

SITE INFORMATION

Report Type: Work Plan

General Site Information

Site:	Osage Federal 34 #1H					
Company:	SM Energy Company					
Section, Township and Range	Unit	Sec 34	T19S	R29E		
Lease Number:	30-015-41508					
County:	Eddy County					
GPS:	32.62298° N			104.05507° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	East of Carlsbad, from the intersection of US 62 and Burton Flats Rd. travel North for 3.85 miles.					
	Turn right traveling East for 1.0 miles. Turn left traveling North for 0.40 miles. The location will be					
	on the left.					

Release Data

Date Released:	12/12/2013
Type Release:	Foamy mixture of water, gas, oil and sand.
Source of Contamination:	Well blowout
Fluid Released:	440
Fluids Recovered:	270

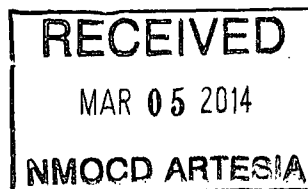
Official Communication

Name:	Vickie Martinez	Tom Elliott
Company:	SM Energy Company	Tetra Tech
Address:	3300 N A St. Suite 200	4000 N. Big Spring Suite 410
P.O. Box		
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@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	10
>100 ft.	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:	10	

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	1,000





TETRA TECH

January 14, 2013

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

**Re: Work Plan for the SM Energy Co., Osage Federal 34 1H, Section 34,
Township 19 South, Range 29 East, Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by Sm Energy Co. (SM Energy) to assess a spill from the Osage Federal 34 1H located in Section 34, Township 19 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.62298°, W 104.05507°. The site location is shown on Figures 1 and 2.

Background

According to the state of New Mexico C-141 Initial Report, a well blowout occurred on December 13, 2013, and released approximately four hundred and forty (440) barrels of fluid from the well. To alleviate the problem, SM Energy got the blowout under control and sealed the well. Approximately two hundred and seventy (270) barrels of fluid were recovered. The spill was initiated on the pad and flowed into the pasture affecting an area approximately 65' X 100'. The initial C-141 form is enclosed in Appendix A.

Groundwater

According to the New Mexico State Engineers Office there is one well listed in Section 34 with a depth to groundwater of 60' below surface. According to the NMOCD groundwater map the depth to groundwater is between 50' and 100' below surface. The groundwater data is shown in Appendix B.

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-

Tetra Tech

4000 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetratech.com



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 1,000 mg/kg.

Soil Assessment and Analytical Results

On December 18, 2013, Tetra Tech personnel inspected and sampled the spill area. Nine (9) auger holes (AH-1 through AH-9) were installed using a stainless steel hand auger to assess the impacted soils. 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 C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, auger holes (AH-4, AH-5, AH-6, AH-7, AH-8 and AH-9) had samples that were above the RRAL for benzene, which ranged from 10.2 mg/kg to 102 mg/kg. Auger holes (AH-2, AH-4, AH-5, AH-6, AH-7, AH-8 and AH-9) had samples that were above the RRAL for total BTEX. These auger hole samples had BTEX concentrations that ranged from 93.5 mg/kg to 840 mg/kg. Auger holes AH-2, AH-4 and AH-5 were not delineated for both benzene and BTEX.

Auger holes (AH-1, AH-2, AH-4, AH-5, AH-6, AH-7, AH-8 and AH-9) also were above the RRAL for TPH. The maximum TPH concentration was 15,790 mg/kg in AH-6 at a depth of 0-1.0', but declined to 25.4 at a depth of 1-1.5' below surface. Auger hole (AH-1, AH-2, AH-4 and AH-5) were not delineated for TPH.

Auger holes (AH-4, AH-5, AH-7, AH-8 and AH-9) showed chloride concentrations at 0-1' ranging from 2,210 mg/kg to 5,240 mg/kg. A deeper impact was detected in auger hole AH-9 of 3,050 at a depth of 1-1.5', however decreased to 39.3 at a depth of 2-2.5' below surface. Auger holes (AH-4 and AH-5) were not delineated for chlorides.

Work Plan

SM Energy proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. During the excavating, the areas of AH-1 and AH-2, AH-4 and AH-5 will be trenched with a backhoe to define benzene, BTEX, TPH and chloride extents, as needed. Based on the field results, these areas will be excavated to the appropriate depths.

These areas will be excavated to an estimated depth of 1.0' to 3.0' below surface to remove the elevated hydrocarbons and chlorides. The area of AH-7 will be excavated to 1.0' below surface and the area of AH-8 and AH-9 will be excavated to 2.0' to remove the deeper impact. Once excavated, confirmation

