SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	**East Shugart Delaware Unit (ESDU) #34**					
Company:	**SM Energy Company**					
Section, Township and Range	**Unit G**	**Sec 24**	**T18S**	**R 31 E**		
Lease Number:	**30-15-41615**					
County:	**Eddy County**					
GPS:		**32.73664° N**		**103.82076° W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of HWY 529 and 126A, travel south on 126A for 4.33 mi. Turn right and head west on lease road for 1.10 miles, then turn south for 0.98miles to T - intersection. Turn right and travel north for 0.25 mi. Turn right and travel 420ft east to spill location in pasture.					

Release Data:	
Date Released:	9/18/2013
Type Release:	Produced Water
Source of Contamination:	Injection Line
Fluid Released:	11.93 bbls
Fluids Recovered:	0 bbls

Official Communication:			
Name:	Vickie Martinez		Tom Elliott
Company:	SM Energy Company		Tetra Tech
Address:	3300 N A St. Suite 200		4000 N. Big Spring
P.O. Box			Suite 401
City:	Midland Texas, 79705		Midland, Texas
Phone number:	(432) 688-1709		(432) 682-4559
Fax:	(432) 688-1701		
Email:	vmartinez@sm-energy.com		tom.elliott@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	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**
Total Ranking Score:	**0**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

TETRA TECH

October 7, 2014

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

Re: Closure Report for the SM Energy Company, East Shugart Delaware Unit #34, Unit G, Section 24, Township 18 South, Range 31 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by SM Energy Company (SM) to assess a spill from the East Shugart Delaware Unit (ESDU) #34 located in Unit G, Section 24, Township 18 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.73664º, W 103.82076º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak occurred on September 18, 2013, and released approximately twelve (12) barrels of produced fluid from an injection line. To alleviate the problem, SM personnel repaired the injection line. Zero (0) barrels of standing fluids were recovered. The spill over sprayed in the pasture measuring 160' x 195' with the majority of the spill pooling in an area measuring 40' X 45'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 12. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 400' below surface. The groundwater data is shown in Figure B.

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (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

On September 20, 2013, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger, and six (6) surface samples were taken to assess the impacted soils. Select 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 C. The results of the sampling are summarized in Table 1. The auger hole and surface sample locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the RRAL for TPH, BTEX, and Benzene. However, elevated chloride concentrations were detected in AH-1, AH-2 and S-1. Auger hole (AH-1) was not vertically defined, but showed chloride concentrations of 1,480 mg/kg at 4.0' below surface. AH-2 showed a chloride high of 14,300 mg/kg at 1.0', but declined with depth to a concentration of 346 mg/kg at 4.0' below surface. S-1 had a chloride concentration of 5,920 mg/kg at 1.0'. The remaining areas did not show a significant chloride impact to the soils.

Site Remediation and Conclusion

From September 3 through 5, 2014, Tetra Tech personnel supervised the excavation of the impacted soils. In order to remove the chloride impacted soils, the area was excavated to a depth of 4.0' to 8.0' below grade. To define the extents, backhoe trenches (T-1 and T-2) were installed in some of the impacted areas (AH-1 & S-1) to define extents. The excavated areas are highlighted in Table 1 and shown on Figure 4.

TETRA TECH

Referring to Table 1, backhoe trenches (T-1 and T-2) were vertically defined for chlorides of 191 mg/kg and <20.0 mg/kg at depths of 8.0-8.5' and 6-6.5' respectively, below ground surface. In addition, confirmation samples were also collected at the bottom of the excavation. Confirmation samples (CS-1 and CS-3) collected in the areas of AH-1 and S-1 had chloride concentrations of <20.0 mg/kg at 8.0' and 6.0, respectively, below ground surface. Confirmation sample (CS-2) collected in the area of AH-2 had chloride concentrations of 49.0 mg/kg at 4.0' below ground surface.

Based on the results, the excavation was backfilled with clean material to surface grade. Approximately 420 cubic yards of soil were removed and transported to the Lea Land facility for proper disposal.

