	50
L 05204	L	LE	4	4	1	18	13S	34E	635016	3673565*	6796	97	67	30
L 01928	L	LE	1	1	3	24	13S	34E	642491	3671866*	6798	137	65	72
L 10651	L	LE		4	1	27	14S	34E	639925	3660863*	6821	173	61	112
L 00385 S	L	LE	1	1	2	23	13S	34E	641676	3672658*	6834	94		
L 05203 X	L	LE		2	2	17	13S	34E	637325	3674101*	6862	110	61	49
L 05104	L	LE			2	27	14S	34E	640529	3661070*	6871	100	75	25
L 05982	L	LE		4	2	23	13S	33E	632530	3672023*	6902	160	85	75
L 05203 X2	L	LE		4	1	18	13S	34E	634917	3673666*	6927	100	68	32
L 01943	L	LE		3	1	26	13S	33E	631340	3670399*	6928	160	80	80
L 06844 POD1	L	LE	2	3	3	29	14S	34E	636266	3660413	6939	140	76	64
L 10650	L	LE		3	2	27	14S	34E	640328	3660869*	6968	171	60	111
L 00321	L	LE	1	1	1	31	13S	35E	644130	3669476*	6989	92	71	21
L 09358	L	LE		1	2	10	14S	33E	630585	3665963*	7039	210	110	100
L 09940	L	LE	4	2	4	30	14S	34E	636006	3660303*	7098	163	65	98
L 01928 S	L	LE	1	2	3	24	13S	34E	642892	3671872*	7101	150		
L 02854	L	LE	1	1	4	34	13S	33E	630454	3668477*	7160	180	125	55
L 07692	L	LE		4	3	31	13S	35E	644645	3668176*	7198	80		
L 10227	L	LE		2	3	15	14S	33E	631134	3663892	7199	240	120	120
L 01927	L	LE	3	3	1	14	13S	34E	640856	3673651*	7231	132	62	70
L 09462	L	LE		4	3	28	14S	34E	638327	3660035*	7252	178	75	103
L 03226	L	LE		4	3	08	13S	34E	636515	3674492*	7318	193	150	43
L 06193 POD2	L	LE		4	1	03	14S	33E	630167	3667165*	7340	120	85	35
L 03001 S3	L	LE	4	4	4	09	13S	34E	639034	3674425*	7344	137	60	77
L 05168	L	LE	4	4	4	09	13S	34E	639034	3674425*	7344	100	57	43
L 01926 S	L	LE	1	3	1	14	13S	34E	640856	3673851*	7409	170	50	120
L 10226	L	LE		2	4	15	14S	33E	631019	3663555*	7462	238	120	118
L 04797 X4	L	LE			4	08	13S	34E	637118	3674699*	7467	130		
L 00294	L	LE	1	1	2	06	14S	35E	644952	3667878*	7471	110	80	30
L 04797 X6	L	LE			3	08	13S	34E	636313	3674687*	7540	115		
L 02537	L	LE	1	4	1	34	13S	33E	630048	3668874*	7636	163	105	58
L 11494	L	LE	4	2	4	14	13S	33E	632617	3673128*	7653	90		
L 06622	L	LE	2	2	2	33	14S	34E	639236	3659744*	7694	150	70	80
L 03077	L	LE	3	1	3	08	13S	34E	636006	3674788*	7694	85	53	32
L 04797 X2	L	LE			4	07	13S	34E	635509	3674677*	7699	130	58	72
L 01926	L	LE	2	4	1	14	13S	34E	641458	3673858*	7706	135	63	72
L 12779 POD1	L	LE			3	18	14S	35E	644145	3663308	7715	162	55	107
L 03001 S2	L	LE	4	2	4	09	13S	34E	639028	3674827*	7736	130	62	68
L 02075	L	LE		1	1	03	14S	33E	629760	3667561*	7754	170	110	60
L 00295 POD4	L	LE			2	06	14S	35E	645260	3667578*	7759	120	50	70
L 03001	L	LE	1	1	3	09	13S	34E	637615	3675010*	7769	130	62	68