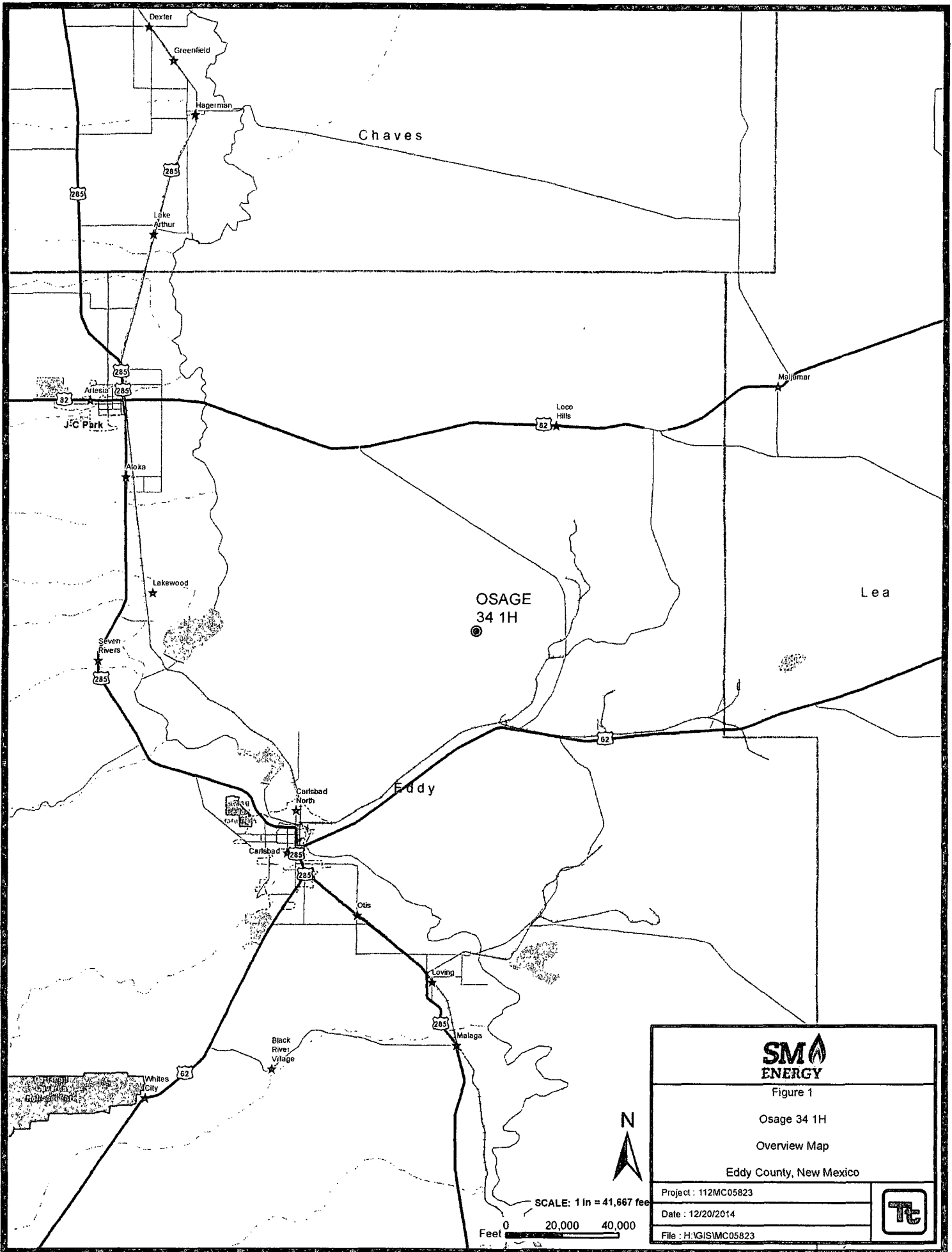


Figure 1

Osage 34 1H

Overview Map

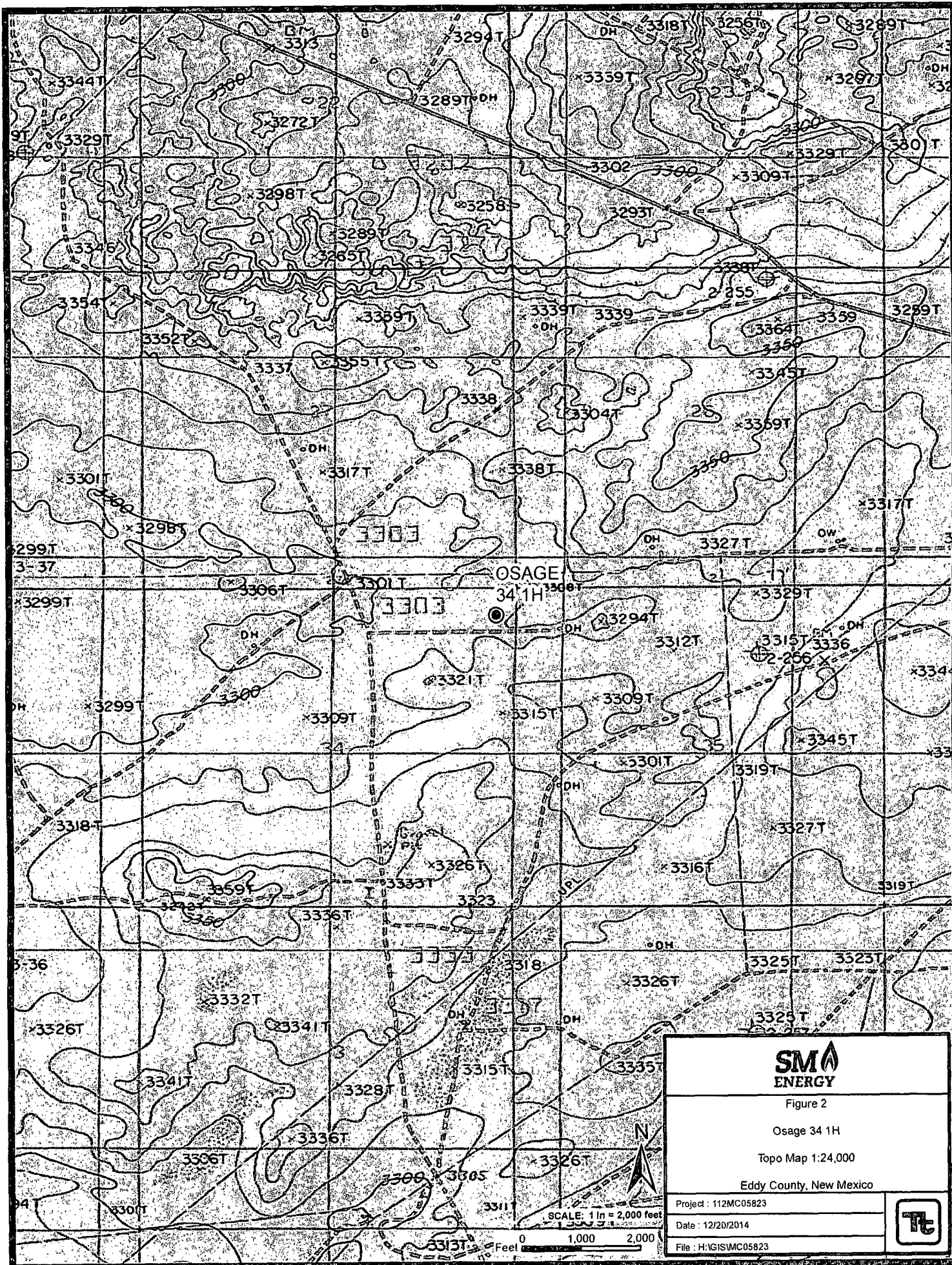
Eddy County, New Mexico

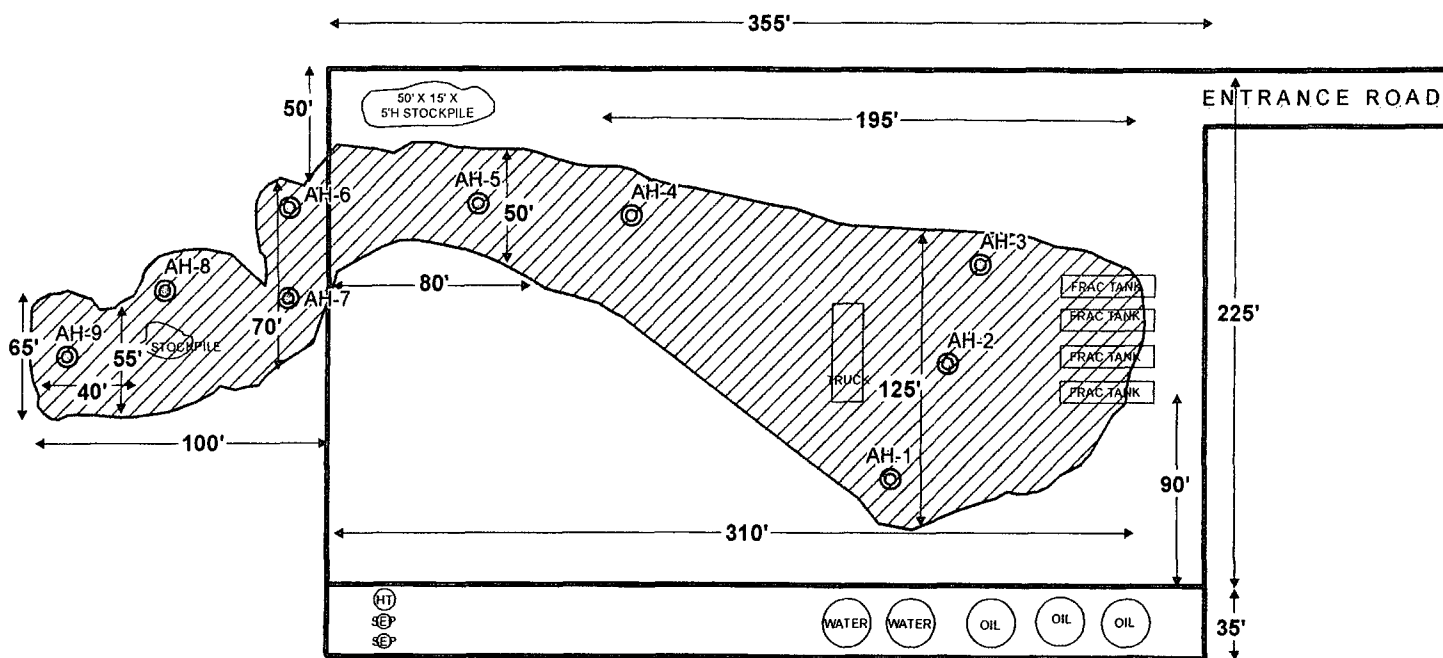
Project : 112MC05823

Date : 12/20/2014

File : H:\GIS\MC05823







EXPLANATION

- ⊗ AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA

SCALE: 1 IN = 83 FEET

Feet 0 40 80



Figure 3

Osage 34 1H

Spill Assessment Map

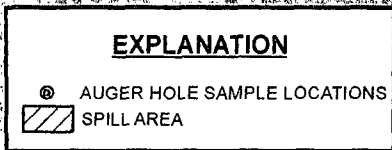
Eddy County, New Mexico

Project : 112MC05823

Date : 12/20/2014

File : H:\GIS\MC05823



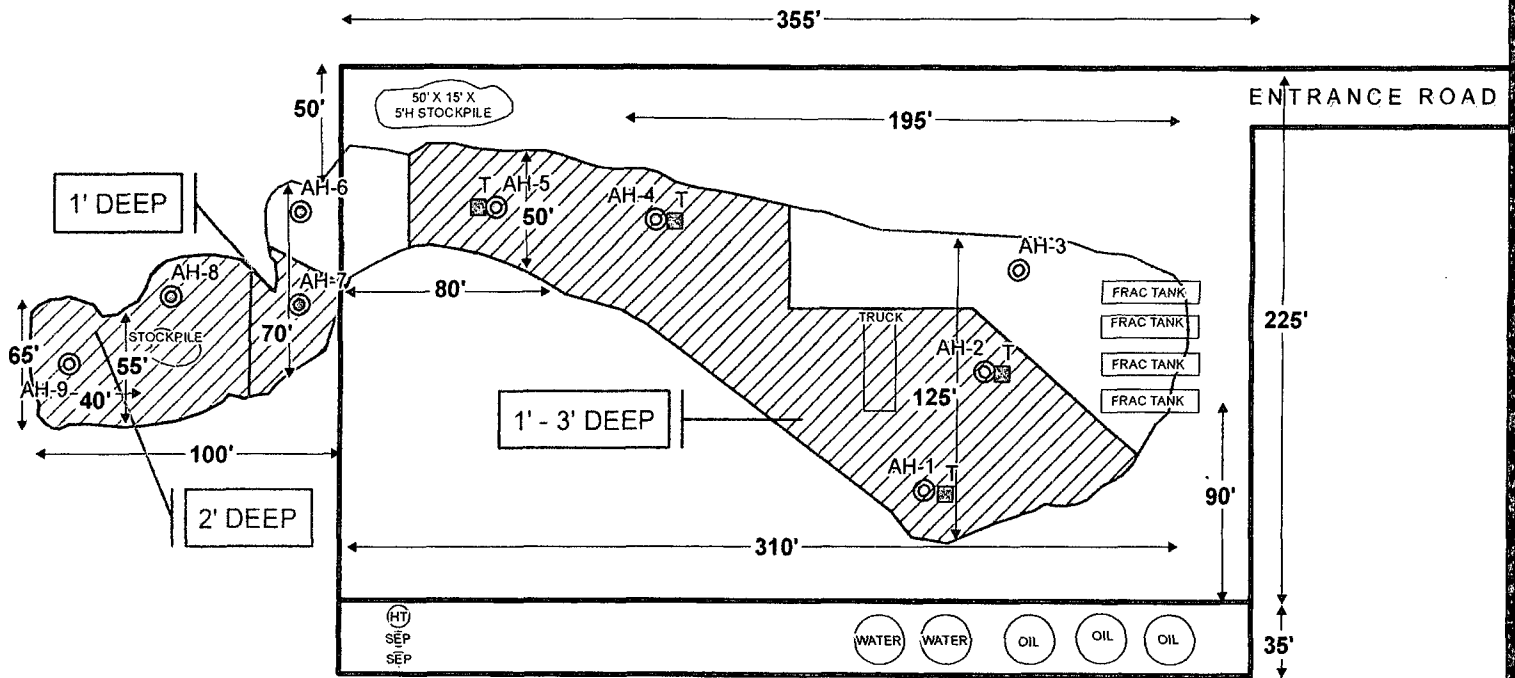


Feet 0 40 80



File : H:\GIS\MC05823





EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▣ PROPOSED TRENCH LOCATIONS
- ▨ PROPOSED EXCAVATION AREAS

SCALE: 1 IN = 83 FEET

Feet 0 40 80



Figure 4

Osage 34 1H

Proposed Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC05823

Date : 1/15/2014

File : H:\GIS\MC05823



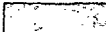
TABLES

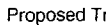
Table 1
SM Energy
Osage Federal 34 1H
Eddy County, New Mexico