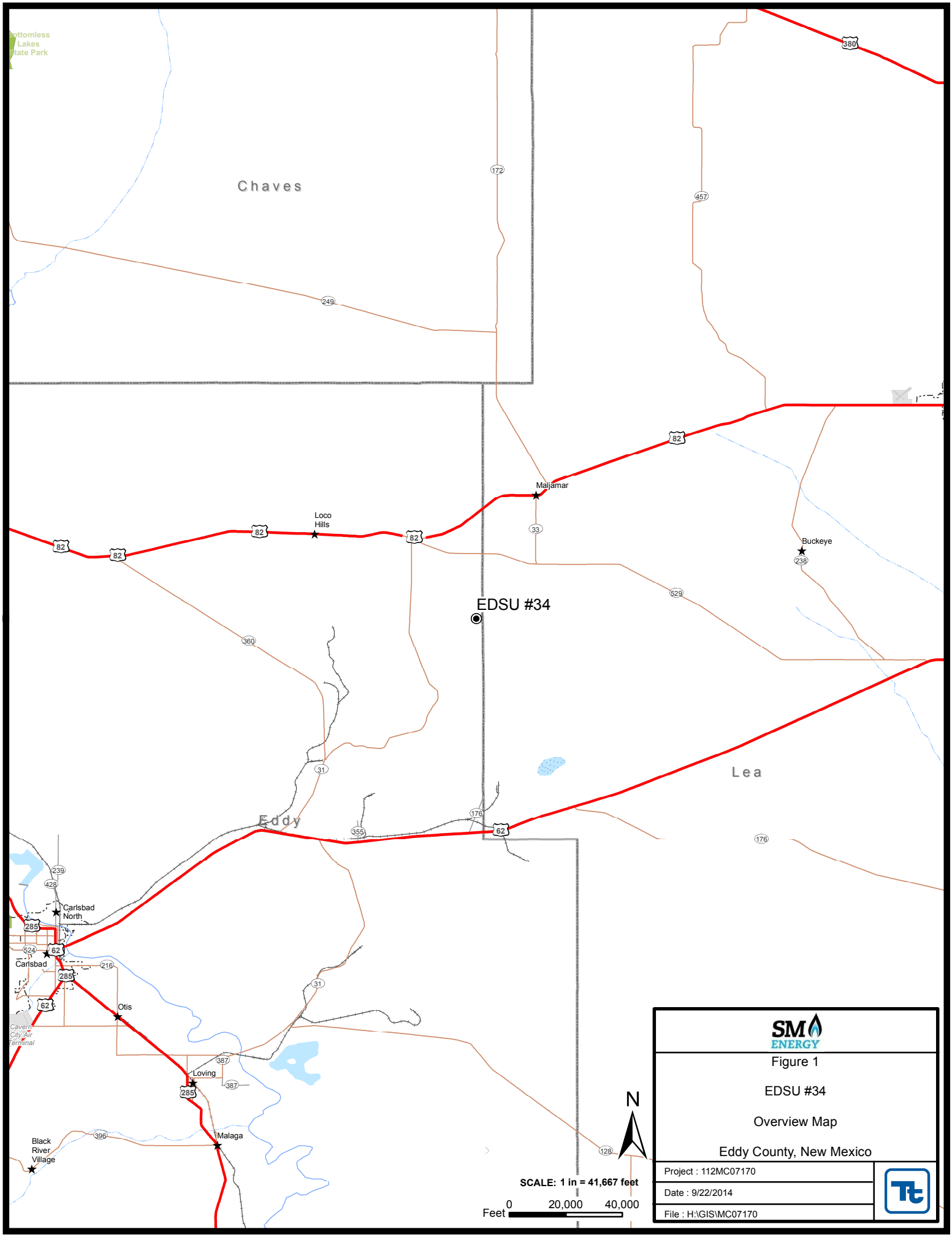
Based on the remediation activities performed at this location, SM Energy requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Tom Elliott
Project Manager

