APPROVED
By CHernandez at 3:05 pm, Aug 28, 2018

1RP-5118

DELINEATION PLAN
New Mexico State S Tank Battery
Lea County, New Mexico

Latitude: 32.421249° North
Longitude: -103.135452° West

LAI Project No. 18-0153-01

August 8, 2018

Prepared for:
XTO Energy, Inc.
6401 Holiday Hill Road, Building 5
Midland, Texas 79707

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 205
Midland, Texas 79701

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Certified Professional Geoscientist #10490

Rachel E. Owen
Staff Geologist

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1.0 INTRODUCTION

Larson & Associates, Inc., (LAI), on behalf of XTO Energy, Inc. (XTO) has prepared this delineation plan for submittal to the New Mexico Oil Conservation Division (OCD) District 1 for a produced water spill at the New Mexico State S Tank Battery (Site) located in Unit F (SE/4, NW/4), Section 2, Township 22 South, Range 37 East in Lea County, New Mexico. The surface and mineral ownership is State of New Mexico. The geodetic position is North 32.421249° and West -103.135452°. Figure 1 presents a topographic map.

1.1 Background

The spill occurred on June 27, 2018, due to a failure of a nipple on the tank level switch at the water tank causing approximately 71.30 barrels (bbls) of produced water to be released inside the earthen containment. Approximately 70.00 bbls were recovered. The affected area measures approximately 1,458.26 square feet. The initial C-141 was submitted to OCD District 1 on July 5, 2018 and was approved on July 9, 2018. OCD assigned the release remediation permit number 1RP-5118. Appendix A presents the initial C-141.

1.2 Physical Setting

The Physical Setting is as follows:

- The surface elevation is approximately 3,365 feet above mean sea level (msl);
- The topography slopes to the southeast;
- The nearest surface water feature is a seasonal playa located approximately 800 feet north of the site;
- Ephemeral monument draw is located approximately 1.5 miles east of the Site;
- There are no lateral connections between the Site, seasonal playa, and Monument Draw;
- The soils are designated as “Berino-Cacique loamy fine sand, 0 to 3 percent slopes”, consisting of loamy fine sand about 12 inches thick and underlain by a sandy clay loam about 20 inches thick (bgs). The soil occurs over cemented material (caliche) present at approximately 28 inches below ground surface (bgs);
- The surface geology is designated as eolian and piedmont deposits (Holocene to middle Pleistocene) interbedded eolian sands and piedmont-slope deposits of the Tertiary-age Blackwater Draw and Ogallala formations, in descending order;
- Groundwater occurs in the Ogallala formation at approximately 30 feet bgs based on a monitoring well (MW-18) associated with a nearby gas plant and located about 1,500 feet west of the Site (refer to Figure 1);
- The nearest freshwater well based on State of New Mexico Office of the State Engineer (OSE) records is located in Unit M (SW/4, SW/4), Section 2, Township 22 South, Range 37 East, approximately 2,060 feet south from the Site.

1.3 Recommended Remediation Action Levels

Recommended remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD in *“Guidelines for Remediation of Leaks, Spills and Releases, pp. 6-7, August 13, 1993”:*

Criteria	*Result*	*Score*
Depth-to-Groundwater	<50 feet	20
Wellhead Protection Area	No	0
Distance to Surface Water Body	<200 - 1,000 Horizontal Feet	10

The following RRAL apply to the release for ranking score: 30

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 100 mg/Kg

Depth to groundwater less than 100 feet bgs requires vertical delineation for chloride to 600 milligrams per kilogram (mg/Kg) and maintained for at least 10 feet farther in depth.

2.0 DELINEATION PLAN

LAI proposes to collect soil samples at seven (7) locations within the containment for vertical delineation and four (4) locations outside the spill for horizontal delineation including each cardinal direction (north, south, east and west) of the spill. The samples will be collected at 1 foot intervals to a depth of approximately 4 feet bgs and at 2 foot intervals to a depth of approximately 12 feet bgs with direct push technology (DPT) depending on subsurface conditions. The soil samples will be delivered under chain of custody and preservation to a National Environmental Laboratory Accreditation Program (NLAP) accredited laboratory. The upper sample from each location will be analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and total petroleum hydrocarbons (TPH) including gasoline range organics (C6-C12), diesel range organics (>C6-C28) and oil range organics (>C28-C35) by EPA Method E300. Additional samples may be analyzed pending the initial laboratory results. Further delineation may be required to achieve the RRAL and chloride delineation limit. Figure 2 presents an aerial map showing the proposed soil sample locations. Appendix B presents photographs.