[illegible]

Table 1
SM Energy
Osage Federal 34 1H
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-8	12/18/2013	0-1	X		6,220	2,580	8,800	85.4	296	88.2	223	693	3,200
	"	1-1.5	X		4,260	1,440	5,700	68.8	223	71.8	194	558	<20.0
		2-2.5	X		5.38	<50.0	5.38	<0.0200	<0.0200	<0.0200	0.0418	0.0418	<20.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	29.6
	"	4-4.5	X		-	-	-	-	-	-	-	-	<20.0
	"	5-5.5	X		-	-	-	-	-	-	-	-	69.1
	"	6-6.5	X		-	-	-	-	-	-	-	-	24.7
AH-9	12/18/2013	0-1	X		4,720	1,610	6,330	51.6	238	69.7	182	541	5,240
	"	1-1.5	X		<4.00	<50.0	<50.0	<0.0200	0.176	0.117	0.419	0.712	3,050
	"	2-2.5	X		-	-	-	-	-	-	-	-	39.3
	"	3-3.5	X		-	-	-	-	-	-	-	-	<20.0
	"	4-4.5	X		-	-	-	-	-	-	-	-	<20.0

 Proposed Excavation Depths

Trench  Proposed Trench Locations

PHOTOGRAPHS

**SM Energy Company
Osage Federal 34 1H
Eddy County, New Mexico**



TETRA TECH

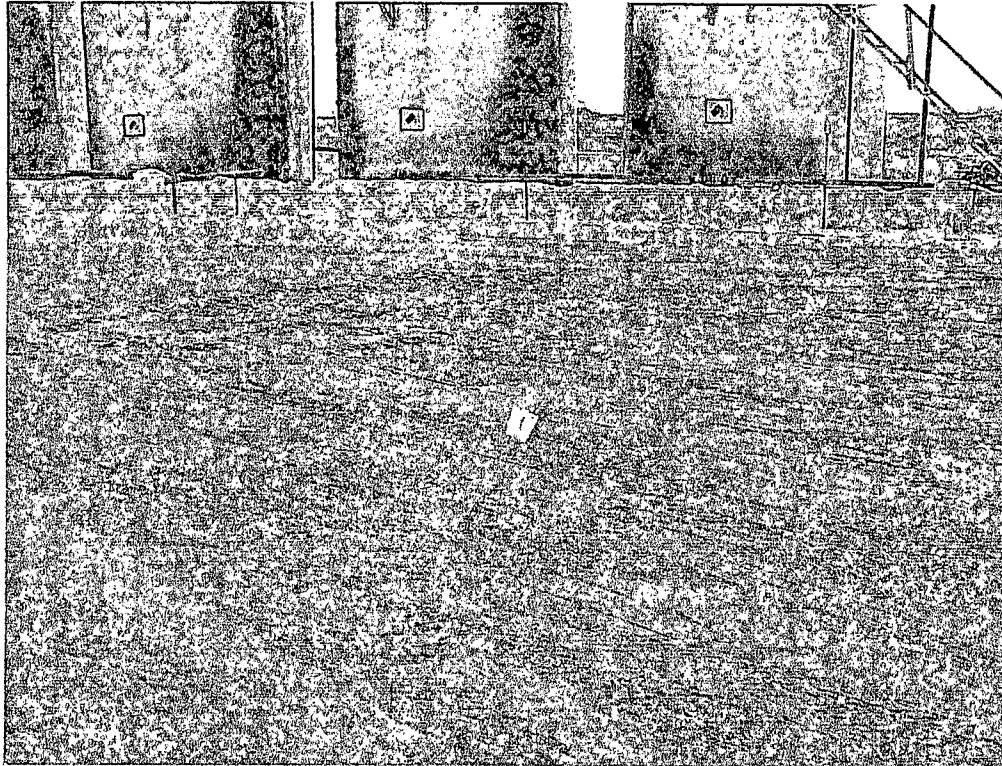


Photo 1. View to the South – Area of AH-1.



Photo 2. View to the West – Area of AH-2.

**SM Energy Company
Osage Federal 34 1H
Eddy County, New Mexico**



TETRA TECH

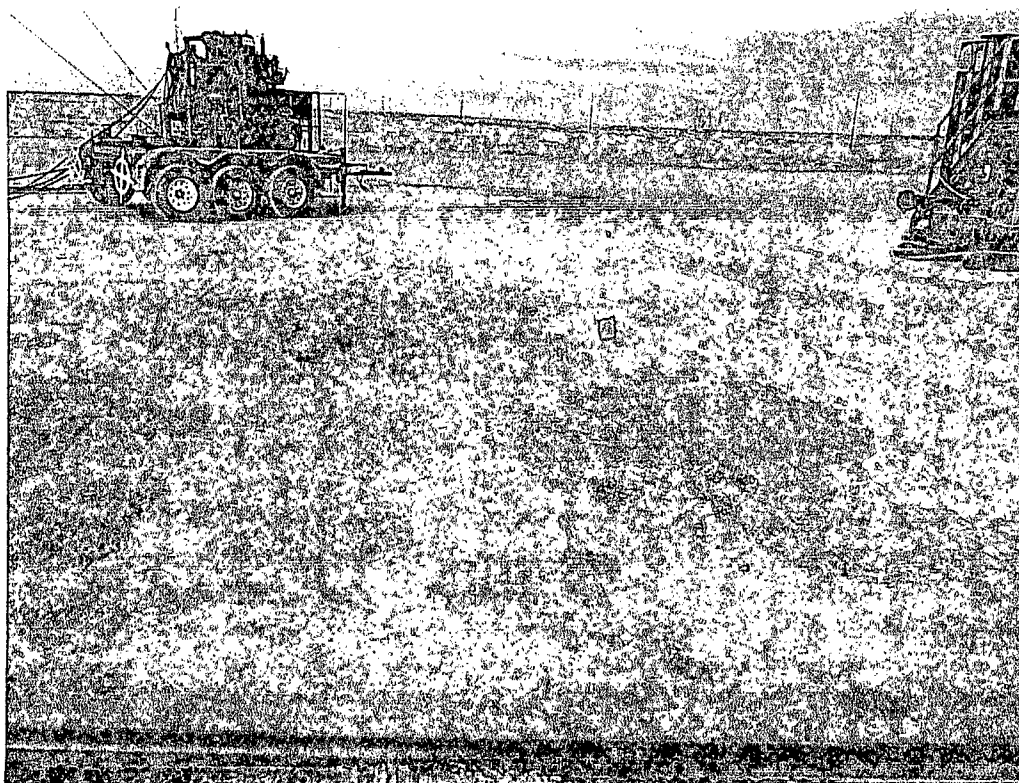


Photo 3. View to the North – Area of AH-3.

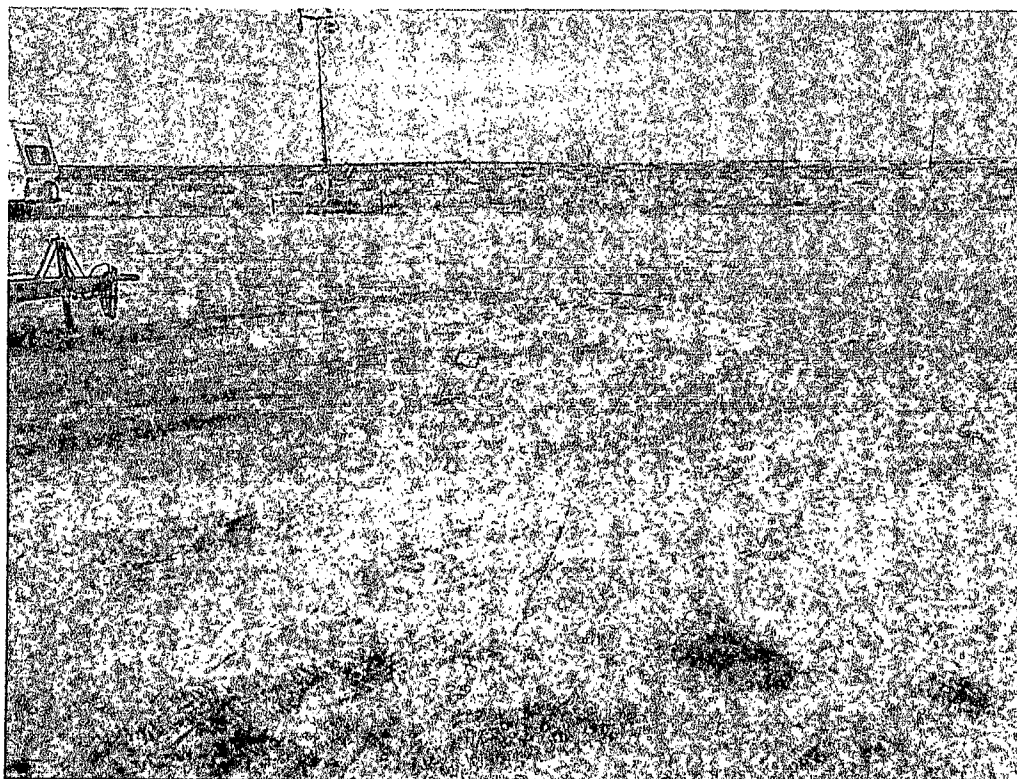


Photo 4. View to the West – Area of AH-4.