L 03001 S		L	LE	4	2	3	09	13S	34E	637615	3675010*		7769	130	62	68
L 10229		L	LE		2	2	22	14S	33E	631031	3662751*		7880	240	120	120
L 09386		L	LE	3	4	3	24	14S	34E	643030	3661613*		7885	150		
L 06436		L	LE		4	2	32	14S	34E	637534	3659220*		8021	160	85	75
L 06065		L	LE			4	22	13S	33E	630136	3670450		8039	164	97	67
L 06614		L	LE	2	4	2	14	13S	34E	642261	3673871*		8157	131	65	66
L 06872		L	LE	2	3	2	31	14S	34E	635621	3659291*		8171	145	80	65
L 04860		L	LE	3	1	3	23	14S	33E	631343	3661851*		8188	247	115	132
L 10228		L	LE		1	2	22	14S	33E	630629	3662746*		8217	242	120	122
L 00295 POD3	R	L	LE	1	1	1	05	14S	35E	645756	3667890*		8273	140	62	78
L 06244		L	LE		2	4	22	14S	33E	631042	3661947*		8356	124	95	29
L 00295 S		L	LE	1	1	3	32	13S	35E	645744	3668694*		8363	90	70	20
L 01627		L	LE	2	3	2	07	13S	34E	635396	3675380*		8408	147	62	85
L 03787		L	LE	3	3	3	23	14S	33E	631349	3661449*		8454	163	100	63
L 00491 POD4		L	LE	4	1	3	22	14S	36E	645154	3663634		8454	285	241	44
L 06939		L	LE	4	4	1	31	14S	34E	635219	3659086*		8470	164	86	78
L 04325		L	LE	3	3	2	22	13S	33E	630419	3671896*		8480	182	165	17
L 04797 X		L	LE			2	07	13S	34E	635498	3675482*		8482	115	60	55
L 07040		L	LE		4	4	28	13S	33E	629337	3669569*		8495	212	100	112
L 01712 POD1		L	LE	1	4	3	22	13S	33E	630025	3671287*		8506	175	110	65
L 00295		L	LE	2	1	3	32	13S	35E	645944	3668694*		8560	73	60	13
L 00295	R	L	LE	2	1	3	32	13S	35E	645944	3668694*		8560	73	60	13
L 10154		L	LE		2	2	16	14S	33E	629400	3664340*		8611	150	105	45
L 01666 POD1		L	LE	4	4	2	28	13S	33E	629428	3670272*		8629	201	125	76
L 06396		L	LE		4	4	26	14S	34E	642351	3660094*		8633	125	68	57
L 09371		L	LE	3	3	2	04	14S	33E	628859	3667048*		8650	240	130	110
L 01710 POD1		L	LE		1	4	22	14S	33E	630641	3661942*		8673	150	80	70
L 08968		L	LE		1	4	22	14S	33E	630641	3661942*		8673	100		
L 06073		L	LE		1	2	22	13S	33E	630517	3672399*		8687	162	100	62
L 04391		L	LE	4	1	4	09	14S	33E	629086	3665038*		8704	140	110	30
L 07004		L	LE	1	4	4	32	14S	34E	637444	3658514*		8727	150	60	90
L 07008		L	LE	1	4	4	32	14S	34E	637444	3658514*		8727	148	78	70
L 07009		L	LE	1	4	4	32	14S	34E	637444	3658514*		8727	153	78	75
L 04776		L	LE	3	2	2	16	14S	33E	629299	3664239*		8740	155	110	45
L 06510 POD1		L	LE		1	2	19	14S	35E	645127	3662951		8744	130	55	75
L 06477		L	LE		4	4	11	13S	33E	632507	3674436*		8761	150	80	70
L 00601		L	LE	4	2	3	32	13S	35E	646346	3668500*		8927	100	80	20
L 10542		L	LE	4	2	4	34	14S	34E	640858	3658763*		9116	175	62	113
L 00068	R	L	LE	1	1	2	19	13S	35E	644877	3672705*		9173	121		
L 00068 S		L	LE		1	2	19	13S	35E	644978	3672606*		9197	130	46	84
L 06850		L	LE	2	2	2	05	15S	34E	637652	3658039*		9203	150		