cc: SM Energy – File Copy
Jim Amos - BLM

FIGURES



SM ENERGY

Figure 1

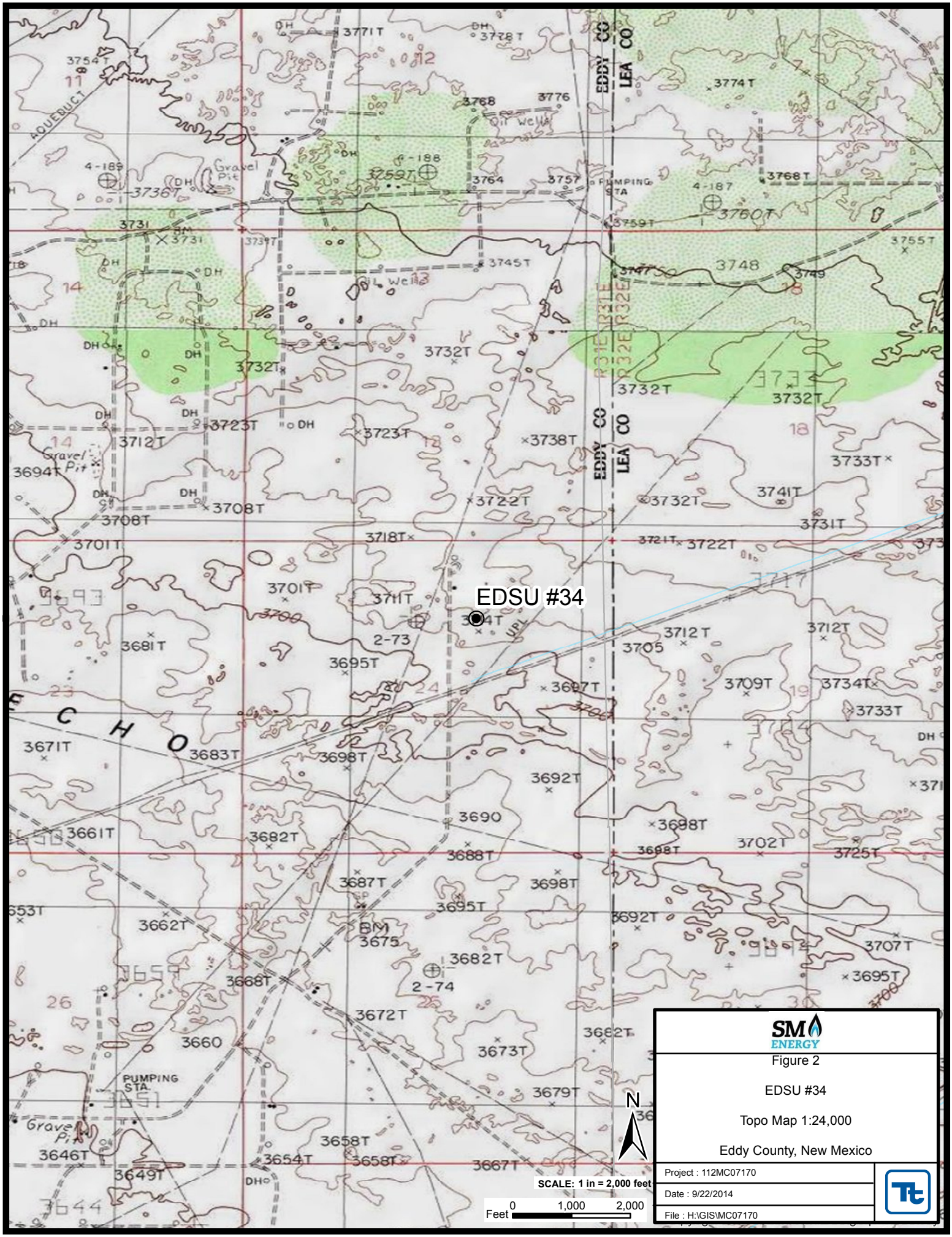
EDSU #34

Overview Map

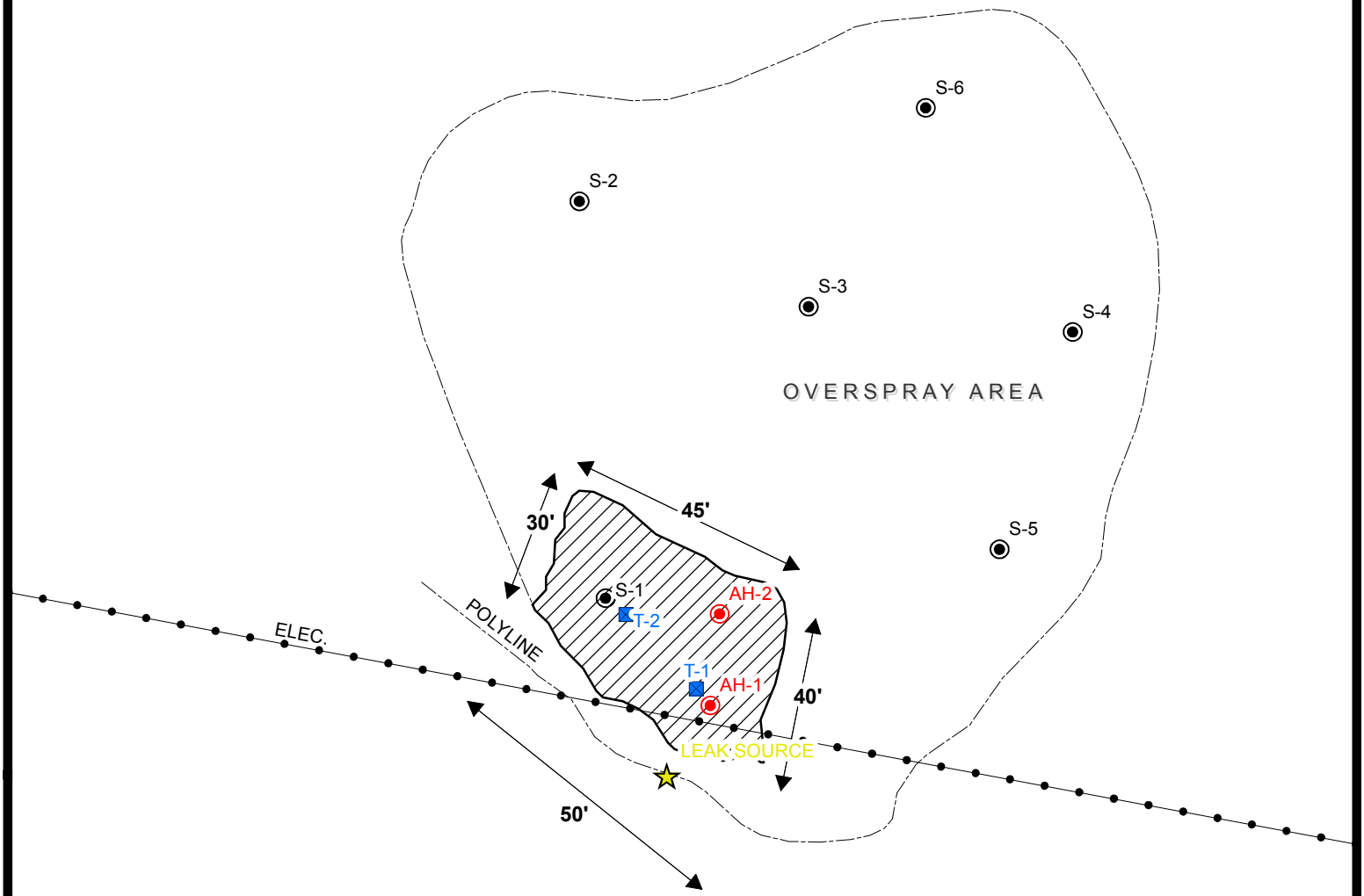
Eddy County, New Mexico

Project : 112MC07170	
Date : 9/22/2014	
File : H:\GIS\MC07170	

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- SOIL SAMPLE LOCATION
- BACKHOE TRENCH
- SPILL AREA

N

SCALE: 1 IN = 38 FEET

Feet 0 10 20

SM ENERGY

Figure 3

EDSU #34

Spill Assessment Map

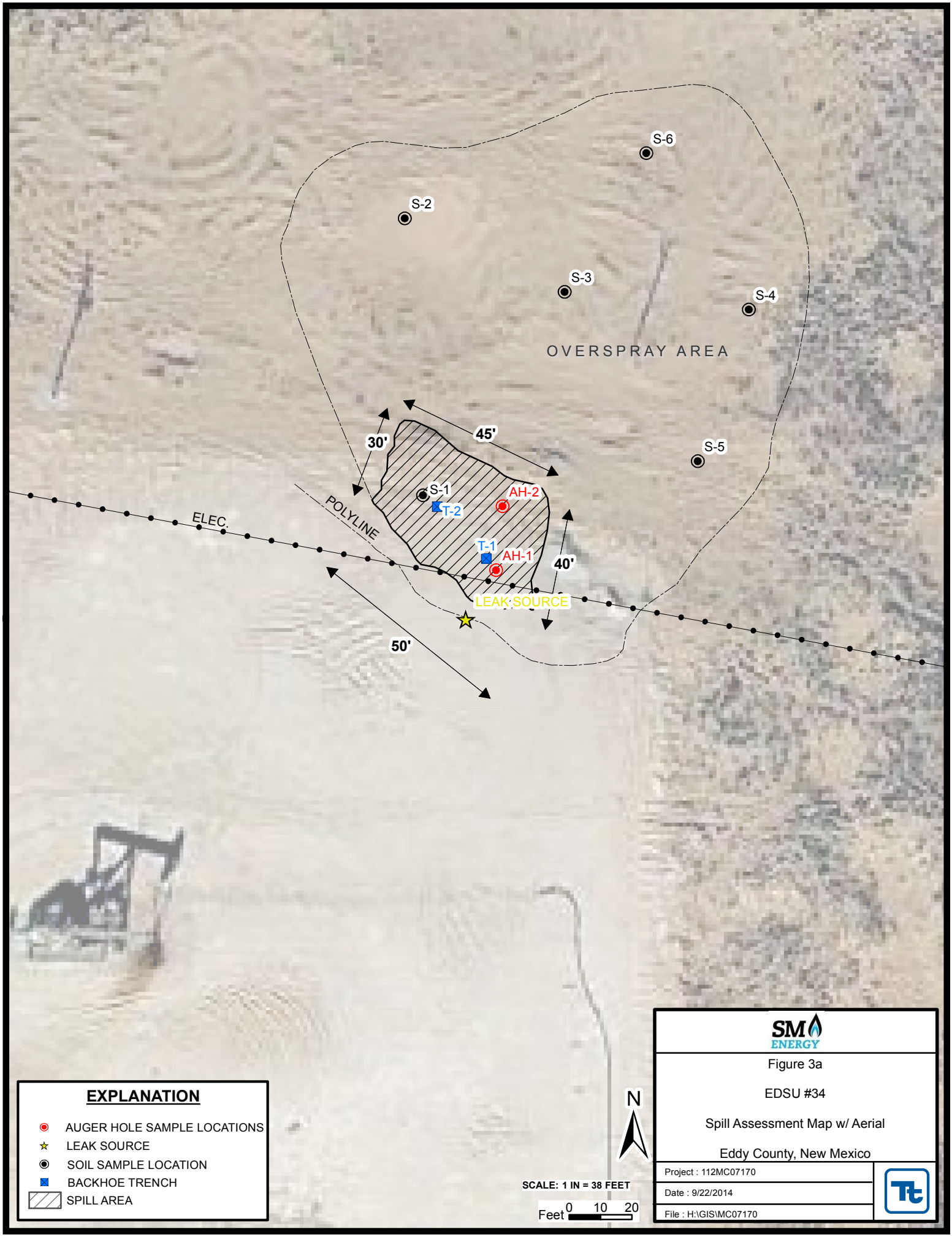
Eddy County, New Mexico

Project : 112MC07170

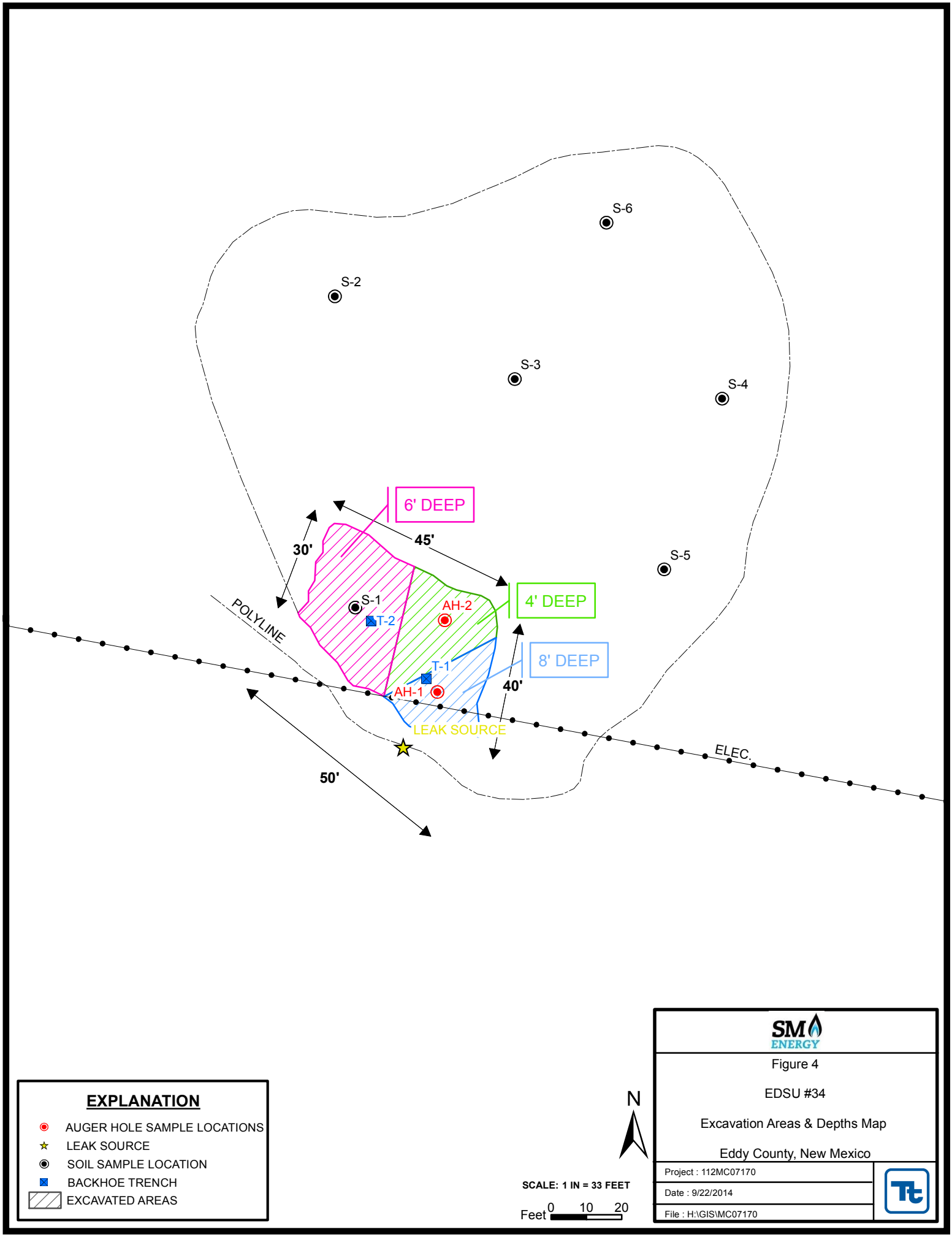
Date : 9/22/2014

File : H:\GIS\MC07170

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- SOIL SAMPLE LOCATION
- BACKHOE TRENCH
- EXCAVATED AREAS

N

SCALE: 1 IN = 33 FEET

Feet 0 10 20

SM ENERGY

Figure 4

EDSU #34

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC07170

Date : 9/22/2014