**SM Energy Company
Osage Federal 34 1H
Eddy County, New Mexico**



TETRA TECH

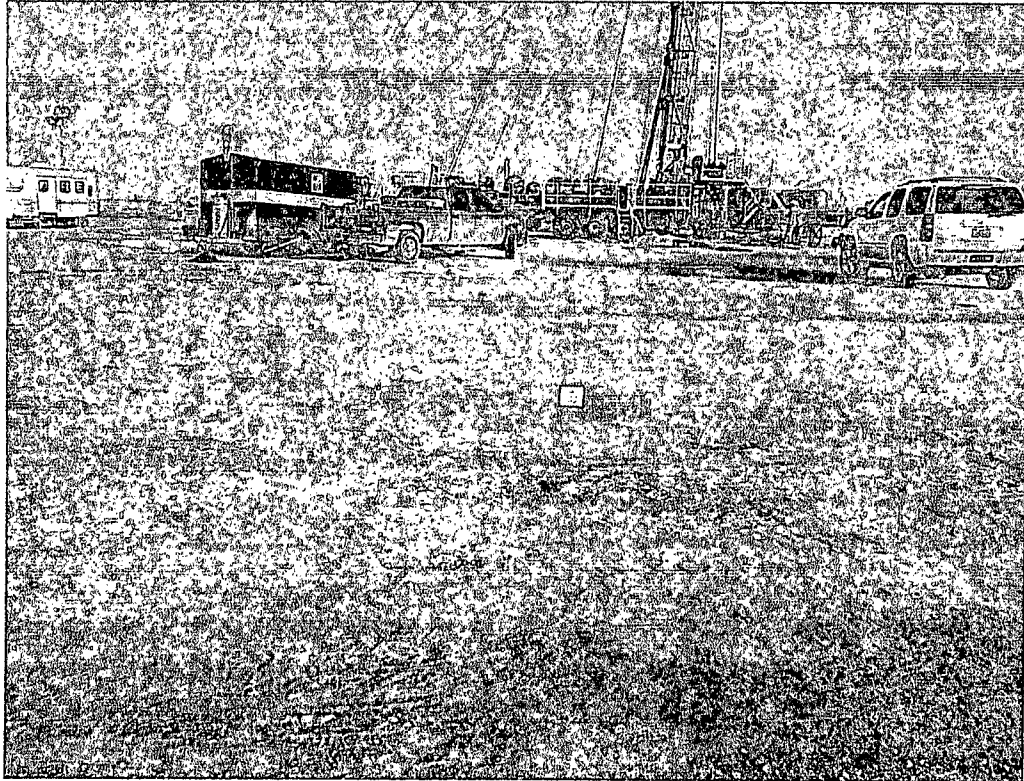


Photo 5. View to the North – Area of AH-5.

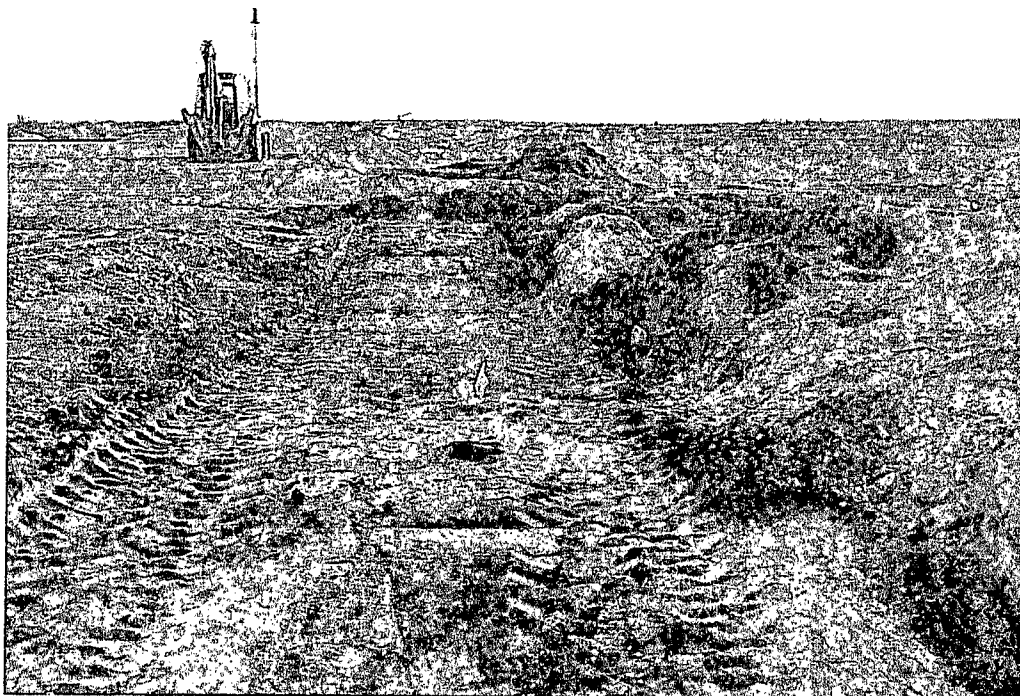


Photo 6. View to the West – Area of AH-6 and AH-7.

**SM Energy Company
Osage Federal 34 1H
Eddy County, New Mexico**



TETRA TECH



Photo 7. View to the North – Area of AH-8 and AH-9.

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	Telephone No. (432)688-1709
Facility Name OSAGE 34 FEDERAL 1H	Facility Type WELL

Surface Owner BLM	Mineral Owner BLM	API No. 30-015-41508
--------------------------	--------------------------	-----------------------------

LOCATION OF RELEASE

Unit Letter A	Section 34	Township 19S	Range 29E	Feet from the 450	North/South Line NORTH	Feet from the 330	East/West Line EAST	County EDDY
-------------------------	----------------------	------------------------	---------------------	-----------------------------	----------------------------------	-----------------------------	-------------------------------	-----------------------

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release FOAMY MIXTURE OF WATER, GAS, OIL & SAND	Volume of Release 440 PRELIM	Volume Recovered 270
Source of Release WELLHEAD (BOP)	Date and Hour of Occurrence	Date and Hour of Discovery SAME
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? JIM AMOS W/BLM - MIKE BRATCHER W/NMOC	
By Whom? MARK BONDY - RICHARD CHOATE	Date and Hour 12/13/13 10:30 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Wellbore fluids were released to the atmosphere, the well pad and to a small extent, the adjacent pasture. The cause of the incident was the failure of the Annular Blowout Preventer being used to seal the wellbore at the surface. The failed BOP element is being examined by the manufacturer. We have established a policy that requires a pump truck to be connected to all horizontal wells that are under initial completion to ensure the wellbore stays full of water during the work. In addition, Annular Blowout Preventers will not be relied upon as a

Describe Area Affected and Cleanup Action Taken.* primary wellbore seal.

Most of the fluids were contained on the well pad. Cleanup crews, safety specialists and well control specialists were immediately dispatched to the site. At approximately midnight, 6 hours after the event started, the flow from the well subsided to the point it was safe for personnel to approach the well, attach a sealing assembly to the tubing and lower it into the wellhead, sealing off the flow. Most of the discharged fluids ran over to a low spot on the West side of the well pad where they were collected by vacuum trucks.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: <i>Vickie Martinez</i>		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: 12/20/2013 Phone: (432)688-1709			

* Attach Additional Sheets If Necessary

OSAGE 34 FEDERAL 1H

C-141 ATTACHMENT

Describe Area Affected and Cleanup Action Taken.* continued:

The cleanup continued throughout the night and into Saturday morning. Jim Amos with the BLM visited the site on Saturday morning to assess the situation and provide some guidance on cleanup strategies. Approximately 17,700 square feet on the pad and another 4,300 off the pad to the west were impacted by the release. Tetra Tech (Environmental testing and consulting company) personnel visited the site Wednesday, December 18, to delineate the extent of the impact. Soil samples were taken to determine hydrocarbon and chloride levels. We are awaiting their recommendations and proposed timing for the final cleanup and remediation of the impacted pasture land. When analysis results are received for the soil samples, they will be evaluated and either a work plan or request for closure will be prepared and submitted for approval. It will likely be mid-January before the work plan or closure request will be ready.

