

## SITE INFORMATION

### Report Type: Work Plan 2RP-2777

#### General Site Information:

Site:	ESDU #2					
Company:	SM Energy Company					
Section, Township and Range	Section 13	T 18S	R 31E			
Lease Number:	API-30-015-25847					
County:	Eddy County					
GPS:	32.7411437° N			103.815492° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From intersection of HWY 529 and CR 126A (Maljamar Rd) in rural Eddy County, Travel south on 126A for approximately 4.3 miles, turn WEST and continue for approximately 1.10 mile until road turns SOUTH and continue for approximately 0.6 miles, turn NORTH onto lease road for 0.20 miles to T in road, turn EAST and continue for 0.10 miles to location					

#### Phone number:

Date Released:	1/29/2015
Type Release:	Produced Water and Crude Oil
Source of Contamination:	Polished rod liner leak
Fluid Released:	25.3 bbls water / 4.5 bbls oil
Fluids Recovered:	16.2 bbls water / 2.9 bbls oil

#### Official Communication:

Name:	Zack Luikens	Ike Tavaréz
Company:	SM Energy Company	Tetra Tech
Address:	6301 Holiday Hill Road	4000 N. Big Spring
		Ste 401
City:	Midland Texas, 79707	Midland, Texas
Phone number:	(432) 212-3408	(432) 687-8110
Fax:		
Email:	<a href="mailto:zluikens@sm-energy.com">zluikens@sm-energy.com</a>	<a href="mailto:Ike.Tavaréz@tetrattech.com">Ike.Tavaréz@tetrattech.com</a>

#### Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
<b>Total Ranking Score:</b>		<b>0</b>

#### Acceptable Soil RRAL (mg/kg)

Benzene	Total BTEX	TPH
10	50	5,000



**TETRA TECH**

June 13, 2016

Mr. Mike Bratcher  
Environmental Engineer Specialist  
Oil Conservation Division, District 2  
811 S. First Street  
Artesia, New Mexico 88210

**Re: Work Plan for SM Energy Company  
ESDU #2 Well  
Section 13, Township 18S, Range 31E  
Eddy County, New Mexico  
2RP-2777**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by SM Energy Company (SM Energy) to assess a spill at the EDSU #2, located in Section 13, Township 18S, Range 31E, Eddy County, New Mexico (Site). The spill site coordinates are N 32.741437°, W -103.815492°. The site location is shown on Figures 1 and 2.

### **Background**

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on January 29, 2015. The spill at the rod liner released approximately 25.3 barrels of produced water and 4.5 barrels of oil. SM Energy was able to recover approximately 16.2 barrels of produced water and 2.9 barrels of oil with a vacuum truck. To alleviate the problem, SM Energy repaired the rods that caused the problem. The spill impacted an area on the pad approximately 130' x 135'. The spill areas are shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

### **Groundwater**

No wells were located listed in Section 13. According to the Geology and Groundwater Resources of Eddy County, NM (Report 3) and the New Mexico State Engineers Well Reports, all wells listed in adjacent Sections showing a depth to water greater than 300' below surface. In addition, the NMOCD groundwater map showed groundwater depths between 250' and 300' below surface. The groundwater data is shown in Appendix B.

**Tetra Tech**

4000 North Big Spring, Ste 401 Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 [www.tetratech.com](http://www.tetratech.com)



## **Regulatory**

A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

## **Soil Assessment and Analytical Results**

### Initial Soil Assessment

On February 16, 2015, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted areas. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix E. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, auger hole (AH-3) showed an elevated concentration of TPH and total BTEX at a depth of 0'-1' below surface of 10,970 mg/kg and 122 mg/kg, respectively. The TPH and BTEX concentrations declined with depth to below the RRALs at 1.0'-1.5' below surface. Auger holes (AH-1, AH-2, AH-4, AH-5, AH-6, and AH-7) were below the RRAL's for TPH and BTEX.

The samples collected in the area of auger holes (AH-1 and AH-6) did not show a significant chloride impact to the subsurface soils. However, samples collected in the areas of auger holes (AH-2 and AH-4) showed a shallow chloride impact with concentrations of 1,660 mg/kg and 2,900 mg/kg at depths of 0'-1.5' below surface, which then declined with depth to concentrations of 293 mg/kg and 147 mg/kg at 3.0'-3.5'. The area of auger hole (AH-3) showed a deeper chloride impact to the soils with a chloride high of 20,400 mg/kg at 5.0'-5.5' below surface, which then declined with depth to 147 mg/kg at 9.0'-9.5' below surface.

In addition, auger hole (AH-5) also showed a shallow chloride impact at 0'-1' of 2,700 mg/kg and auger hole (AH-7) did not show a significant impact the surface, both areas showed chloride concentrations that increased with depth to 2,940 mg/kg at 6.0'-6.5' and 2,100 mg/kg at 4.0'-4.5' below surface, respectively. Deeper samples were not collected in these areas due to dense formation, and these areas were not vertically defined.



According to the Application for Permit to Drill, approved in December 1987, a closed reserve pit was previously located in the areas of auger holes (AH-4, AH-5, AH-6 and possibly AH-7). Based on this information, it appears that the deeper chloride impact encountered in these areas appear to be from the reserve pit. The Application for Permit to Drill is enclosed in Appendix C.

#### Work Plan Submittal and Proposed Action

On June 1, 2015, Tetra Tech submitted a Work Plan to the NMOCD and BLM for approval. The NMOCD approved the Work Plan with conditions including excavating the area of auger hole (AH-3) to 4' with a liner, or 6.5' with no liner. Additionally, the NMOCD requested vertical delineation of the areas of auger holes (AH-5 and AH-7). In addition to the NMOCD requests, Tetra Tech proposed to resample of the previous sampled areas due to the heavy rains that occurred in the area. The NMOCD and BLM approved the resampling of these areas.

#### Site Re-sampling and Borehole Drilling

On January 14, 2016 and February 17, 2016 Tetra Tech resampled the areas of auger holes (AH-2, AH-3 and AH-4) with a hand auger and used an air rotary rig for the areas of AH-5 and AH-7. The sampling results are summarized in Table 1. The auger hole and borehole locations are shown on Figure 3.

Referring to Table 1, the area of auger hole (AH-2) was resampled at 0'-1' below surface and showed a significant decline in chloride concentration from the initial sampling event, with the concentrations decreasing from 1,660 mg/kg to 645 mg/kg. The area of auger hole (AH-3) initially showed elevated chloride concentrations between 2.0' to 6.5' below surface, with concentrations ranging from 6,000 mg/kg to 20,400 mg/kg. However, the samples collected during the resampling event showed significantly lower chloride concentrations at the same depth intervals, with concentrations ranging from 995 mg/kg to 2,790 mg/kg. Additionally, samples collected in the area of auger hole (AH-4) showed chloride concentrations slightly elevated with concentrations of 3,330 mg/kg at 0'-1' and 1,220 mg/kg at 1.0'-1.5' below surface.

In addition, two (2) boreholes were installed in the areas of AH-5 (BH-1) and AH-7 (BH-2) to further delineate the chloride impact detected in these areas. The chloride concentrations in the area of borehole (BH-1) showed chloride concentrations increasing with depth to 3,440 mg/kg at 6.0'-7.0' below surface, before significantly declining to 192 mg/kg at 24'-25' below surface. The area of BH-2 (AH-7) showed chloride concentrations that increased with depth to 6,620 mg/kg at 14'-15' below surface, before declining to 48.4 mg/kg at 49'-50' below surface. The borehole drilling logs are shown in Appendix D.