3.0 REMEDIATION PLAN

XTO will submit a remediation plan to the OCD upon completion of the delineation.

Figures

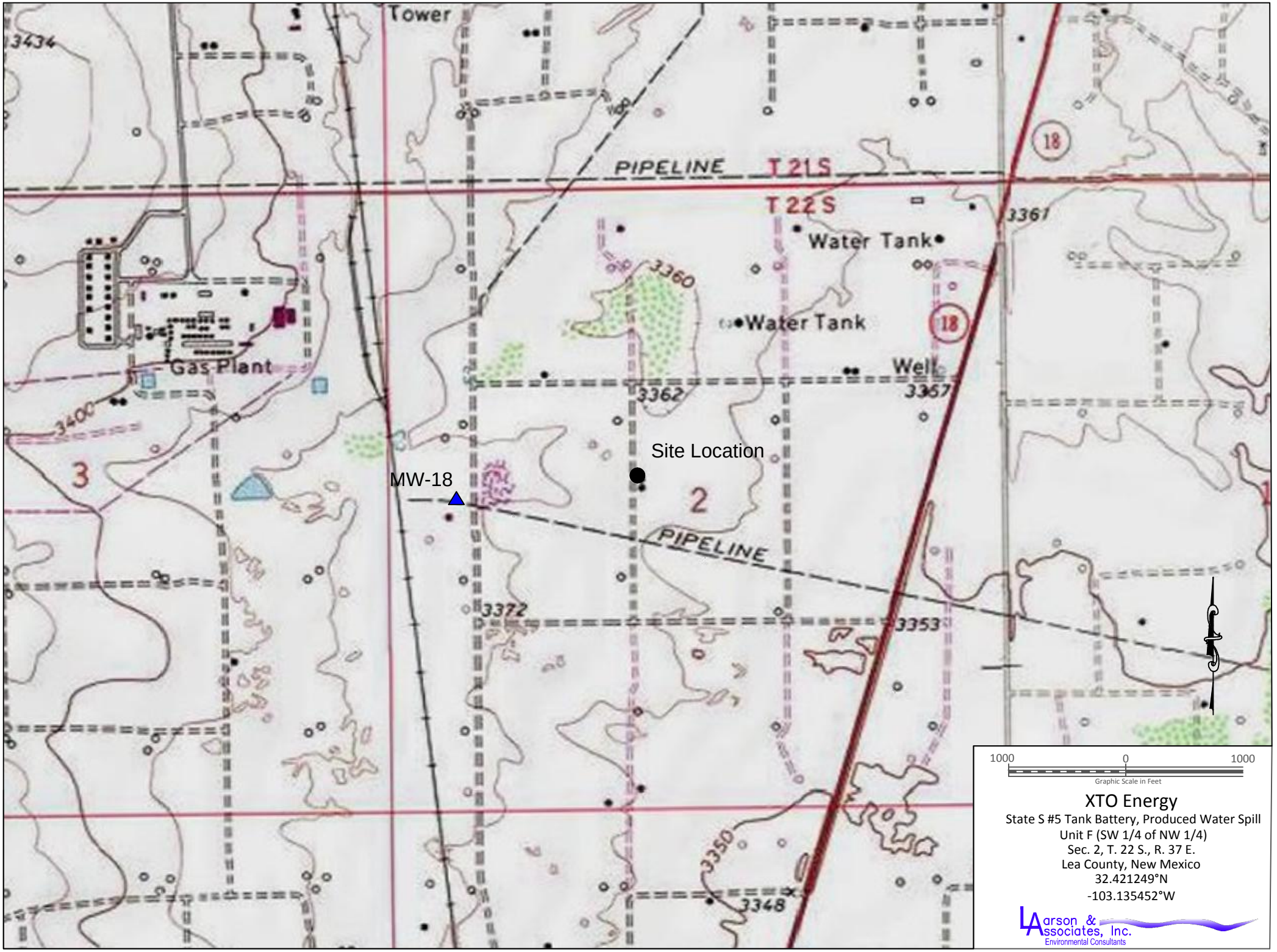

Figure 1 - Topographic Map

Figure 2- Aerial Map

Figure 3 - Site Map Showing Proposed Soil Sample Locations

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

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

X Initial Report ☐ Final Report

Name of Company XTO Energy	Contact Scott Kaufman
Address 6401 Holiday Hill Rd. Building 5 Midland TX 79707	Telephone No. 432-234-3054
Facility Name NM State S Battery	Facility Type Tank Battery

Surface Owner New Mexico State	Mineral Owner New Mexico State	API No. 30-025-25268

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	2	22S	37E					Lea

Latitude 32.421249 **Longitude** -103.135452 NAD83

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 71.30 bbls.	Volume Recovered 70.00 bbls.
Source of Release Tank/ Nipple	Date and Hour of Occurrence 6/27/2018 4:30pm	Date and Hour of Discovery 6/27/2018 4:30pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Voice message to NM State Land (Ryan Mann), Voice message & Email to NMOCD Olivia Yu.	
By Whom? Scott Kaufman	Date and Hour 6/27/2018 6:00pm (MT)	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

N/A

RECEIVED
By Olivia Yu at 7:29 am, Jul 09, 2018

Describe Cause of Problem and Remedial Action Taken.*

Due to corrosion and age a 2" nipple coming out of a fiber glass tank that had the ball valve attached had broken off at the tank threads while electrician was servicing the head switch. Equipment was replaced immediately & leak was stopped.

Describe Area Affected and Cleanup Action Taken.*

1,458.26 ft² was affected and picked up by Vac trucks immediately. Once RP# is issued final clean up measures will be taken by XTO Energy to complete remediation.

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: Scott Kaufman

Printed Name: Scott Kaufman

Title: Oil Center Production Foreman