File : H:\GIS\MC07170

Drawn By: Isabel Marmolejo

TABLES

Table 1
SM Energy
ESDU #34
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	9/20/2013	0-1		X	<4.00	149	149	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	**4,200**
	"	1-1.5		X	-	-	-	-	-	-	-	-	**2,290**
	"	2-2.5		X	-	-	-	-	-	-	-	-	**4,600**
	"	3-3.5		X	-	-	-	-	-	-	-	-	**3,420**
	"	4-4.5		X	-	-	-	-	-	-	-	-	**1,480**
T-1	9/3/2014	6-6.5		X	-	-	-	-	-	-	-	-	**10,000**
		7-7.5		X	-	-	-	-	-	-	-	-	**9,190**
		8.8.5	X		-	-	-	-	-	-	-	-	191
CS-1	9/5/2014	8	X		-	-	-	-	-	-	-	-	<20.0
AH-2	9/20/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	**7,950**
	"	1-1.5		X	-	-	-	-	-	-	-	-	**14,300**
	"	2-2.5		X	-	-	-	-	-	-	-	-	**2,950**
	"	3-3.5		X	-	-	-	-	-	-	-	-	**1,980**
	"	4-4.5	X		-	-	-	-	-	-	-	-	346
	"	5-5.5	X		-	-	-	-	-	-	-	-	542
CS-2	9/5/2014	4	X		-	-	-	-	-	-	-	-	49
S-1	9/20/2013	0-1		X	<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	**5,920**
T-2	9/3/2014	1-1.5		X	-	-	-	-	-	-	-	-	909
	"	2-2.5		X	-	-	-	-	-	-	-	-	**1,150**
	"	3-3.5		X	-	-	-	-	-	-	-	-	766
	"	4-4.5		X	-	-	-	-	-	-	-	-	**3,270**
	"	5-5.5		X	-	-	-	-	-	-	-	-	**1,710**
	"	6-6.5	X		-	-	-	-	-	-	-	-	<20.0
	"	7-7.5	X		-	-	-	-	-	-	-	-	<20.0
CS-1	9/5/2014	6	X		-	-	-	-	-	-	-	-	<20.0
S-2	9/20/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
S-3	9/20/2013	1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	75.3

Table 1
SM Energy
ESDU #34
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
S-4	9/20/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
S-5	9/20/2013	1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	30.1
S-6	9/20/2013	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0

(-)	Not Analyzed
	Excavation Depths
T-1	Backhoe Trench
CS	Confirmation Samples

PHOTOGRAPHS

SM Energy Company
ESDU #34
Eddy County, New Mexico

View West – Area of AH-1.