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
SM ENERGY COMPANY - OSAGE 34 1H
Eddy County, New Mexico

18 South			28 East		
6	5	4	3	2	1
		108			
7	8	9	10	11	12
	69				
18	17	16	15	14	13
19	20	21	22	23	24
		226			
49	29	28	27	26	25
31	32	33	34	35	36
				65	

18 South			29 East		
6	5	4	3	2	1
7	8	9	10	95	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

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	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South			28 East		
6	5	4	3	2	1
7	8	9	246	10	11
		265			
18	17	16	15	14	13
91					
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

19 South			29 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
					123
19	20	21	22	23	24
					101
30	29	28	27	26	25
31	32	33	34	35	36
			62.9	121	115
			62' 60"	110	

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					
31	32	33	34	35	36
115					

20 South			28 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
115		29	25		19

20 South			29 East		
6	5	4	3	2	1
			91		
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
52					
31	32	33	34	35	36

20 South			30 East		
6	5	3.5	4	3	2
				6	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
		29			
30	29	28	27	26	25
		29	150		
31	32	33	34	35	36
170					

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

☐ Tetra Tech Temporary well (TD 180' - Dry Well)



New Mexico Office of the State Engineer Wells with Well Log Information

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

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(in feet)

POD Number	Code	Subbasin	County	Source	q	q	q	Sec	Tws	Range	X	Y	Start Date	Finish Date	Log File Date	Depth Well	Depth Water	Driller	License Number
CP 00681			ED		1	1	3	34	19S	29E	587230	3609127	04/23/1986	04/23/1986	04/25/1986			GLENN, CLARK A. "CORKY" (LD)	421
CP 00741			ED	Shallow	1	3	2	34	19S	29E	588030	3609533	04/17/1989	04/20/1989	04/24/1989	230	60	DUBOSE, BILL M. JR.	1107

Record Count: 2

PLSS Search:

Section(s): 34

Township: 19S

Range: 29E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/15/14 10:10 AM

WELLS WITH WELL LOG INFORMATION

APPENDIX C

Summary Report

(Corrected Report)

Tom Elliott
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: January 13, 2014

Work Order: 13121935



Project Location: Eddy Co, NM
Project Name: SME/Osage Fed 34 1H
Project Number: TBD

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
349548	AH-1 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349549	AH-2 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349550	AH-3 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349551	AH-4 0-1'	soil	2013-12-18	00:00	2013-12-19
349552	AH-5 0-1'	soil	2013-12-18	00:00	2013-12-19
349553	AH-6 0-1'	soil	2013-12-18	00:00	2013-12-19
349554	AH-6 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349555	AH-6 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349556	AH-6 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349557	AH-6 4-4.5'	soil	2013-12-18	00:00	2013-12-19
349558	AH-6 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349559	AH-7 0-1'	soil	2013-12-18	00:00	2013-12-19
349560	AH-7 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349561	AH-7 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349562	AH-7 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349563	AH-7 4-4.5'	soil	2013-12-18	00:00	2013-12-19
349564	AH-7 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349565	AH-7 6-6.5'	soil	2013-12-18	00:00	2013-12-19
349566	AH-7 7-7.5'	soil	2013-12-18	00:00	2013-12-19
349567	AH-7 8-8.5'	soil	2013-12-18	00:00	2013-12-19
349568	AH-7 9-9.5'	soil	2013-12-18	00:00	2013-12-19
349569	AH-8 0-1'	soil	2013-12-18	00:00	2013-12-19
349570	AH-8 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349571	AH-8 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349572	AH-8 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349573	AH-8 4-4.5'	soil	2013-12-18	00:00	2013-12-19
349574	AH-8 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349575	AH-8 6-6.5'	soil	2013-12-18	00:00	2013-12-19

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

This is only a summary. Please, refer to the complete report package for quality control data.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
349576	AH-9 0-1'	soil	2013-12-18	00:00	2013-12-19
349577	AH-9 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349578	AH-9 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349579	AH-9 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349580	AH-9 4-4.5'	soil	2013-12-18	00:00	2013-12-19

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
349548 - AH-1 0-0.5'	<0.100	<0.100	<0.100	0.229	1010	<20.0
349549 - AH-2 0-0.5'	0.631	21.8	18.2	53.2	1940	1060
349550 - AH-3 0-0.5'	0.0910	0.104	0.0620	0.245	303	20.0
349551 - AH-4 0-1'	10.2	66.0 _{je}	27.7	70.5 _{je}	1900	801
349552 - AH-5 0-1'	20.7	126 _{je}	58.0	154 _{je}	1460	1800
349553 - AH-6 0-1'	102	366	106	266	9640	6150
349554 - AH-6 1-1.5'	<0.0200	0.0853	0.154	0.601	<50.0	25.4
349559 - AH-7 0-1'	25.8	113 _{je}	36.2	93.6 _{je}	1780	2860
349560 - AH-7 1-1.5'	<0.0200	<0.0200	<0.0200	0.0543	<50.0	<4.00
349569 - AH-8 0-1'	85.4	296	88.2	223	2580	6220
349570 - AH-8 1-1.5'	68.8	223	71.8	194	1440	4260
349571 - AH-8 2-2.5'	<0.0200	<0.0200	<0.0200	0.0418	<50.0	5.38
349576 - AH-9 0-1'	51.6	238	69.7	182	1610	4720
349577 - AH-9 1-1.5'	<0.0200	0.176	0.117	0.419	<50.0	<4.00

Sample: 349548 - AH-1 0-0.5'

Param	Flag	Result	Units	RL
Chloride		347	mg/Kg	4

Sample: 349549 - AH-2 0-0.5'

Param	Flag	Result	Units	RL
Chloride		854	mg/Kg	4

Sample: 349550 - AH-3 0-0.5'

Param	Flag	Result	Units	RL
Chloride		55.3	mg/Kg	4

Sample: 349551 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		2210	mg/Kg	4

Sample: 349552 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		2240	mg/Kg	4

Sample: 349553 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		407	mg/Kg	4

Sample: 349554 - AH-6 1-1.5'

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

Sample: 349555 - AH-6 2-2.5'

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

Sample: 349556 - AH-6 3-3.5'

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

Sample: 349557 - AH-6 4-4.5'

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

Sample: 349558 - AH-6 5-5.5'

Param	Flag	Result	Units	RL
Chloride		25.1	mg/Kg	4

Sample: 349559 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		3070	mg/Kg	4

Sample: 349560 - AH-7 1-1.5'

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

Sample: 349561 - AH-7 2-2.5'

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

Sample: 349562 - AH-7 3-3.5'

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

Sample: 349563 - AH-7 4-4.5'

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

Sample: 349564 - AH-7 5-5.5'

Param	Flag	Result	Units	RL
Chloride		80.3	mg/Kg	4

Sample: 349565 - AH-7 6-6.5'

Param	Flag	Result	Units	RL
Chloride		70.3	mg/Kg	4

Sample: 349566 - AH-7 7-7.5'

Param	Flag	Result	Units	RL
Chloride		55.2	mg/Kg	4

Sample: 349567 - AH-7 8-8.5'

Param	Flag	Result	Units	RL
Chloride		25.1	mg/Kg	4

Sample: 349568 - AH-7 9-9.5'

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

Sample: 349569 - AH-8 0-1'

Param	Flag	Result	Units	RL
Chloride		3200	mg/Kg	4

Sample: 349570 - AH-8 1-1.5'

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

Sample: 349571 - AH-8 2-2.5'

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

Sample: 349572 - AH-8 3-3.5'

Param	Flag	Result	Units	RL
Chloride		29.6	mg/Kg	4

Sample: 349573 - AH-8 4-4.5'

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

Sample: 349574 - AH-8 5-5.5'

Param	Flag	Result	Units	RL
Chloride		69.1	mg/Kg	4

Sample: 349575 - AH-8 6-6.5'

Param	Flag	Result	Units	RL
Chloride		24.7	mg/Kg	4

Sample: 349576 - AH-9 0-1'

Param	Flag	Result	Units	RL
Chloride		5240	mg/Kg	4

Sample: 349577 - AH-9 1-1.5'

Param	Flag	Result	Units	RL
Chloride		3050	mg/Kg	4

Sample: 349578 - AH-9 2-2.5'

Param	Flag	Result	Units	RL
Chloride		39.3	mg/Kg	4

Sample: 349579 - AH-9 3-3.5'

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

Sample: 349580 - AH-9 4-4.5'

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



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1298 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

(Corrected Report)

Tom Elliott
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: January 13, 2014

Work Order: 13121935



Project Location: Eddy Co, NM
Project Name: SME/Osage Fed 34 1H
Project Number: TBD

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
349548	AH-1 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349549	AH-2 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349550	AH-3 0-0.5'	soil	2013-12-18	00:00	2013-12-19
349551	AH-4 0-1'	soil	2013-12-18	00:00	2013-12-19
349552	AH-5 0-1'	soil	2013-12-18	00:00	2013-12-19
349553	AH-6 0-1'	soil	2013-12-18	00:00	2013-12-19
349554	AH-6 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349555	AH-6 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349556	AH-6 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349557	AH-6 4-4.5'	soil	2013-12-18	00:00	2013-12-19
349558	AH-6 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349559	AH-7 0-1'	soil	2013-12-18	00:00	2013-12-19
349560	AH-7 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349561	AH-7 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349562	AH-7 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349563	AH-7 4-4.5'	soil	2013-12-18	00:00	2013-12-19