E-mail Address: scott_kaufman@xtoenergy.com

Date: 7/5/2018 Phone: 432-234-3054

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 7/9/2018 Expiration Date:

Conditions of Approval: see attached directive

Attached ☒

* Attach Additional Sheets If Necessary

1RP-5118 nOY1819027249 pOY1819027667

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _7/5/2018_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-5118__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _8/9/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

From:	Kaufman, Scott
To:	Yu, Olivia, EMNRD
Cc:	Pennington, Shelby; Parks, Doug; Meadows, Derrick; Kemp, Deeann
Subject:	Unauthorized release on XTO Energy NM State S Battery follow up
Date:	Thursday, June 28, 2018 4:54:34 PM
Attachments:	image001.png NM State S Batt spill calc..png

Good afternoon Mrs. Yu,

I'm follow up to late yesterday's release that XTO Energy had on 6/27/2018 of produced water only from New Mexico State S battery GPS coordinates are as follow N 32.421269 & W -103.135447. The release was caused by an aged and corroded nipple on the tank holding the head switch assembly that had broken off causing a 2" hole inlet.

Approx. release total was 71.30 bbls of Produced water. We recovered 70.00 bbls total, I have attached Spill calc for you as well.

I have contacted Ryan Mann with State as this location is on State property, we will be remediating when approved and following up with a C-141 soon.

If you should have any further questions or need anything please feel free to contact me as always….E-mail address above and cell 432-234-3054.

Thank you,

Scott Kaufman

Production Foreman
Permian Division
Eunice & Oil Center NM, EMSU & AGU Leases

XTO ENERGY a subsidiary of ExxonMobil

Appendix B

Photographs

New Mexico “S” State Tank Battery #5 Viewing East, June 28, 2018

Spill Area Viewing East, June 28, 2018

Spill Area Viewing Southwest, June 28, 2018

Spill Area Viewing South, June 28, 2018

Spill Area Viewing Southeast, June 28, 2018