### NMOCD Meeting

On April 14, 2016, Tetra Tech met with the NMOCD to discuss resampling results of auger holes (AH-2, AH-3 and AH-4) and the delineation of auger holes (AH-5 and AH-7). The NMOCD approved the declining chlorides in the shallow soils in the area of auger hole (AH-2). However, the NMOCD requested the area of auger hole (AH-3) be resampled to a depth of 9.5' below surface to re-confirm the chloride reduction in the area. The NMOCD also requested an additional auger hole (AH-3A) between the well and auger hole (AH-3). Additionally, the NMOCD requested the area of auger hole (AH-4) be scraped to 1.5' below surface for site closure.

### Additional Sampling

Per the NMOCD's request, the area of auger hole (AH-3) was resampled on April 28, 2016. Referring to Table 1, the additional samples collected in the area of auger hole (AH-3) were similar to the previous sampling event. In addition, auger hole (AH-3A) showed an elevated chloride concentration at 4'-4.5' below surface, with a concentration of 1,640 mg/kg. Chloride concentrations from 5' to 9.5' below surface ranged from 67.8 mg/kg to 465 mg/kg. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix E. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

### **Work Plan**

SM Energy proposes to remove the impacted material as highlighted (orange) in Table 1 and shown on Figure 4. The area of auger hole (AH-4) will be excavated to a depth of approximately 1.5' below surface, per the NMOCD's request.

Referring to the areas of auger holes (AH-2 and AH-3), which showed significant decline in chloride concentrations, likely due to recent rain events, and the deep depth to groundwater in the area, SM Energy proposes to leave the soil in place. Additionally, the chloride impact in the areas of auger holes (AH-5 and AH-7) was vertically defined. Due to the impacted soil being within the horizontal bounds of a reserve pit, as indicated by the Application for Permit to Drill and the deep depth to groundwater in the area, SM Energy proposes to leave the soil in place, as it does not appear to be an environmental concern.

Once the area of auger hole (AH-4) is excavated to the appropriate depth, the area will then be backfilled with clean material and brought to surface grade. The excavated soil will be transported to a proper disposal facility.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. Any remaining impact not accessible to be removed will be deferred until abandonment.



**TETRA TECH**

Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

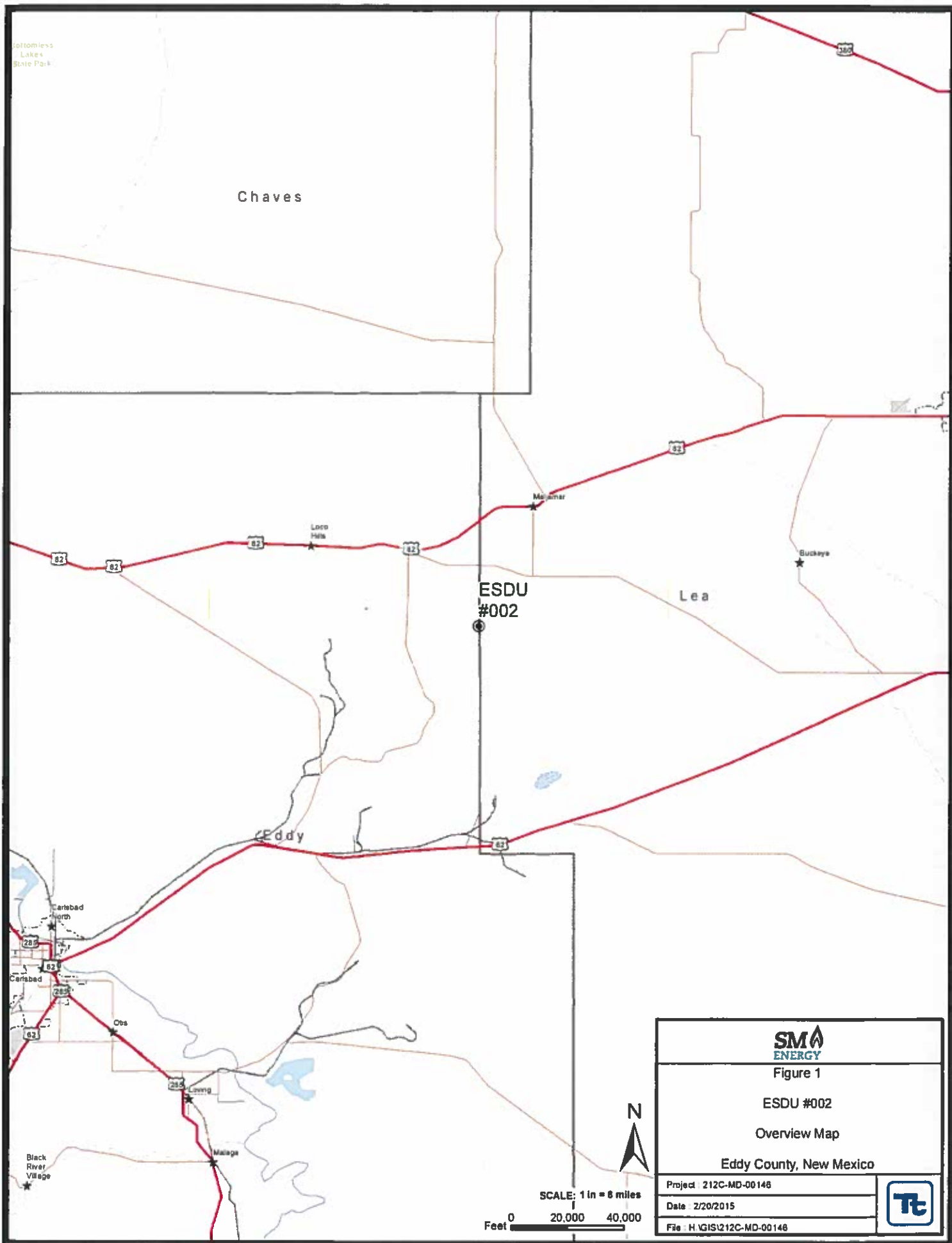
Respectfully submitted,  
**TETRA TECH, Inc.**

Ike Tavaréz,  
Senior Project Manager, P.G.