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
349564	AH-7 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349565	AH-7 6-6.5'	soil	2013-12-18	00:00	2013-12-19
349566	AH-7 7-7.5'	soil	2013-12-18	00:00	2013-12-19
349567	AH-7 8-8.5'	soil	2013-12-18	00:00	2013-12-19
349568	AH-7 9-9.5'	soil	2013-12-18	00:00	2013-12-19
349569	AH-8 0-1'	soil	2013-12-18	00:00	2013-12-19
349570	AH-8 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349571	AH-8 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349572	AH-8 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349573	AH-8 4-4.5'	soil	2013-12-18	00:00	2013-12-19
349574	AH-8 5-5.5'	soil	2013-12-18	00:00	2013-12-19
349575	AH-8 6-6.5'	soil	2013-12-18	00:00	2013-12-19
349576	AH-9 0-1'	soil	2013-12-18	00:00	2013-12-19
349577	AH-9 1-1.5'	soil	2013-12-18	00:00	2013-12-19
349578	AH-9 2-2.5'	soil	2013-12-18	00:00	2013-12-19
349579	AH-9 3-3.5'	soil	2013-12-18	00:00	2013-12-19
349580	AH-9 4-4.5'	soil	2013-12-18	00:00	2013-12-19

Report Corrections (Work Order 13121935)

- 1/13/14: Added BTEX to samples 349570 and 349571 per client.

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.

This report consists of a total of 59 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative	6
Analytical Report	7
Sample 349548 (AH-1 0-0.5')	7
Sample 349549 (AH-2 0-0.5')	8
Sample 349550 (AH-3 0-0.5')	9
Sample 349551 (AH-4 0-1')	11
Sample 349552 (AH-5 0-1')	12
Sample 349553 (AH-6 0-1')	14
Sample 349554 (AH-6 1-1.5')	15
Sample 349555 (AH-6 2-2.5')	17
Sample 349556 (AH-6 3-3.5')	17
Sample 349557 (AH-6 4-4.5')	17
Sample 349558 (AH-6 5-5.5')	18
Sample 349559 (AH-7 0-1')	18
Sample 349560 (AH-7 1-1.5')	19
Sample 349561 (AH-7 2-2.5')	21
Sample 349562 (AH-7 3-3.5')	21
Sample 349563 (AH-7 4-4.5')	21
Sample 349564 (AH-7 5-5.5')	22
Sample 349565 (AH-7 6-6.5')	22
Sample 349566 (AH-7 7-7.5')	22
Sample 349567 (AH-7 8-8.5')	23
Sample 349568 (AH-7 9-9.5')	23
Sample 349569 (AH-8 0-1')	23
Sample 349570 (AH-8 1-1.5')	25
Sample 349571 (AH-8 2-2.5')	26
Sample 349572 (AH-8 3-3.5')	28
Sample 349573 (AH-8 4-4.5')	28
Sample 349574 (AH-8 5-5.5')	28
Sample 349575 (AH-8 6-6.5')	28
Sample 349576 (AH-9 0-1')	29
Sample 349577 (AH-9 1-1.5')	30
Sample 349578 (AH-9 2-2.5')	32
Sample 349579 (AH-9 3-3.5')	32
Sample 349580 (AH-9 4-4.5')	32
Method Blanks	33
QC Batch 107808 - Method Blank (1)	33
QC Batch 107810 - Method Blank (1)	33
QC Batch 107811 - Method Blank (1)	33
QC Batch 107855 - Method Blank (1)	34
QC Batch 107859 - Method Blank (1)	34
QC Batch 107889 - Method Blank (1)	34
QC Batch 107900 - Method Blank (1)	35
QC Batch 107962 - Method Blank (1)	35

QC Batch 108061 - Method Blank (1)	36
QC Batch 108134 - Method Blank (1)	36
QC Batch 108136 - Method Blank (1)	36
QC Batch 108137 - Method Blank (1)	36

Laboratory Control Spikes 38

QC Batch 107808 - LCS (1)	38
QC Batch 107810 - LCS (1)	38
QC Batch 107811 - LCS (1)	39
QC Batch 107855 - LCS (1)	39
QC Batch 107859 - LCS (1)	40
QC Batch 107889 - LCS (1)	40
QC Batch 107900 - LCS (1)	41
QC Batch 107962 - LCS (1)	41
QC Batch 108061 - LCS (1)	42
QC Batch 108134 - LCS (1)	42
QC Batch 108136 - LCS (1)	43
QC Batch 108137 - LCS (1)	43
QC Batch 107808 - MS (1)	43
QC Batch 107810 - MS (1)	44
QC Batch 107811 - MS (1)	44
QC Batch 107855 - MS (1)	45
QC Batch 107859 - MS (1)	46
QC Batch 107889 - MS (1)	46
QC Batch 107900 - MS (1)	47
QC Batch 107962 - MS (1)	47
QC Batch 108061 - MS (1)	48
QC Batch 108134 - MS (1)	48
QC Batch 108136 - MS (1)	48
QC Batch 108137 - MS (1)	49

Calibration Standards 50

QC Batch 107808 - CCV (1)	50
QC Batch 107808 - CCV (2)	50
QC Batch 107808 - CCV (3)	50
QC Batch 107810 - CCV (1)	50
QC Batch 107810 - CCV (2)	51
QC Batch 107810 - CCV (3)	51
QC Batch 107811 - CCV (1)	51
QC Batch 107811 - CCV (2)	51
QC Batch 107811 - CCV (3)	52
QC Batch 107855 - CCV (1)	52
QC Batch 107855 - CCV (2)	52
QC Batch 107855 - CCV (3)	53
QC Batch 107859 - CCV (1)	53
QC Batch 107859 - CCV (2)	53
QC Batch 107889 - CCV (1)	53
QC Batch 107889 - CCV (2)	53

QC Batch 107889 - CCV (3)	54
QC Batch 107900 - CCV (1)	54
QC Batch 107900 - CCV (2)	54
QC Batch 107962 - CCV (1)	55
QC Batch 107962 - CCV (2)	55
QC Batch 108061 - CCV (1)	55
QC Batch 108061 - CCV (2)	55
QC Batch 108134 - CCV (1)	55
QC Batch 108134 - CCV (2)	56
QC Batch 108136 - CCV (1)	56
QC Batch 108136 - CCV (2)	56
QC Batch 108137 - CCV (1)	56
QC Batch 108137 - CCV (2)	57
Appendix	58
Report Definitions	58
Laboratory Certifications	58
Standard Flags	58
Result Comments	58
Attachments	59

Case Narrative

Samples for project SME/Osage Fed 34 1H were received by TraceAnalysis, Inc. on 2013-12-19 and assigned to work order 13121935. Samples for work order 13121935 were received intact at a temperature of 1.4 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	91224	2013-12-20 at 12:31	107810	2013-12-23 at 09:48
BTEX	S 8021B	91258	2013-12-23 at 12:50	107855	2013-12-24 at 13:15
BTEX	S 8021B	91310	2013-12-30 at 14:58	107900	2013-12-30 at 20:21
Chloride (Titration)	SM 4500-Cl B	91411	2014-01-03 at 11:04	108061	2014-01-06 at 16:26
Chloride (Titration)	SM 4500-Cl B	91411	2014-01-03 at 11:04	108134	2014-01-09 at 09:25
Chloride (Titration)	SM 4500-Cl B	91411	2014-01-03 at 11:04	108136	2014-01-09 at 09:54
Chloride (Titration)	SM 4500-Cl B	91411	2014-01-03 at 11:04	108137	2014-01-09 at 10:31
TPH DRO - NEW	S 8015 D	91251	2013-12-23 at 08:35	107808	2013-12-23 at 08:40
TPH DRO - NEW	S 8015 D	91289	2013-12-27 at 12:00	107859	2013-12-27 at 08:49
TPH DRO - NEW	S 8015 D	91365	2014-01-02 at 10:30	107962	2014-01-02 at 14:09
TPH GRO	S 8015 D	91224	2013-12-20 at 12:31	107811	2013-12-23 at 09:51
TPH GRO	S 8015 D	91286	2013-12-24 at 09:00	107889	2013-12-30 at 15:54

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 13121935 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.