L 03790		L	LE		2	2	05	15S	34E	637553	3657940*		9301	136	85	51
L 04374		L	LE	4	1	4	06	13S	34E	635380	3676386*		9388	170	70	100
L 02198		L	LE		3	3	26	14S	33E	631473	3659943*		9470	180	125	55
L 00068 S2		L	LE	4	1	3	20	13S	35E	645894	3671712*		9503	125	52	73
L 04374 S		L	LE	3	2	3	06	13S	34E	634778	3676381*		9538	170	70	100
L 07127		L	LE	4	4	4	25	14S	34E	644059	3660016*		9753	155	85	70
L 01957 S		L	LE	3	2	3	30	14S	35E	644663	3660430*		9879	125	48	77
L 01957 S	R	L	LE	3	2	3	30	14S	35E	644663	3660430*		9879	125	48	77
L 11681		L	LE	1	4	4	35	14S	34E	642273	3658584*		9882	196		
L 02229		L	LE	3	1	1	35	14S	33E	631378	3659440*		9921	147	105	42
L 01957		L	LE			2	30	14S	35E	645361	3661141*		9944	125		
L 05048		L	LE		2	2	17	14S	35E	647113	3664590*		9964	120	95	25
L 06558		L	LE		2	3	21	13S	33E	628513	3671570*		9981	251	110	141

Average Depth to Water: **78 feet**

Minimum Depth: **45 feet**

Maximum Depth: **241 feet**

Record Count: 170

UTMNAD83 Radius Search (in meters):

Easting (X): 637507.51 **Northing (Y):** 3667241.37 **Radius:** 10000

***UTM location was derived from PLSS - see Help**

5/23/19 4:28 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C: Lab Results and Chain of Custody

envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: HRL Compliance Solutions- Carlsbad

Samples Received: 5/20/2019
Job Number: 14078-0003
Work Order: P905058
Project Name/Location: Mars State #1

Report Reviewed By: Walter Hinchman, Laboratory Director

Date: 5/23/19

Envirotech Inc. certifies the test results meet all requirements of TNI unless footnoted otherwise.
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Envirotech, Inc, currently holds the appropriate and available Utah TNI certification NM009792018-1 for the data reported.

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
BG 1-0	P905058-01A	Solid	05/17/19	05/20/19	Glass Jar, 4 oz.
CS 1-0	P905058-02A	Solid	05/17/19	05/20/19	Glass Jar, 4 oz.
CS 2-0	P905058-03A	Solid	05/17/19	05/20/19	Glass Jar, 4 oz.
CS 3-0	P905058-04A	Solid	05/17/19	05/20/19	Glass Jar, 4 oz.

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

BG 1-0
P905058-01 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.0500	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
Toluene	ND	0.0500	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
Ethylbenzene	ND	0.0500	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
p,m-Xylene	ND	0.100	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
o-Xylene	ND	0.0500	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
Total Xylenes	ND	0.0500	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	40.0	mg/kg	2	1921004	05/20/19	05/21/19	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Oil Range Organics (C28-C40)	ND	50.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*86.9 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Surrogate: n-Nonane		*87.4 %*		*50-200*	*1921007*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Anions by 300.0/9056A									
Chloride	**28.1**	20.0	mg/kg	1	1921005	05/20/19	05/20/19	EPA 300.0/9056A	

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

CS 1-0

P905058-02 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Toluene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Ethylbenzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
p,m-Xylene	ND	0.0500	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
o-Xylene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Total Xylenes	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg	1	1921007	05/20/19	05/22/19	EPA 8015D	
Oil Range Organics (C28-C40)	ND	50.0	mg/kg	1	1921007	05/20/19	05/22/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.7 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Surrogate: n-Nonane		*99.7 %*		*50-200*	*1921007*	*05/20/19*	*05/22/19*	*EPA 8015D*	
Anions by 300.0/9056A									
Chloride	**349**	20.0	mg/kg	1	1921005	05/20/19	05/20/19	EPA 300.0/9056A	

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

CS 2-0

P905058-03 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Toluene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Ethylbenzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
p,m-Xylene	ND	0.0500	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
o-Xylene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Total Xylenes	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Oil Range Organics (C28-C40)	ND	50.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*87.9 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Surrogate: n-Nonane		*98.6 %*		*50-200*	*1921007*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Anions by 300.0/9056A									
Chloride	**5510**	40.0	mg/kg	2	1921005	05/20/19	05/21/19	EPA 300.0/9056A	