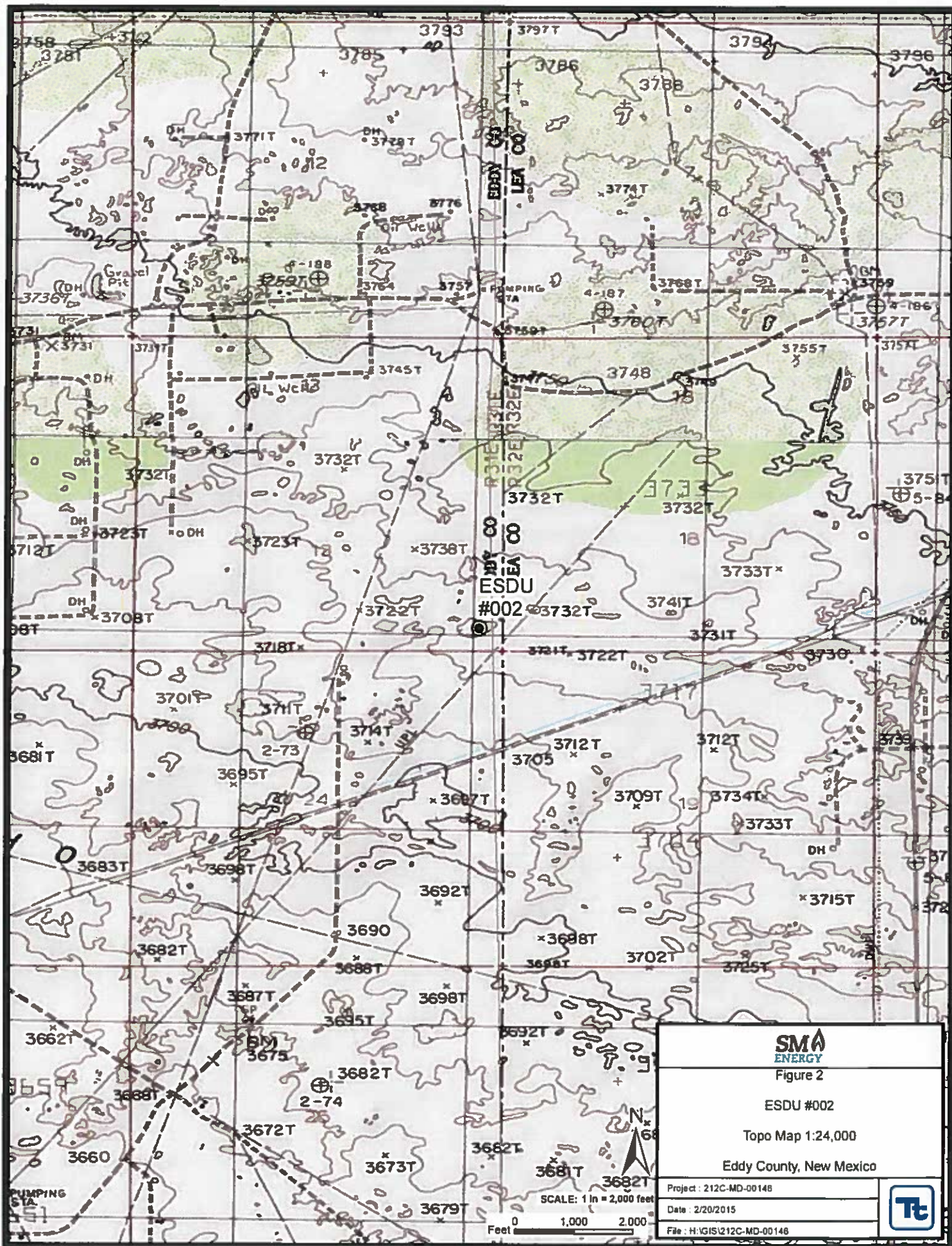
cc: Zack Luikens – SM Energy  
Shelly Tucker - BLM