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 7 of 59
Eddy Co, NM

Analytical Report

Sample: 349548 - AH-1 0-0.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	<0.100	mg/Kg	5	0.0200
Toluene		1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	u	1	<0.100	mg/Kg	5	0.0200
Xylene		1	0.229	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	1 Qsr	Qsr	1.31	mg/Kg	5	2.00	66	70 - 130
4-Bromofluorobenzene (4-BFB)			1.76	mg/Kg	5	2.00	88	70 - 130

Sample: 349548 - AH-1 0-0.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			347	mg/Kg	5	4.00

Sample: 349548 - AH-1 0-0.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107808
Prep Batch: 91251

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation:

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1010	mg/Kg	5	50.0

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 8 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	152	mg/Kg	5	100	152	70 - 130

Sample: 349548 - AH-1 0-0.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107811
Prep Batch: 91224

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	5	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	4.61	mg/Kg	5	2.00	230	70 - 130

Sample: 349549 - AH-2 0-0.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL	Result	Units	Dilution	RL
Benzene				0.631	mg/Kg	10	0.0200
Toluene				21.8	mg/Kg	10	0.0200
Ethylbenzene				18.2	mg/Kg	10	0.0200
Xylene				53.2	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	² Qsr	Qsr	1.26	mg/Kg	10	2.00	63	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	10.1	mg/Kg	10	2.00	505	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 9 of 59
Eddy Co, NM

Sample: 349549 - AH-2 0-0.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108061 Date Analyzed: 2014-01-06 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			854	mg/Kg	5	4.00

Sample: 349549 - AH-2 0-0.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 107808 Date Analyzed: 2013-12-23 Analyzed By: KC
Prep Batch: 91251 Sample Preparation: Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1940	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	167	mg/Kg	1	100	167	70 - 130

Sample: 349549 - AH-2 0-0.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 107811 Date Analyzed: 2013-12-23 Analyzed By: AK
Prep Batch: 91224 Sample Preparation: 2013-12-20 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1060	mg/Kg	10	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	10	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	31.3	mg/Kg	10	2.00	1565	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 10 of 59
Eddy Co, NM

Sample: 349550 - AH-3 0-0.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	0.0910	mg/Kg	2	0.0200
Toluene		1	0.104	mg/Kg	2	0.0200
Ethylbenzene		1	0.0620	mg/Kg	2	0.0200
Xylene		1	0.245	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	3	Q _{sr}	1.21	mg/Kg	2	2.00	60	70 - 130
4-Bromofluorobenzene (4-BFB)			1.65	mg/Kg	2	2.00	82	70 - 130

Sample: 349550 - AH-3 0-0.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			55.3	mg/Kg	5	4.00

Sample: 349550 - AH-3 0-0.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107808
Prep Batch: 91251

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation:

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	303	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			120	mg/Kg	1	100	120	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 11 of 59
Eddy Co, NM

Sample: 349550 - AH-3 0-0.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107811
Prep Batch: 91224

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	20.0	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.72	mg/Kg	2	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.50	mg/Kg	2	2.00	125	70 - 130

Sample: 349551 - AH-4 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	10.2	mg/Kg	5	0.0200
Toluene	Je	1	66.0	mg/Kg	5	0.0200
Ethylbenzene		1	27.7	mg/Kg	5	0.0200
Xylene	Je	1	70.5	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.24	mg/Kg	5	2.00	62	70 - 130
4-Bromofluorobenzene (4-BFB)			14.7	mg/Kg	5	2.00	735	70 - 130

Sample: 349551 - AH-4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 12 of 59
Eddy Co, NM

sample 349551 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2210	mg/Kg	5	4.00

Sample: 349551 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 107808

Prep Batch: 91251

Analytical Method: S 8015 D

Date Analyzed: 2013-12-23

Sample Preparation:

Prep Method: N/A

Analyzed By: KC

Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO			1900	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	222	mg/Kg	5	100	222	70 - 130

Sample: 349551 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 107889

Prep Batch: 91286

Analytical Method: S 8015 D

Date Analyzed: 2013-12-30

Sample Preparation: 2013-12-24

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			801	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.05	mg/Kg	100	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	16.5	mg/Kg	100	2.00	825	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 13 of 59
Eddy Co, NM

Sample: 349552 - AH-5 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	20.7	mg/Kg	10	0.0200
Toluene	Je	1	126	mg/Kg	10	0.0200
Ethylbenzene		1	58.0	mg/Kg	10	0.0200
Xylene	Je	1	154	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.24	mg/Kg	10	2.00	62	70 - 130
4-Bromofluorobenzene (4-BFB)			29.6	mg/Kg	10	2.00	1480	70 - 130

Sample: 349552 - AH-5 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2240	mg/Kg	10	4.00

Sample: 349552 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107808
Prep Batch: 91251

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation:

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1460	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	196	mg/Kg	5	100	196	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 14 of 59
Eddy Co, NM

Sample: 349552 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107889
Prep Batch: 91286

Analytical Method: S 8015 D
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-24

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	1800	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	3.05	mg/Kg	100	2.00	152	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	36.8	mg/Kg	100	2.00	1840	70 - 130

Sample: 349553 - AH-6 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107810
Prep Batch: 91224

Analytical Method: S 8021B
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	102	mg/Kg	50	0.0200
Toluene		1	366	mg/Kg	50	0.0200
Ethylbenzene		1	106	mg/Kg	50	0.0200
Xylene		1	266	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.08	mg/Kg	50	2.00	54	70 - 130
4-Bromofluorobenzene (4-BFB)			43.3	mg/Kg	50	2.00	2165	70 - 130

Sample: 349553 - AH-6 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 15 of 59
Eddy Co, NM

sample 349553 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			407	mg/Kg	5	4.00

Sample: 349553 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107808
Prep Batch: 91251

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation:

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	9640	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	614	mg/Kg	5	100	614	70 - 130

Sample: 349553 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107889
Prep Batch: 91286

Analytical Method: S 8015 D
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-24

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	6150	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.56	mg/Kg	100	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	45.9	mg/Kg	100	2.00	2295	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 16 of 59
Eddy Co, NM

Sample: 349554 - AH-6 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 107855

Prep Batch: 91258

Analytical Method: S 8021B

Date Analyzed: 2013-12-24

Sample Preparation: 2013-12-23

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	0.0853	mg/Kg	1	0.0200
Ethylbenzene		1	0.154	mg/Kg	1	0.0200
Xylene		1	0.601	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	70 - 130

Sample: 349554 - AH-6 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 108061

Prep Batch: 91411

Analytical Method: SM 4500-Cl B

Date Analyzed: 2014-01-06

Sample Preparation: 2014-01-03

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Sample: 349554 - AH-6 1-1.5'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 107962

Prep Batch: 91365

Analytical Method: S 8015 D

Date Analyzed: 2014-01-02

Sample Preparation: 2014-01-02

Prep Method: N/A

Analyzed By: KC

Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		118	mg/Kg	1	100	118		70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 17 of 59
Eddy Co, NM

Sample: 349554 - AH-6 1-1.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107889
Prep Batch: 91286

Analytical Method: S 8015 D
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-24

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			25.4	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

Sample: 349555 - AH-6 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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

Sample: 349556 - AH-6 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108061
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-06
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 18 of 59
Eddy Co, NM

Sample: 349557 - AH-6 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108061 Date Analyzed: 2014-01-06 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

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

Sample: 349558 - AH-6 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108134 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			25.1	mg/Kg	5	4.00

Sample: 349559 - AH-7 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 107810 Date Analyzed: 2013-12-23 Analyzed By: AK
Prep Batch: 91224 Sample Preparation: 2013-12-20 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	25.8	mg/Kg	10	0.0200
Toluene	Je	1	113	mg/Kg	10	0.0200
Ethylbenzene		1	36.2	mg/Kg	10	0.0200
Xylene	Je	1	93.6	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	⁴ Qsr	Qsr	1.05	mg/Kg	10	2.00	52	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	12.9	mg/Kg	10	2.00	645	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 19 of 59
Eddy Co, NM

Sample: 349559 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108134	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3070	mg/Kg	10	4.00

Sample: 349559 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2013-12-23	Analyzed By:	KC
QC Batch:	107808	Sample Preparation:		Prepared By:	KC
Prep Batch:	91251				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO			1780	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	QNT	QNT	188	mg/Kg	5	100	188	70 - 130

Sample: 349559 - AH-7 0-1'

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2013-12-30	Analyzed By:	AK
QC Batch:	107889	Sample Preparation:	2013-12-24	Prepared By:	AK
Prep Batch:	91286				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			2860	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	100	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)	QNT	QNT	48.4	mg/Kg	100	2.00	2420	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 20 of 59
Eddy Co, NM

Sample: 349560 - AH-7 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107855
Prep Batch: 91258

Analytical Method: S 8021B
Date Analyzed: 2013-12-24
Sample Preparation: 2013-12-23

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.0200	mg/Kg	1	0.0200
Toluene	u	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene		1	<0.0200	mg/Kg	1	0.0200
Xylene		1	0.0543	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	70 - 130

Sample: 349560 - AH-7 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 108134
Prep Batch: 91411

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-09
Sample Preparation: 2014-01-03

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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

Sample: 349560 - AH-7 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107859
Prep Batch: 91289

Analytical Method: S 8015 D
Date Analyzed: 2013-12-27
Sample Preparation: 2013-12-26

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 21 of 59
Eddy Co, NM

Sample: 349560 - AH-7 1-1.5'

Laboratory:	Midland		
Analysis:	TPH GRO	Analytical Method:	S 8015 D
QC Batch:	107889	Date Analyzed:	2013-12-30
Prep Batch:	91286	Sample Preparation:	2013-12-24
		Prep Method:	S 5035
		Analyzed By:	AK
		Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		u	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.34	mg/Kg	1	2.00	117	70 - 130
4-Bromofluorobenzene (4-BFB)			2.31	mg/Kg	1	2.00	116	70 - 130

Sample: 349561 - AH-7 2-2.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	108134	Date Analyzed:	2014-01-09
Prep Batch:	91411	Sample Preparation:	2014-01-03
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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

Sample: 349562 - AH-7 3-3.5'

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	108134	Date Analyzed:	2014-01-09
Prep Batch:	91411	Sample Preparation:	2014-01-03
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 22 of 59
Eddy Co, NM