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

CS 3-0

P905058-04 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Toluene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Ethylbenzene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
p,m-Xylene	ND	0.0500	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
o-Xylene	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Total Xylenes	ND	0.0250	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8021B	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg	1	1921004	05/20/19	05/21/19	EPA 8015D	
Diesel Range Organics (C10-C28)	**510**	25.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Oil Range Organics (C28-C40)	**781**	50.0	mg/kg	1	1921007	05/20/19	05/21/19	EPA 8015D	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.0 %*		*50-150*	*1921004*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Surrogate: n-Nonane		*131 %*		*50-200*	*1921007*	*05/20/19*	*05/21/19*	*EPA 8015D*	
Anions by 300.0/9056A									
Chloride	**2940**	20.0	mg/kg	1	1921005	05/20/19	05/21/19	EPA 300.0/9056A	

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1921004 - Purge and Trap EPA 5030A										
Blank (1921004-BLK1)				Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Benzene	ND	0.0250	mg/kg							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
p,m-Xylene	ND	0.0500	"							
o-Xylene	ND	0.0250	"							
Total Xylenes	ND	0.0250	"							
Surrogate: 4-Bromochlorobenzene-PID	*8.31*		*"*	*8.00*		*104*	*50-150*			
LCS (1921004-BS1)				Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Benzene	5.16	0.0250	mg/kg	5.00		103	70-130			
Toluene	5.60	0.0250	"	5.00		112	70-130			
Ethylbenzene	5.57	0.0250	"	5.00		111	70-130			
p,m-Xylene	11.4	0.0500	"	10.0		114	70-130			
o-Xylene	5.56	0.0250	"	5.00		111	70-130			
Total Xylenes	17.0	0.0250	"	15.0		113	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*8.36*		*"*	*8.00*		*104*	*50-150*			
Matrix Spike (1921004-MS1)		**Source: P905058-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Benzene	10.1	0.0500	mg/kg	10.0	ND	101	54.3-133			
Toluene	10.9	0.0500	"	10.0	ND	109	61.4-130			
Ethylbenzene	10.9	0.0500	"	10.0	ND	109	61.4-133			
p,m-Xylene	22.4	0.100	"	20.0	ND	112	63.3-131			
o-Xylene	10.9	0.0500	"	10.0	ND	109	63.3-131			
Total Xylenes	33.3	0.0500	"	30.0	ND	111	63.3-131			
Surrogate: 4-Bromochlorobenzene-PID	*16.8*		*"*	*16.0*		*105*	*50-150*			
Matrix Spike Dup (1921004-MSD1)		**Source: P905058-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Benzene	10.2	0.0500	mg/kg	10.0	ND	102	54.3-133	1.17	20	
Toluene	11.0	0.0500	"	10.0	ND	110	61.4-130	1.04	20	
Ethylbenzene	11.0	0.0500	"	10.0	ND	110	61.4-133	1.00	20	
p,m-Xylene	22.6	0.100	"	20.0	ND	113	63.3-131	0.974	20	
o-Xylene	11.0	0.0500	"	10.0	ND	110	63.3-131	0.747	20	
Total Xylenes	33.6	0.0500	"	30.0	ND	112	63.3-131	0.900	20	
Surrogate: 4-Bromochlorobenzene-PID	*16.5*		*"*	*16.0*		*103*	*50-150*			

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1921004 - Purge and Trap EPA 5030A										
Blank (1921004-BLK1)				Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Gasoline Range Organics (C6-C10)	ND	20.0	mg/kg							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.21*		*"*	*8.00*		*90.1*	*50-150*			
LCS (1921004-BS2)				Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Gasoline Range Organics (C6-C10)	48.6	20.0	mg/kg	50.0		97.2	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*7.08*		*"*	*8.00*		*88.5*	*50-150*			
Matrix Spike (1921004-MS2)		**Source: P905058-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Gasoline Range Organics (C6-C10)	99.5	40.0	mg/kg	100	ND	99.5	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*14.4*		*"*	*16.0*		*89.7*	*50-150*			
Matrix Spike Dup (1921004-MSD2)		**Source: P905058-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 0						
Gasoline Range Organics (C6-C10)	99.4	40.0	mg/kg	100	ND	99.4	70-130	0.0833	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*14.1*		*"*	*16.0*		*88.1*	*50-150*			