## Figures

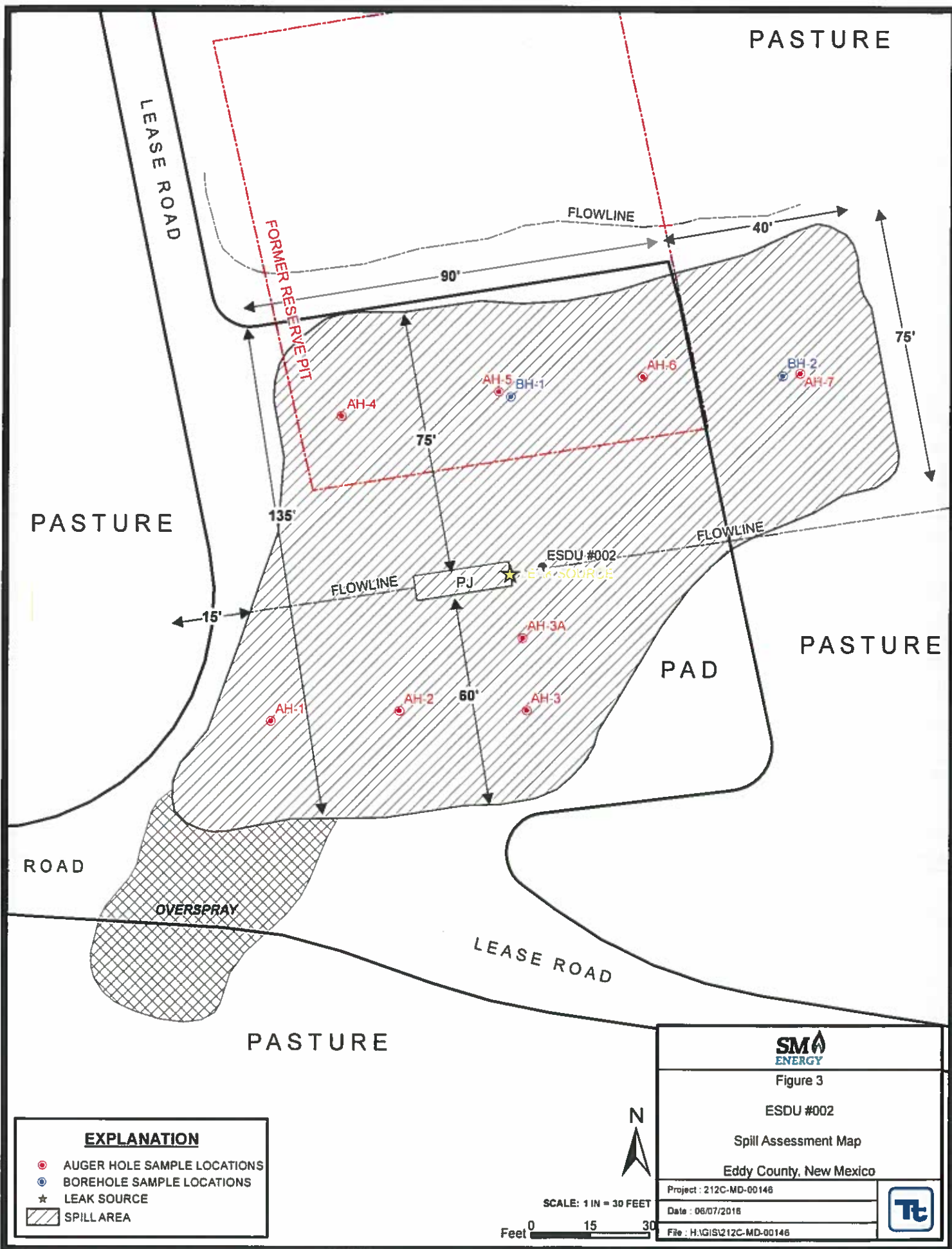




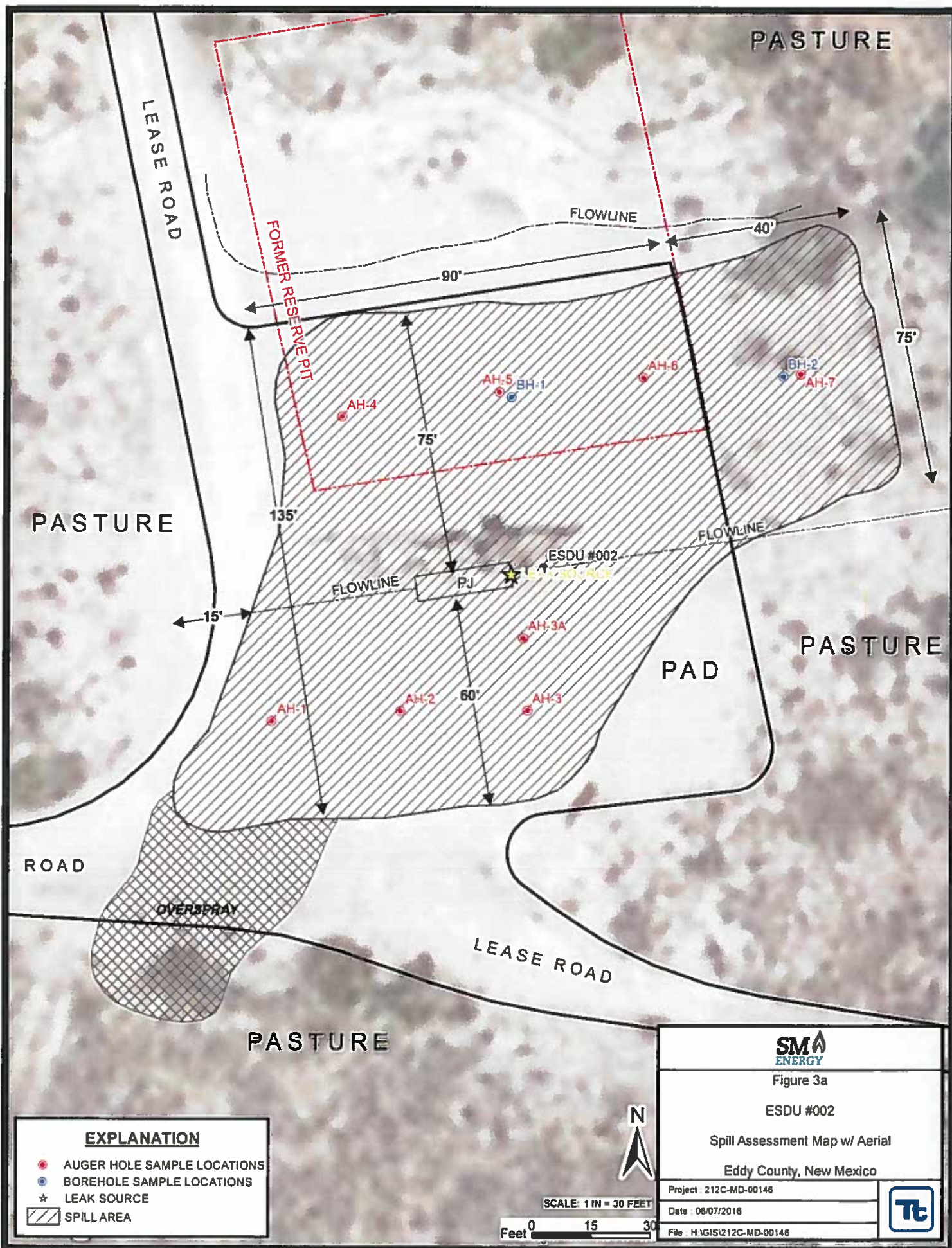












PASTURE

LEASE ROAD

FORMER RESERVE PIT

FLOWLINE

PASTURE

PAD

ROAD

OVERSPRAY

LEASE ROAD

PASTURE



SCALE: 1 IN = 30 FEET

Feet 0 15 30



Figure 3a

ESDU #002

Spill Assessment Map w/ Aerial

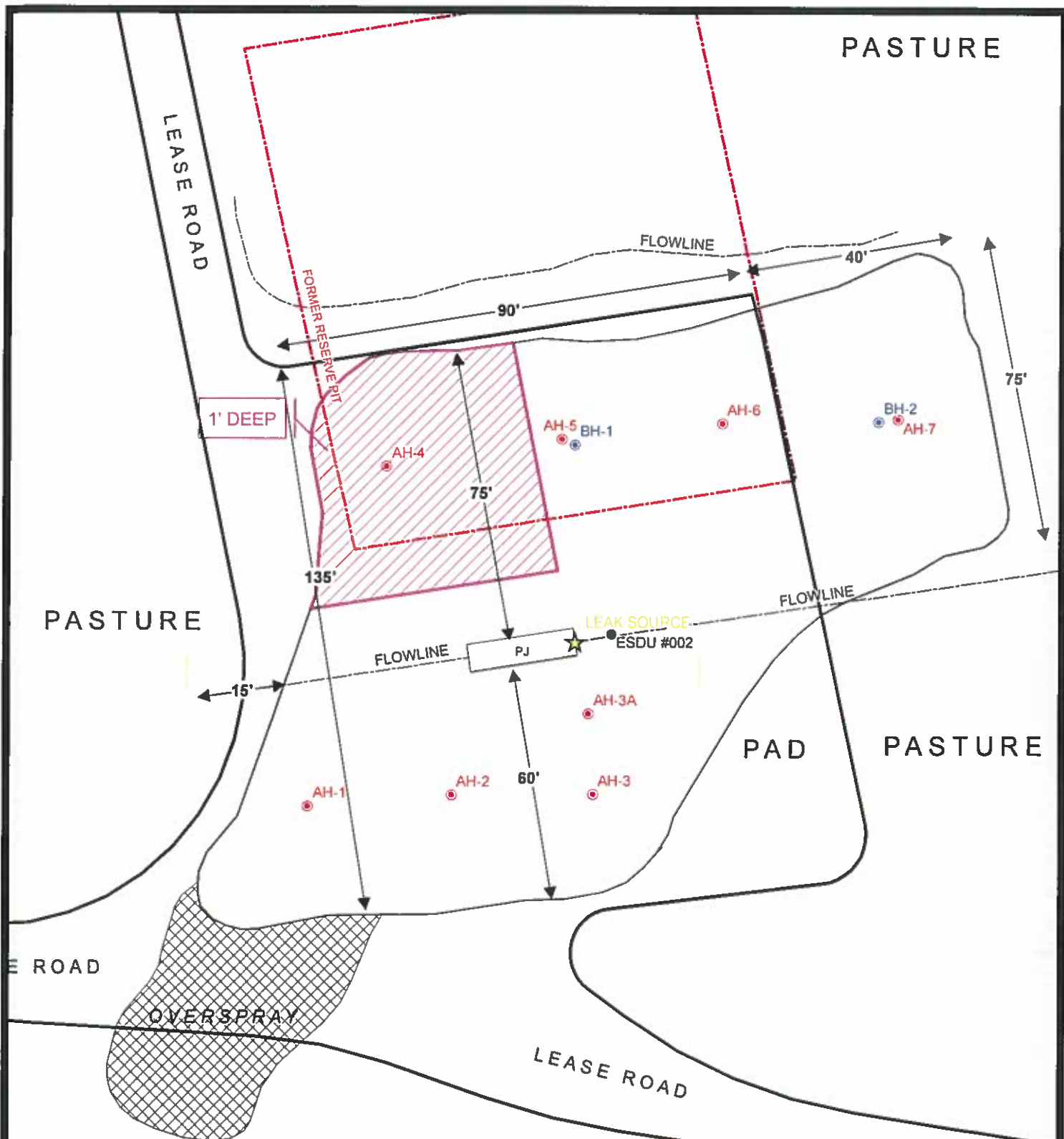
Eddy County, New Mexico

Project: 212C-MD-00146

Date: 06/07/2016

File: H:\GIS\212C-MD-00146





**EXPLANATION**



- AUGER HOLE SAMPLE LOCATIONS
- BOREHOLE SAMPLE LOCATIONS
- ★ LEAK SOURCE
- ▨ PROPOSED EXCAVATION AREA

SCALE: 1 IN = 30 FEET

0 15 30

Feet



	
Figure 4 ESDU #002 Proposed Excavation Area & Depth Map Eddy County, New Mexico	
Project : 212C-MD-00146	
Date : 06/07/2018	
File : H:\GIS\212C-MD-00146	

## Tables

**Table 1**  
**SM Energy**  
**ESDU #2**  
**Eddy County, New Mexico**

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	2/16/2015	0-1	X		<4.00	75.3	75.3	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	636
	"	1-1.5	X		-	-	-	-	-	-	-	-	244
	"	2-2.5	X		-	-	-	-	-	-	-	-	29.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	147
AH-2	2/16/2015	0-1	X		25.0	359	384	<0.0400	0.0425	0.0829	0.469	0.594	1,660
	"	1-1.5	X		-	-	-	-	-	-	-	-	68.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	244
	"	3-3.5	X		-	-	-	-	-	-	-	-	293
Re-sampled	1/14/2016	0-1	X		-	-	-	-	-	-	-	-	645
AH-3	2/16/2015	0-1	X		2,990	7,980	10,970	2.61	30.3	17.7	71.7	122	2,250
	"	1-1.5	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,320
	"	2-2.5	X		-	-	-	-	-	-	-	-	10,400
	"	3-3.5	X		-	-	-	-	-	-	-	-	12,800
	"	4-4.5	X		-	-	-	-	-	-	-	-	6,000
	"	5-5.5	X		-	-	-	-	-	-	-	-	20,400
	"	6-6.5	X		-	-	-	-	-	-	-	-	8,840
	"	7-7.5	X		-	-	-	-	-	-	-	-	1,230
	"	8-8.5	X		-	-	-	-	-	-	-	-	295
	"	9-9.5	X		-	-	-	-	-	-	-	-	147