View North – Area of AH-1, AH-2 and S-1.

SM Energy Company
ESDU #34
Eddy County, New Mexico

View Northwest– Backfill

View North – Backfill

APPENDIX A

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 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 SM ENERGY COMPANY	Contact VICKIE MARTINEZ
Address 3300 N "A" STREET, BLDG 7-200 MIDLAND, TX 79705	Telephone No. (432)688-1709
Facility Name ESDU 34	Facility Type WELL

Surface Owner BUREAU OF LAND MANAGEMENT	Mineral Owner BUREAU OF LAND MANAGEMENT	API No. 30-015-41615

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	24	18S	31E	1500	NORTH	2020	EAST	EDDY

Latitude _____ **Longitude** _____

NATURE OF RELEASE

Type of Release SPILL	Volume of Release 11.93 BBLS / Volume Recovered 0 BBLS
Source of Release INJECTION LINE	Date and Hour of Occurrence 9/18/13 3:53 PM / Date and Hour of Discovery SAME
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? BLM-JAMES AMOS AND NMOCD-MIKE BRATCHER
By Whom? NATHAN LUOMA	Date and Hour 9/18/13 5:00 PM
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

WHILE BUILDING LOCATION, DOZER TRACKS SUNK INTO SOFT GROUND AND CUT AN INJ LINE BURIED 8 INCHES BELOW THE GROUND CAUSING SPILL.

Describe Area Affected and Cleanup Action Taken.*

AREA AFFECTED WAS 110' X 213'. REMOVED CONTAMINATED SOIL AND BRUSH AND HAULED TO A PERMITTED FACILITY. TETRA TECH TOOK INITIAL SOILS SAMPLES AND SENT TO LAB AND WE ARE WAITING ON RESULTS.

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: Vickie Martinez	OIL CONSERVATION DIVISION
Printed Name: VICKIE MARTINEZ	Approved by Environmental Specialist:
Title: ENGINEER TECH II	Approval Date: / Expiration Date:
E-mail Address: VMARTINEZ@SM-ENERGY.COM	Conditions of Approval: / Attached ☐
Date: 09/26/2013 Phone: (432)688-1709	

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, 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 October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	**SM Energy Company**	Contact	**Lisa Hunt**
Address	**6301 Holiday Hill Rd, Bldg 1 Midland, TX 79707**	Telephone No.	**(432) 848-4833**
Facility Name	**ESDU #34**	Facility Type	**Well**

Surface Owner: BLM	Mineral Owner: BLM	Lease No. (API#) 30-015-41615

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	24	18S	31E	1500	North	2020	East	Eddy

Latitude N 32.73664° **Longitude** W 103.82076°

NATURE OF RELEASE

Type of Release: Spill (Produced Water)	Volume of Release 11.93 bbls	Volume Recovered 0 bbls
Source of Release: Injection Line	Date and Hour of Occurrence 9/18/13 5:00 PM	Date and Hour of Discovery Same
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Jim Amos with BLM / Mike Bratcher with NMOCD	
By Whom? Nathan Luoma	Date and Hour 9/18/2013 5:00 P.M.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

While building the location, dozer tracks sunk into soft ground and cut a fiberglass injection line buried 8 inches below the ground, causing a spill.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted to NMOCD for review.

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: 	OIL CONSERVATION DIVISION Approved by District Supervisor:		
Printed Name: Tom Elliott as agent for SM Energy			
Title: Project Manager	Approval Date:	Expiration Date:	
E-mail Address: Tom.Elliott@TetraTech.com	Conditions of Approval:		Attached ☐
Date: 9-26-2014 Phone: (432) 682-4559			

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
SM Energy - ESDU #34
Eddy County, New Mexico

17 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20 **80**	21	22	23	24
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 **271**	35	36

17 South 32 East

6	5	4 **82** Maljamar	3 **175**	2 **60**	1 **225**
7	8	9	10 **132**	11 **70** **88**	12 **120**
18	17	16	15	14	13
19	20	21	22	23	24
30 180 dry	29	28	27	26	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**	24
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 **Site** **400**
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 **261**	36

18 South 32 East

6	5	4 **65**	3	2	1
7 **460** **82**	8	9	10	11	12
18	17	16 **84**	15	14	13
19	20 **164**	21	22 **429**	23	24
30	29	28	27	26	25
31	32	33	34 **117**	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 **90**	29	28	27	26	25
31 **115**	32	33	34	35	36

19 South 31 East

6	5 **SITE**	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 **180**	27	26	25
31	32	33 **101**	34	35	36 **130**

19 South 32 East

6	5	4	3	2	1
7	8 **365**	9	10	11	12
18	17	16	15	14	13 135 dry
19 **102**	20 **345**	21	22	23	24
30	29	28	27	26	25
31	32	33	34 **250**	35	36

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

APPENDIX C

Summary Report

Tom Elliott
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: September 17, 2014

Work Order: 14090901

Project Location: Eddy Co, NM
Project Name: SME/ESDU #34
Project Number: 112MC07170