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1921007 - DRO Extraction EPA 3570										
Blank (1921007-BLK1)				Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Diesel Range Organics (C10-C28)	ND	25.0	mg/kg							
Oil Range Organics (C28-C40)	ND	50.0	"							
Surrogate: n-Nonane	*46.2*		*"*	*50.0*		*92.5*	*50-200*			
LCS (1921007-BS1)				Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Diesel Range Organics (C10-C28)	460	25.0	mg/kg	500		92.0	38-132			
Surrogate: n-Nonane	*34.2*		*"*	*50.0*		*68.4*	*50-200*			
Matrix Spike (1921007-MS1)	**Source: P905050-01**			Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Diesel Range Organics (C10-C28)	463	25.0	mg/kg	500	ND	92.6	38-132			
Surrogate: n-Nonane	*46.5*		*"*	*50.0*		*93.1*	*50-200*			
Matrix Spike Dup (1921007-MSD1)	**Source: P905050-01**			Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Diesel Range Organics (C10-C28)	462	25.0	mg/kg	500	ND	92.4	38-132	0.217	20	
Surrogate: n-Nonane	*44.9*		*"*	*50.0*		*89.7*	*50-200*			

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Anions by 300.0/9056A - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1921005 - Anion Extraction EPA 300.0/9056A										
Blank (1921005-BLK1)				Prepared & Analyzed: 05/20/19 1						
Chloride	ND	20.0	mg/kg							
LCS (1921005-BS1)				Prepared & Analyzed: 05/20/19 1						
Chloride	250	20.0	mg/kg	250		100	90-110			
Matrix Spike (1921005-MS1)		**Source: P905056-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Chloride	10500	100	mg/kg	1250	10100	37.0	80-120			SPK2
Matrix Spike Dup (1921005-MSD1)		**Source: P905056-01**		Prepared: 05/20/19 1 Analyzed: 05/21/19 1						
Chloride	10500	100	mg/kg	1250	10100	32.1	80-120	0.578	20	SPK2

HRL Compliance Solutions- Carlsbad	Project Name:	Mars State #1	
112 S 6th St.	Project Number:	14078-0003	**Reported:**
Artesia NM, 88210	Project Manager:	Natalie Gordon	05/23/19 10:58

Notes and Definitions

SPK2	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to native analyte concentration at 4 times or greater than the spike concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
**	Methods marked with ** are non-accredited methods.

Project Information | Chain of Custody | Page 1 of 1

Client: HRL Compliance Solutions		Report Attention	
Project: MARS State #1		Report due by:	
Project Manager: Natalie Gordon		Attention:	
Address:		Address:	
City, State, Zip		City, State, Zip	
Phone:		Phone:	
Email: Natalie		Email: Natalie	

Lab Use Only		TAT		EPA Program		
Lab WO# P905058	Job Number 14078-0003	1D	3D	RCRA	CWA	SDWA

State			
NM	CO	UT	AZ
✓			

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	BGDOC	Remarks
1445	5/17	S	1	BG 1-0	1							X	
↓	↓	↓	↓	CS 1-0	2							↓	
				CS 2-0	3								
↓	↓	↓	↓	CS 3-0	4							↓	

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Natalie Gordon

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Natalie Gordon	5/17/19	1611		5-17-19	1611
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
FedEx	5/20/19	8:00	Jessica Mayfield	5/20/19	8:00

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech Analytical Laboratory
5796 US Highway 64, Farmington, NM 87401
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envirotech-inc.com
labadmin@envirotech-inc.com

Appendix D: Field Notes

17 May 2019 Mack Energy - Mars State #1

Arrived @ 1430 - 45 miles from Lea KG State
Conditions: Warm ~85°F and windy 25-35 mph (S-SW)
Equipment: 4-gas, Trimble, Camera
Description: Release occurred at well head/pump-jack resulting in ~5-6 bbls oil about 10' radius around well-head plus spray about 20' extending southward toward tank battery. Contaminated soil was removed. No backfill? Onsite - no apparent staining nor depression where soil was removed. Trimbled approx. release boundary based on dimensions provided (see above). Collected three confirmation samples plus one background approximately 30 ft west of pad edge. No field screens run due to high winds & gusts. Samples for lab were jarred. Met w/ Envirotech lab rep in Hobbs to get samples shipped.

Departed site @ 1515 for Hobbs. Mileage=
Departed Hobbs @ 1615 for Artesia Mileage=
Arrived in Artesia @ 1745 + truck unload = 1800.

Scale: 1 square = _____

Scale: 1 square = _____