Table 1  
SM Energy  
ESDU #2  
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	
			In-Situ	Removed	GRO	DRO	Total							
AH-3 Re-sampled	1/14/2016	0-1	X		-	-	-	-	-	-	-	-	1,550	
	"	1-1.5	X		-	-	-	-	-	-	-	-	472	
	"	2-2.5	X		-	-	-	-	-	-	-	-	465	
	"	3-3.5	X		-	-	-	-	-	-	-	-	916	
	2/17/2016	3-3.5	X		-	-	-	-	-	-	-	-	1,690	
	"	4-4.5	X		-	-	-	-	-	-	-	-	1,670	
	"	5-5.5	X		-	-	-	-	-	-	-	-	995	
	"	6-6.5	X		-	-	-	-	-	-	-	-	2,790	
	"	7-7.5	X		-	-	-	-	-	-	-	-	1,460	
	"	8-8.5	X		-	-	-	-	-	-	-	-	485	
	"	9-9.5	X		-	-	-	-	-	-	-	-	206	
AH-3 Composite	4/13/2016	0-1'	X		<15.0	53.2	53.2	-	-	-	-	-	-	
AH-3 Re-sampled	4/28/2016	0-1	X		-	-	-	-	-	-	-	-	175	
	"	1-1.5	X		-	-	-	-	-	-	-	-	29.3	
	"	2-2.5	X		-	-	-	-	-	-	-	-	1,040	
	"	3-3.5	X		-	-	-	-	-	-	-	-	1,570	
	"	4-4.5	X		-	-	-	-	-	-	-	-	834	
	"	5-5.5	X		-	-	-	-	-	-	-	-	1,790	
	"	6-6.5	X		-	-	-	-	-	-	-	-	1,710	
	"	7-7.5	X		-	-	-	-	-	-	-	-	1,610	
	"	8-8.5	X		-	-	-	-	-	-	-	-	1,300	
	"	9-9.5	X		-	-	-	-	-	-	-	-	11.4	
	AH-3A	4/28/2016	0-1	X		-	-	-	-	-	-	-	-	252
		"	1-1.5	X		-	-	-	-	-	-	-	-	<9.94
		"	2-2.5	X		-	-	-	-	-	-	-	-	75.4
		"	3-3.5	X		-	-	-	-	-	-	-	-	62.2
"		4-4.5	X		-	-	-	-	-	-	-	-	1,640	
"		5-5.5	X		-	-	-	-	-	-	-	-	93.6	
"		6-6.5	X		-	-	-	-	-	-	-	-	465	
"	7-7.5	X		-	-	-	-	-	-	-	-	67.8		
"	8-8.5	X		-	-	-	-	-	-	-	-	408		
"	9-9.5	X		-	-	-	-	-	-	-	-	427		



Table 1  
SM Energy  
ESDU #2  
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		GRO	TPH (mg/kg)		Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed		DRO	Total						
AH-4	2/16/2015	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,560
	"	1-1.5	X		-	-	-	-	-	-	-	-	2,900
	"	2-2.5	X		-	-	-	-	-	-	-	-	69.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	147
AH-4 Re-sampled	1/14/2016	0-1	X		-	-	-	-	-	-	-	-	3,330
	"	1-1.5	X		-	-	-	-	-	-	-	-	1,220
AH-5  area drilled	2/16/2015	0-1	X		<8.00	326	326	<0.0400	<0.0400	<0.0400	0.145	0.145	2,700
	"	1-1.5	X		-	-	-	-	-	-	-	-	490
	"	2-2.5	X		-	-	-	-	-	-	-	-	588
	"	3-3.5	X		-	-	-	-	-	-	-	-	588
	"	4-4.5	X		-	-	-	-	-	-	-	-	245
	"	5-5.5	X		-	-	-	-	-	-	-	-	1,760
	"	6-6.5	X		-	-	-	-	-	-	-	-	2,940
Re-sampled	1/14/2016	0-1	X		-	-	-	-	-	-	-	-	1,510
BH-1 (AH-5) Resampled	2/17/2016	0-1	X		-	-	-	-	-	-	-	-	1,290
	"	2-3	X		-	-	-	-	-	-	-	-	205
	"	4-5	X		-	-	-	-	-	-	-	-	776
	"	6-7	X		-	-	-	-	-	-	-	-	3,440
	"	9-10	X		-	-	-	-	-	-	-	-	4,340
	"	14-15	X		-	-	-	-	-	-	-	-	299
	"	19-20	X		-	-	-	-	-	-	-	-	172
	"	24-25	X		-	-	-	-	-	-	-	-	192

Table 1  
SM Energy  
ESDU #2  
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-6	2/16/2015	0-1	X		<4.00	532	532	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	245
	"	1-1.5	X		-	-	-	-	-	-	-	-	29.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	20.0
AH-7 area drilled	2/16/2015	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	39.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	29.0
	"	2-2.5	X		-	-	-	-	-	-	-	-	29.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	440
	"	4-4.5	X		-	-	-	-	-	-	-	-	2,100
BH-2 (AH-7)	2/17/2016	0-1	X		-	-	-	-	-	-	-	-	32.9
	"	2-3	X		-	-	-	-	-	-	-	-	20.3
	"	4-5	X		-	-	-	-	-	-	-	-	1,140
	"	6-7	X		-	-	-	-	-	-	-	-	1,300
	"	9-10	X		-	-	-	-	-	-	-	-	3,100
	"	14-15	X		-	-	-	-	-	-	-	-	6,620
	"	19-20	X		-	-	-	-	-	-	-	-	3,050
	"	24-25	X		-	-	-	-	-	-	-	-	1,760
	"	29-30	X		-	-	-	-	-	-	-	-	369
	"	34-35	X		-	-	-	-	-	-	-	-	366
	"	39-40	X		-	-	-	-	-	-	-	-	419
	"	49-50	X		-	-	-	-	-	-	-	-	48.4

(-) Not Analyzed

Areas Re-sampled

Proposed Soil Removal

## Photos

SM Energy Company  
EDSU #2  
Eddy County, New Mexico



TETRA TECH



View East – Area of AH-1, AH-2, and AH-3



View Northwest – Area of AH-4, AH-5, and AH-6

SM Energy Company  
EDSU #2  
Eddy County, New Mexico



TETRA TECH



View East – Area of AH-7



View South – Area of BH-1



SM Energy Company  
EDSU #2  
Eddy County, New Mexico



TETRA TECH



View East – Area of BH-2

## Appendix A



OIL CONSERVATION DIVISION

Title: District Production Superintendent	Approval Date: <u>2/3/15</u>	Expiration Date: <u>N/A</u>
E-mail Address: <u>tsimpson@sm-energy.com</u>	Conditions of Approval:	
Date: <u>01/31/2015</u> Phone: <u>432-212-3408</u>	<b>Remediation per O.C.D. Rules &amp; Guidelines</b>	
* Attach Additional Sheets If Necessary	<b>SUBMIT REMEDIATION PROPOSAL NO</b>	
	<b>LATER THAN: <u>3/3/15</u></b>	

**Patterson, Heather, EMNRD**

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**From:** Tejay Simpson <tsimpson@sm-energy.com>  
**Sent:** Saturday, January 31, 2015 8:50 AM  
**To:** Jim Amos (jamos@blm.gov); Patterson, Heather, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** Ann Sandate; Heather Roberts  
**Subject:** SM ENERGY: ESDU 02 C-141  
**Attachments:** ESDU 02\_013115.pdf

Spill report for the ESDU No. 02

Onward and Upward!