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
373938	T-1 (AH-1) 6-6.5’	soil	2014-09-03	00:00	2014-09-08
373939	T-1 (AH-1) 7-7.5’	soil	2014-09-03	00:00	2014-09-08
373940	T-1 (AH-1) 8-8.5’	soil	2014-09-03	00:00	2014-09-08
373941	T-2 (S1) 1-1.5’	soil	2014-09-03	00:00	2014-09-08
373942	T-2 (S1) 2-2.5’	soil	2014-09-03	00:00	2014-09-08
373943	T-2 (S1) 3-3.5’	soil	2014-09-03	00:00	2014-09-08
373944	T-2 (S1) 4-4.5’	soil	2014-09-03	00:00	2014-09-08
373945	T-2 (S1) 5-5.5’	soil	2014-09-03	00:00	2014-09-08
373946	T-2 (S1) 6-6.5’	soil	2014-09-03	00:00	2014-09-08
373947	T-2 (S1) 7-7.5’	soil	2014-09-03	00:00	2014-09-08

Sample: 373938 - T-1 (AH-1) 6-6.5’

Param	Flag	Result	Units	RL
Chloride		**10000**	mg/Kg	4

Sample: 373939 - T-1 (AH-1) 7-7.5’

Param	Flag	Result	Units	RL
Chloride		**9190**	mg/Kg	4

Sample: 373940 - T-1 (AH-1) 8-8.5’

Param	Flag	Result	Units	RL
Chloride		**191**	mg/Kg	4

Sample: 373941 - T-2 (S1) 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**909**	mg/Kg	4

Sample: 373942 - T-2 (S1) 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1150**	mg/Kg	4

Sample: 373943 - T-2 (S1) 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**766**	mg/Kg	4

Sample: 373944 - T-2 (S1) 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**3270**	mg/Kg	4

Sample: 373945 - T-2 (S1) 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**1710**	mg/Kg	4

Sample: 373946 - T-2 (S1) 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 373947 - T-2 (S1) 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Summary Report

Tom Elliott
Tetra Tech
1901 N. Big Spring St.
Midland, TX 79705

Report Date: September 17, 2014

Work Order: 14090902

Project Location: Eddy Co, NM
Project Name: SME/ESDU #34
Project Number: 112MC07170

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
373948	CS 1 (AH-1) 8’	soil	2014-09-05	00:00	2014-09-08
373949	CS 2 (AH-2) 4’	soil	2014-09-05	00:00	2014-09-08
373950	CS 3 (S-1) 6’	soil	2014-09-05	00:00	2014-09-08

Sample: 373948 - CS 1 (AH-1) 8’

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 373949 - CS 2 (AH-2) 4’

Param	Flag	Result	Units	RL
Chloride		**49.0**	mg/Kg	4

Sample: 373950 - CS 3 (S-1) 6’

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Tom Elliott
Tetra Tech
1901 N. Big Spring St.
Midland, TX, 79705

Report Date: September 17, 2014

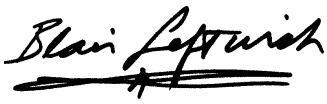
Work Order: 14090901

Project Location: Eddy Co, NM
Project Name: SME/ESDU #34
Project Number: 112MC07170

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
373938	T-1 (AH-1) 6-6.5’	soil	2014-09-03	00:00	2014-09-08
373939	T-1 (AH-1) 7-7.5’	soil	2014-09-03	00:00	2014-09-08
373940	T-1 (AH-1) 8-8.5’	soil	2014-09-03	00:00	2014-09-08
373941	T-2 (S1) 1-1.5’	soil	2014-09-03	00:00	2014-09-08
373942	T-2 (S1) 2-2.5’	soil	2014-09-03	00:00	2014-09-08
373943	T-2 (S1) 3-3.5’	soil	2014-09-03	00:00	2014-09-08
373944	T-2 (S1) 4-4.5’	soil	2014-09-03	00:00	2014-09-08
373945	T-2 (S1) 5-5.5’	soil	2014-09-03	00:00	2014-09-08
373946	T-2 (S1) 6-6.5’	soil	2014-09-03	00:00	2014-09-08
373947	T-2 (S1) 7-7.5’	soil	2014-09-03	00:00	2014-09-08

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project SME/ESDU #34 were received by TraceAnalysis, Inc. on 2014-09-08 and assigned to work order 14090901. Samples for work order 14090901 were received intact at a temperature of 9.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	97574	2014-09-11 at 14:16	115382	2014-09-11 at 15:35
Chloride (Titration)	SM 4500-Cl B	97605	2014-09-12 at 10:43	115418	2014-09-12 at 12:09

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14090901 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 373938 - T-1 (AH-1) 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**10000**	mg/Kg	10	4.00

Sample: 373939 - T-1 (AH-1) 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**9190**	mg/Kg	10	4.00

Sample: 373940 - T-1 (AH-1) 8-8.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**191**	mg/Kg	5	4.00

Sample: 373941 - T-2 (S1) 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**909**	mg/Kg	5	4.00

Sample: 373942 - T-2 (S1) 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**1150**	mg/Kg	5	4.00

Sample: 373943 - T-2 (S1) 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	Sample Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**766**	mg/Kg	5	4.00

Sample: 373944 - T-2 (S1) 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**3270**	mg/Kg	5	4.00

Sample: 373945 - T-2 (S1) 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1710**	mg/Kg	5	4.00

Sample: 373946 - T-2 (S1) 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 373947 - T-2 (S1) 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 115382

QC Batch:	115382	Date Analyzed:	2014-09-11	Analyzed By:	MM
Prep Batch:	97574	QC Preparation:	2014-09-11	Prepared By:	MM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 115418

QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	QC Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 115382 | Date Analyzed: 2014-09-11 | Analyzed By: MM
Prep Batch: 97574 | QC Preparation: 2014-09-11 | Prepared By: MM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2870	mg/Kg	5	2500	<19.2	115	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2780	mg/Kg	5	2500	<19.2	111	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM
Prep Batch: 97605 | QC Preparation: 2014-09-12 | Prepared By: MM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2680	mg/Kg	5	2500	<19.2	107	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	5	2500	<19.2	107	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 373943

QC Batch: 115382 | Date Analyzed: 2014-09-11 | Analyzed By: MM
Prep Batch: 97574 | QC Preparation: 2014-09-11 | Prepared By: MM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3490	mg/Kg	5	2500	766	109	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3540	mg/Kg	5	2500	766	111	78.9 - 121	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 373949

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM
Prep Batch: 97605 | QC Preparation: 2014-09-12 | Prepared By: MM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	5	2500	49	98	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2390	mg/Kg	5	2500	49	94	78.9 - 121	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 115382 | Date Analyzed: 2014-09-11 | Analyzed By: MM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-09-11

Standard (CCV-2)

QC Batch: 115382 | Date Analyzed: 2014-09-11 | Analyzed By: MM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2014-09-11

Standard (ICV-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-09-12

Standard (CCV-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-09-12

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

14090901

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: SM Energy
SITE MANAGER: Tom Elliott
PROJECT NO.: 112MC07170
PROJECT NAME: SM Energy - ESDU #34 Eddy Co, NM

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
373938	9/3		S		X	T-1 (AH 1) 6'-6.5'	1	N			X													X				
939						7'-7.5'																						
940						8'-8.5'																						
941						T-2 (S 1) 1'-1.5'																						
942						2'-2.5'																						
943						3'-3.5'																						
944						4'-4.5'																						
945						5'-5.5'																						
946						6'-6.5'																						
947						7'-7.5'																						

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Adrian Garcia	Date: 9/5/14 Time: 1700	RECEIVED BY: (Signature)	Date: 9/5/14 Time: 17:00
RELINQUISHED BY: (Signature)	Date: 9/8/14 Time: 16:41	RECEIVED BY: (Signature)	Date: 9/8/14 Time: 16:45
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) Adrian Garcia (AG) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #: OTHER:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Tom Elliott, Jeanie Fitch

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 9.90

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972•242•7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Tom Elliott
Tetra Tech
1901 N. Big Spring St.
Midland, TX, 79705

Report Date: September 17, 2014

Work Order: 14090902

Project Location: Eddy Co, NM
Project Name: SME/ESDU #34
Project Number: 112MC07170

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
373948	CS 1 (AH-1) 8'	soil	2014-09-05	00:00	2014-09-08
373949	CS 2 (AH-2) 4'	soil	2014-09-05	00:00	2014-09-08
373950	CS 3 (S-1) 6'	soil	2014-09-05	00:00	2014-09-08

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative

Samples for project SME/ESDU #34 were received by TraceAnalysis, Inc. on 2014-09-08 and assigned to work order 14090902. Samples for work order 14090902 were received intact at a temperature of 9.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	97605	2014-09-12 at 10:43	115418	2014-09-12 at 12:09

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14090902 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 373948 - CS 1 (AH-1) 8'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Sample: 373949 - CS 2 (AH-2) 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**49.0**	mg/Kg	5	4.00

Sample: 373950 - CS 3 (S-1) 6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	Sample Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride	U		<20.0	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 115418

QC Batch:	115418	Date Analyzed:	2014-09-12	Analyzed By:	MM
Prep Batch:	97605	QC Preparation:	2014-09-12	Prepared By:	MM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM
Prep Batch: 97605 | QC Preparation: 2014-09-12 | Prepared By: MM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2680	mg/Kg	5	2500	<19.2	107	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	5	2500	<19.2	107	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 373949

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM
Prep Batch: 97605 | QC Preparation: 2014-09-12 | Prepared By: MM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	5	2500	49	98	78.9 - 121

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2390	mg/Kg	5	2500	49	94	78.9 - 121	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (ICV-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-09-12

Standard (CCV-1)

QC Batch: 115418 | Date Analyzed: 2014-09-12 | Analyzed By: MM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-09-12

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

1409090 2

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: SM Energy

SITE MANAGER: Tom Elliott

PROJECT NO.: 112MC07170

PROJECT NAME: SM Energy - ESDU #34 Eddy Co. NM

LAB I.D. NUMBER	DATE 2014	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
373948	9/5		S		X	CS1 (AH1) 8'	1	N			X													X				
949						CS2 (AH2) 4'	1	N			X													X				
950						CS3 (NS-1) 6'	1	N			X													X				

RELINQUISHED BY: (Signature) Adrian Baeza — Date: 9/3/14 Time: 1700
RECEIVED BY: (Signature) — Date: 9/5/14 Time: 1700

RELINQUISHED BY: (Signature) — Date: 9/8/14 Time: 1642
RECEIVED BY: (Signature) — Date: 9/8/14 Time: 1646

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) Adrian Baeza — Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS
AIRBILL #:
OTHER:

RECEIVING LABORATORY: Trace Analysis
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Tom Elliott / Jeanie Fitch

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 9.9°

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.