Tejay Simpson

SM Energy  
District Production Superintendent  
432-212-3408

# ENVIRONMENTAL RELEASE NOTIFICATION

## Call-In Sheet

Date: 1/30 5pm

Teja Simpson from SM Energy  
(Person Reporting) (Company)

is reporting a release at the ESON No. 2  
(Site)

API# 30-015-28847 Sec. 13 T 185 - R 3/E

Occurred on: 1/29 at 3 AM/PM  
(Date of Occurrence) (Time of Occurrence)

Volume released: \_\_\_\_\_

C-141 received: 1/31/15

Volume recovered: 16.2 gal 2.9 oil

2RP- 2797

Briefly Describe Cause of Problem and action taken: Flare stayed on well  
pad:

432-212-8408

(\_\_\_\_\_) (Initials)

## FLARE NOTIFICATION

### Call-In Sheet

Date: \_\_\_\_\_

Report Flare for \_\_\_\_\_ from \_\_\_\_\_  
(Reporting Company) (Person Reporting)

Occurred on: \_\_\_\_\_ at \_\_\_\_\_ AM/PM.  
(Date) (Time of Occurrence)

C-129/C-141 received: \_\_\_\_\_

Flared Inlet Gas for: \_\_\_\_\_

Total MCF: \_\_\_\_\_

Briefly Describe Cause of Problem and action taken: \_\_\_\_\_

(\_\_\_\_\_) (Initials)

## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**SM Energy - ESDU No. 2, Eddy County, New Mexico**

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	80	21	22	23
30	29	28	27	26	25
31	32	33	34	35	36

17 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

17 South			32 East		
6	5	4	82	3	2
			Maljamar	75	60
7	8	9	10	132	11
				88	70
18	17	16	15	14	13
19	20	21	22	23	24
30	180	29	28	27	26
dry					25
31	32	33	34	35	36

18 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	44
30	29	28	27	26	25
31	32	33	34	35	36

18 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	98	14
				317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South			32 East		
6	5	4	65	3	2
7	460	8	9	10	11
82					12
18	17	16	15	14	13
			84		
19	20	21	22	23	24
	164		429		
30	29	28	27	26	25
31	32	33	34	35	36

19 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
90					
115	32	33	34	35	36

19 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
		180			
31	32	33	34	35	36

19 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
	365				
18	17	16	15	14	13
					135
19	20	21	22	23	24
102	345				dry
30	29	28	27	26	25
31	32	33	34	35	36

- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
- Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD - Groundwater Data

## Appendix C



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPPLICATE\*  
(Check instructions on  
reverse side)

30-015-25847  
Form approved.  
Budget Bureau No. 1004-0136  
Expires August 31, 1985

DEC 11 '87

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL WELL ☒

GAS WELL ☐

OTHER ☐

SINGLE ZONE ☐

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

Harvey E. Yates Company

3. ADDRESS OF OPERATOR

P.O. Box 1933, Roswell, New Mexico 88201

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

330' FSL & 330' FEL

At proposed prod. zone

same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

15. DISTANCE FROM PROPOSED\* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT.

(Also to nearest drlg. unit line, if any)

330

16. NO. OF ACRES IN LEASE

680.06

17. NO. OF ACRES ASSIGNED TO THIS WELL

40

18. DISTANCE FROM PROPOSED LOCATION\* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

660

19. PROPOSED DEPTH

5450

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3715.2 GL

22. APPROX. DATE WORK WILL START\*

ASAP

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4	8 5/8	24	350	Circ to surface
7 7/8	5 1/2	15.5	5450	Circ to surface

MUD PROGRAM:

0 - 350 Fresh water  
350 - 5450 Brine water

RECEIVED  
NOV 4 11 07 AM '87  
CARLSON SOURCE  
AREA HEADQUARTERS  
POST 10#1  
N.Y. API  
12-8-87

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

*A. M. Young*

N.M. Young TITLE Drilling Superintendent

DATE Nov. 2, 1987

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

DATE

12-8-87

CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions On Reverse Side

NEW MEXICO OIL CONSERVATION COMMISSION  
WELL LOCATION AND ACREAGE DEDICATION

PLAT 070188

Form C-102  
Supersedes C-128  
Effective 1-1-85

All distances must be from the outer boundaries of the Section.

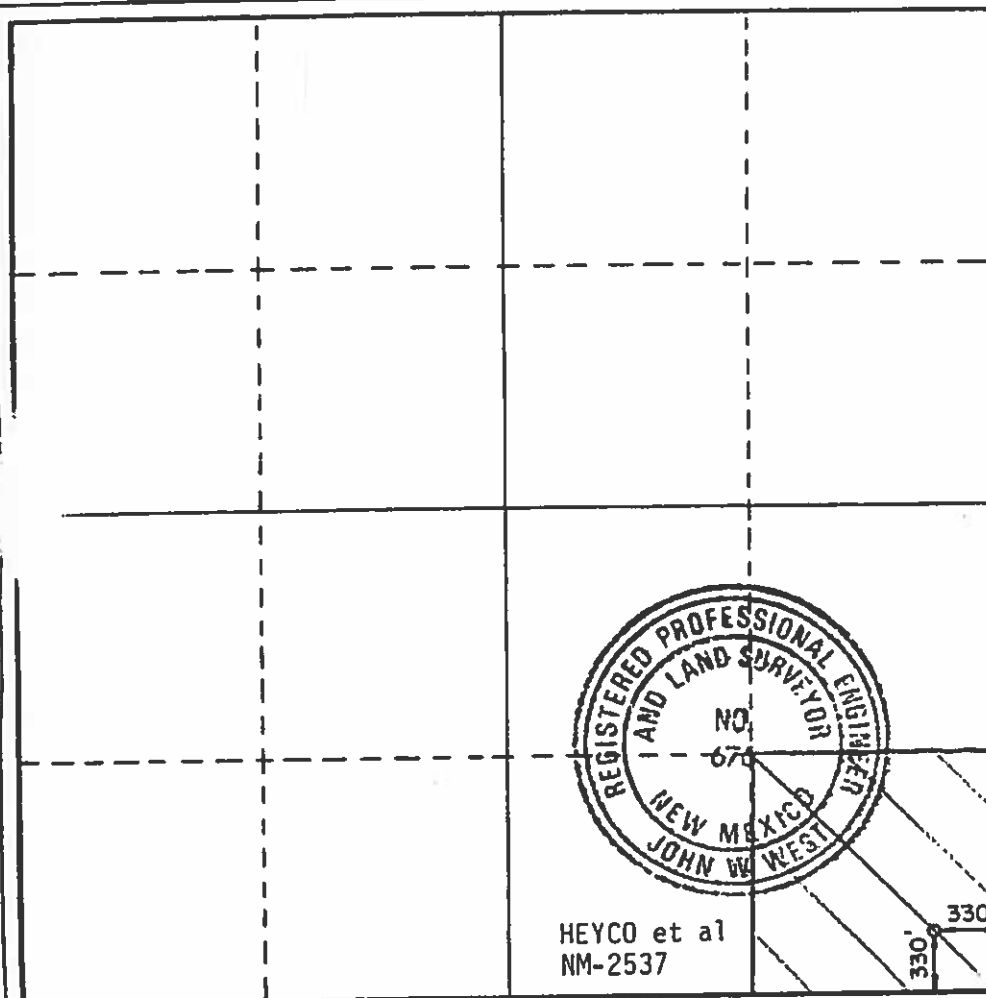
Operator <b>HARVEY E. YATES</b>			Lease <b>SOUTH TAYLOR 13 FEDERAL</b>		Well No. <b>2</b>
Unit Letter <b>P</b>	Section <b>13</b>	Township <b>18S</b>	Range <b>31E</b>	County <b>LEA-EDDY</b>	
Actual Footage Location of Well: <b>330</b> feet from the <b>SOUTH</b> line and <b>330</b> feet from the <b>EAST</b> line					
Ground Level Elev. <b>3715.2</b>	Producing Formation <b>Delaware</b>		Pool <b>East Shugart Delaware</b>	Dedicated Acreage: <b>40</b> Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation \_\_\_\_\_

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) \_\_\_\_\_

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

**N.M. Young**

Position

**Drilling Superintendent**

Company

**Harvey E. Yates Company**

Date

**November 2, 1987**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

**JUNE 27, 1986**

Registered Professional Engineer and/or Land Surveyor

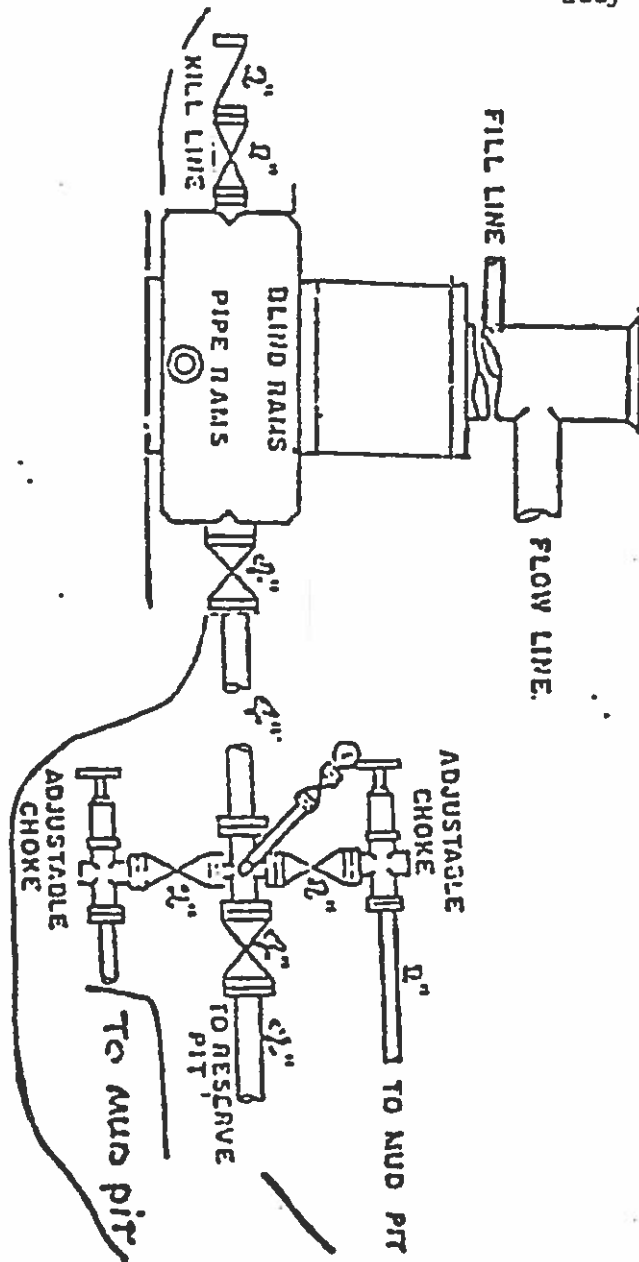
Certificate No. **JOHN W. WEST, 676**

**RONALD J. EIDSON, 3239**

EXHIBIT C

Harvey E. Yates Co.  
South Taylor 13 Federal 2  
330' PSL & 330' FEL  
Sec. 13, T-18S, R-31E  
Eddy Co., New Mexico

900 Series



Application

HARVEY E. YATES COMPANY  
South Taylor 13 Federal #2  
Section 13, T18S, R31E  
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill the Subject well in Section 13, Township 18 South, Range 31 East, Eddy County, New Mexico, Harvey E. Yates Company submits the following ten items of pertinent information in accordance with Bureau of Land Management requirements:

1. The geologic surface formation is quaternary alluvium and bolson deposits and other surficial deposits.
2. The estimated tops of geologic markers are as follows:

Rustler	870'	Grayburg	4100'
Yates	2450'	Delaware	4770'
Seven Rivers	2850'	TD	5450'
Queen	3520'		

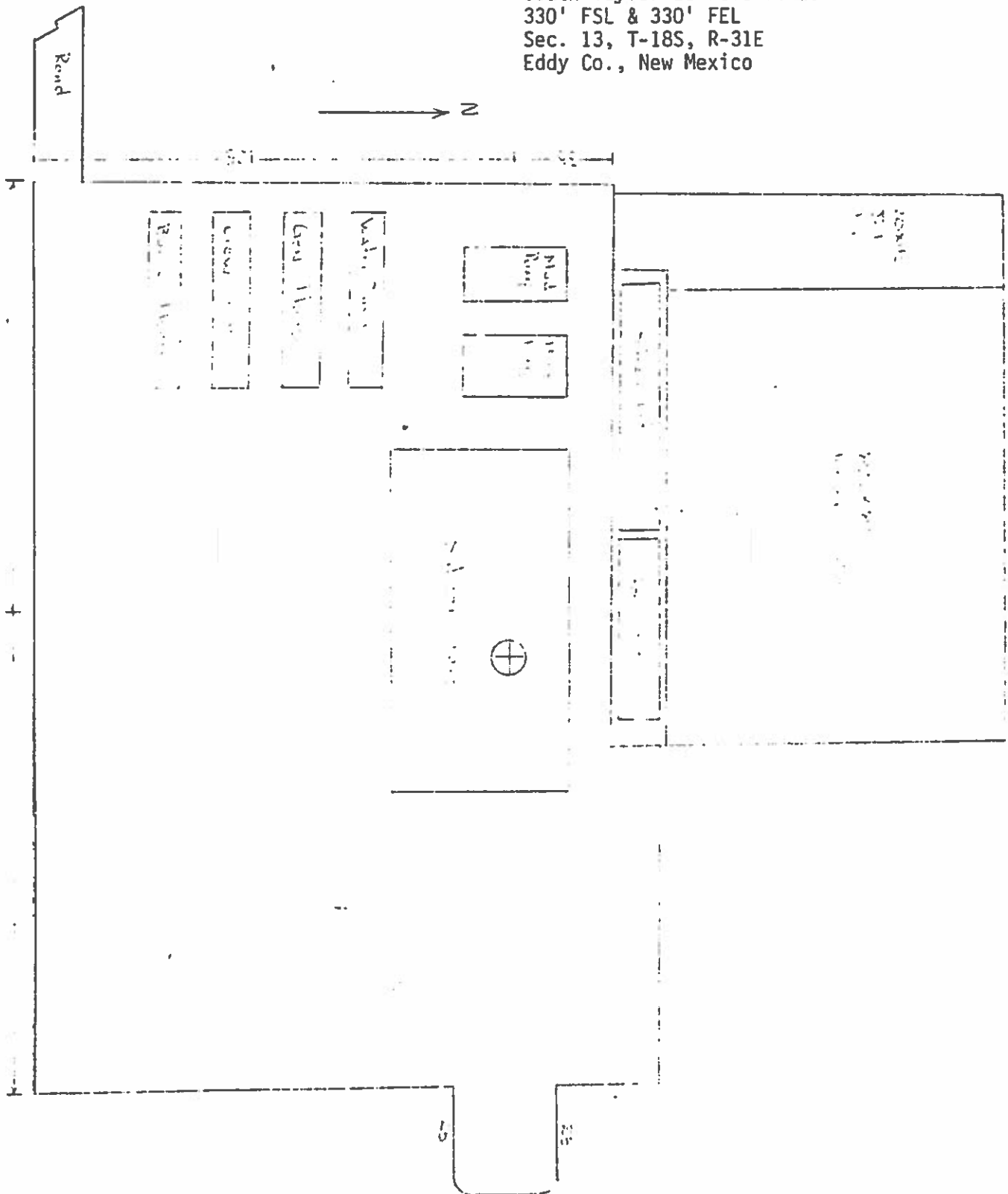
3. We do not anticipate finding water but have listed the formation in which we anticipate finding oil or gas.

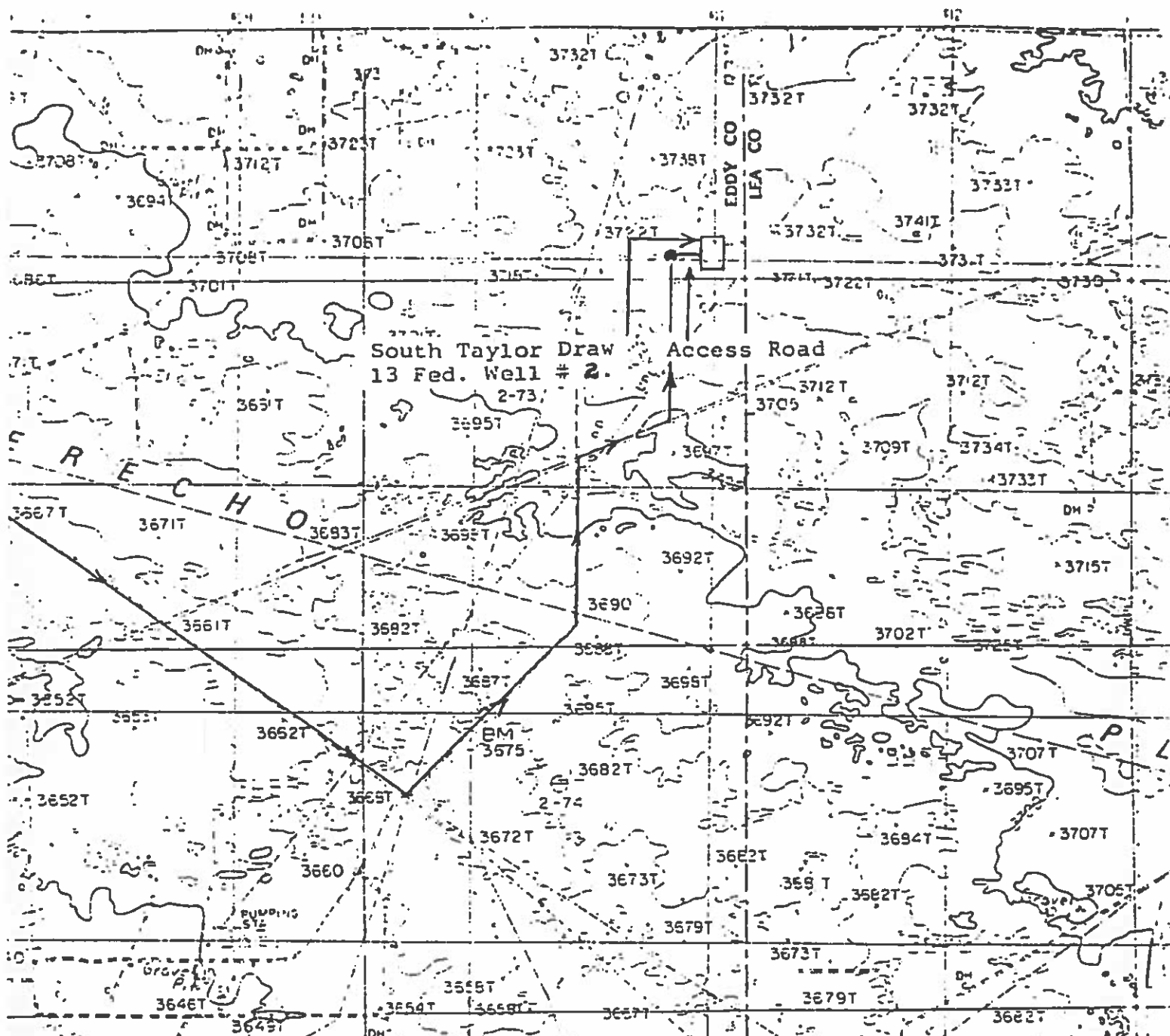
Delaware            4770'

4. Proposed casing program: See Form 3160-3
5. Pressure control equipment: See Exhibit C.
6. Mud program: See Form 3160-3.
7. Auxiliary equipment: Blowout preventer
8. Testing, logging and coring programs: We are not planning to do any coring or DST's. Planned logs are DLL-Miro w/GR & Caliper, CN-Den w/GR & Caliper.
9. No abnormal pressures or temperatures are anticipated.
10. Anticipated starting date: As soon as possible.

EXHIBIT D

Harvey E. Yates Co.  
South Taylor 13 Federal #2  
330' FSL & 330' FEL  
Sec. 13, T-18S, R-31E  
Eddy Co., New Mexico





Map showing the location of the Harvey E. Yates Company South Taylor Draw 13 Federal Well #2 and access road. T18S, R31E, Section 13, Centre, SE/4 SW/4SE/4 [330 FSL, 330 FEL], Eddy County, New Mexico. Open square shows location of well pad; solid line shows location of access road. U.S.G.S. 7.5 minute series, GREENWOOD LAKE, NEW MEXICO, 1985. ASC project: 87-57.

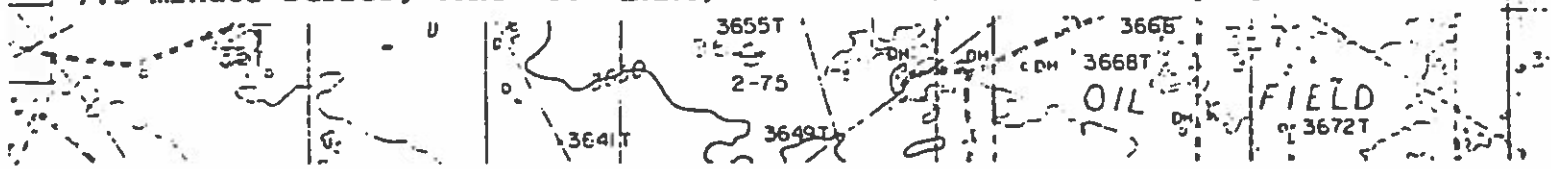


EXHIBIT A  
Harvey E. Yates Co.  
South Taylor 13 Federal #2  
Eddy Co., New Mexico

## Appendix D



## SAMPLE LOG

<b>Client:</b>	SM Energy Services
<b>Site Name</b>	ESDU #2 Well
<b>Boring/Well:</b>	BH-1
<b>GPS</b>	32.74142, -103.81556
<b>Project #:</b>	212C-MD-00146
<b>Total Depth</b>	25'
<b>Date Installed:</b>	2/17/2016

[illegible]

## SAMPLE LOG

<b>Client:</b>	<b>SM Energy Company</b>
<b>Site Name</b>	<b>ESDU #2 Well</b>
<b>Boring/Well:</b>	<b>BH-2</b>
<b>GPS</b>	<b>32.74149, -103.81525</b>
<b>Project #:</b>	<b>212C-MD-00146</b>
<b>Total Depth</b>	<b>50'</b>
<b>Date Installed:</b>	<b>2/17/2016</b>

[illegible]