Sample: 349563 - AH-7 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108134	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

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

Sample: 349564 - AH-7 5-5.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108134	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			80.3	mg/Kg	5	4.00

Sample: 349565 - AH-7 6-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108134	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			70.3	mg/Kg	5	4.00

Sample: 349566 - AH-7 7-7.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108134	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 23 of 59
Eddy Co, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			55.2	mg/Kg	5	4.00

Sample: 349567 - AH-7 8-8.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108134 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			25.1	mg/Kg	5	4.00

Sample: 349568 - AH-7 9-9.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

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

Sample: 349569 - AH-8 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 107810 Date Analyzed: 2013-12-23 Analyzed By: AK
Prep Batch: 91224 Sample Preparation: 2013-12-20 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	85.4	mg/Kg	50	0.0200
Toluene		1	296	mg/Kg	50	0.0200
Ethylbenzene		1	88.2	mg/Kg	50	0.0200

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 24 of 59
Eddy Co, NM

sample 349569 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene		1	223	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	⁵ Q _{sr}	Q _{sr}	0.903	mg/Kg	50	2.00	45	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	34.3	mg/Kg	50	2.00	1715	70 - 130

Sample: 349569 - AH-8 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3200	mg/Kg	10	4.00

Sample: 349569 - AH-8 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 107808 Date Analyzed: 2013-12-23 Analyzed By: KC
Prep Batch: 91251 Sample Preparation: Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	2580	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	231	mg/Kg	5	100	231	70 - 130

Sample: 349569 - AH-8 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 107811 Date Analyzed: 2013-12-23 Analyzed By: AK
Prep Batch: 91224 Sample Preparation: 2013-12-20 Prepared By: AK

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 25 of 59
Eddy Co, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	6220	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	6 Qsr	Qsr	1.18	mg/Kg	50	2.00	59	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	108	mg/Kg	50	2.00	5400	70 - 130

Sample: 349570 - AH-8 1-1.5'

Laboratory: Midland

Analysis: BTEX

QC Batch: 107855

Prep Batch: 91258

Analytical Method: S 8021B

Date Analyzed: 2013-12-24

Sample Preparation: 2013-12-23

Prep Method: S 5035

Analyzed By: AK

Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	68.8	mg/Kg	10	0.0200
Toluene		1	223	mg/Kg	10	0.0200
Ethylbenzene		1	71.8	mg/Kg	10	0.0200
Xylene		1	194	mg/Kg	10	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			19.1	mg/Kg	10	20.0	96	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	34.7	mg/Kg	10	20.0	174	70 - 130

Sample: 349570 - AH-8 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 108136

Prep Batch: 91411

Analytical Method: SM 4500-Cl B

Date Analyzed: 2014-01-09

Sample Preparation: 2014-01-03

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 26 of 59
Eddy Co, NM

Sample: 349570 - AH-8 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107859
Prep Batch: 91289

Analytical Method: S 8015 D
Date Analyzed: 2013-12-27
Sample Preparation: 2013-12-26

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1440	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	QSR	QSR	167	mg/Kg	1	100	167	70 - 130

Sample: 349570 - AH-8 1-1.5'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107889
Prep Batch: 91286

Analytical Method: S 8015 D
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-24

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	4260	mg/Kg	100	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.53	mg/Kg	100	2.00	76	70 - 130
4-Bromofluorobenzene (4-BFB)	QSR	QSR	33.8	mg/Kg	100	2.00	1690	70 - 130

Sample: 349571 - AH-8 2-2.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107900
Prep Batch: 91310

Analytical Method: S 8021B
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-30

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene	U	1	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	1	<0.0200	mg/Kg	1	0.0200
Xylene		1	0.0418	mg/Kg	1	0.0200

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 27 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.07	mg/Kg	1	2.00	104	70 - 130

Sample: 349571 - AH-8 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

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

Sample: 349571 - AH-8 2-2.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 107859 Date Analyzed: 2013-12-27 Analyzed By: KC
Prep Batch: 91289 Sample Preparation: 2013-12-26 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO			<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			118	mg/Kg	1	100	118	70 - 130

Sample: 349571 - AH-8 2-2.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 107889 Date Analyzed: 2013-12-30 Analyzed By: AK
Prep Batch: 91286 Sample Preparation: 2013-12-24 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			5.38	mg/Kg	1	4.00

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 28 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			2.26	mg/Kg	1	2.00	113	70 - 130

Sample: 349572 - AH-8 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			29.6	mg/Kg	5	4.00

Sample: 349573 - AH-8 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

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

Sample: 349574 - AH-8 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			69.1	mg/Kg	5	4.00

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 29 of 59
Eddy Co, NM

Sample: 349575 - AH-8 6-6.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108136	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			24.7	mg/Kg	5	4.00

Sample: 349576 - AH-9 0-1'

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2013-12-23	Analyzed By:	AK
QC Batch:	107810	Sample Preparation:	2013-12-20	Prepared By:	AK
Prep Batch:	91224				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	51.6	mg/Kg	50	0.0200
Toluene		1	238	mg/Kg	50	0.0200
Ethylbenzene		1	69.7	mg/Kg	50	0.0200
Xylene		1	182	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{SR}	Q _{SR}	84.3	mg/Kg	50	2.00	4215	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{SR}	Q _{SR}	23.1	mg/Kg	50	2.00	1155	70 - 130

Sample: 349576 - AH-9 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108136	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5240	mg/Kg	10	4.00

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 30 of 59
Eddy Co, NM

Sample: 349576 - AH-9 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 107808
Prep Batch: 91251

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation:

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	1610	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{NR}	Q _{NR}	176	mg/Kg	5	100	176	70 - 130

Sample: 349576 - AH-9 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 107811
Prep Batch: 91224

Analytical Method: S 8015 D
Date Analyzed: 2013-12-23
Sample Preparation: 2013-12-20

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	4720	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{NR}	Q _{NR}	1.07	mg/Kg	50	2.00	54	70 - 130
4-Bromofluorobenzene (4-BFB)	Q _{NR}	Q _{NR}	80.6	mg/Kg	50	2.00	4030	70 - 130

Sample: 349577 - AH-9 1-1.5'

Laboratory: Midland
Analysis: BTEX
QC Batch: 107855
Prep Batch: 91258

Analytical Method: S 8021B
Date Analyzed: 2013-12-24
Sample Preparation: 2013-12-23

Prep Method: S 5035
Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	1	<0.0200	mg/Kg	1	0.0200
Toluene		1	0.176	mg/Kg	1	0.0200
Ethylbenzene		1	0.117	mg/Kg	1	0.0200
Xylene		1	0.419	mg/Kg	1	0.0200

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 31 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

Sample: 349577 - AH-9 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 Sample Preparation: 2014-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3050	mg/Kg	10	4.00

Sample: 349577 - AH-9 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 107859 Date Analyzed: 2013-12-27 Analyzed By: KC
Prep Batch: 91289 Sample Preparation: 2013-12-26 Prepared By: KC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			117	mg/Kg	1	100	117	70 - 130

Sample: 349577 - AH-9 1-1.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 107889 Date Analyzed: 2013-12-30 Analyzed By: AK
Prep Batch: 91286 Sample Preparation: 2013-12-24 Prepared By: AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	<4.00	mg/Kg	1	4.00

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 32 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 349578 - AH-9 2-2.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108137	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			39.3	mg/Kg	5	4.00

Sample: 349579 - AH-9 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108137	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

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

Sample: 349580 - AH-9 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2014-01-09	Analyzed By:	AR
QC Batch:	108137	Sample Preparation:	2014-01-03	Prepared By:	AR
Prep Batch:	91411				

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 33 of 59
Eddy Co, NM

Method Blanks

Method Blank (1) QC Batch: 107808

QC Batch: 107808
Prep Batch: 91251

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-23

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.88	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			109	mg/Kg	1	100	109	88.3 - 126.1

Method Blank (1) QC Batch: 107810

QC Batch: 107810
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00533	mg/Kg	0.02
Toluene		1	<0.00645	mg/Kg	0.02
Ethylbenzene		1	<0.0116	mg/Kg	0.02
Xylene		1	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.45	mg/Kg	1	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)			1.47	mg/Kg	1	2.00	74	70 - 130

Method Blank (1) QC Batch: 107811

QC Batch: 107811
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 34 of 59
Eddy Co, NM

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70 - 130

Method Blank (1) QC Batch: 107855

QC Batch: 107855
Prep Batch: 91258

Date Analyzed: 2013-12-24
QC Preparation: 2013-12-23

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00354	mg/Kg	0.02
Toluene		1	<0.00966	mg/Kg	0.02
Ethylbenzene		1	<0.00790	mg/Kg	0.02
Xylene		1	<0.00667	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Method Blank (1) QC Batch: 107859

QC Batch: 107859
Prep Batch: 91289

Date Analyzed: 2013-12-27
QC Preparation: 2013-12-27

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<6.88	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			116	mg/Kg	1	100	116	88.3 - 126.1

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 35 of 59
Eddy Co, NM

Method Blank (1) QC Batch: 107889

QC Batch: 107889
Prep Batch: 91286

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-24

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<2.32	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Method Blank (1) QC Batch: 107900

QC Batch: 107900
Prep Batch: 91310

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-30

Analyzed By: AK
Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00354	mg/Kg	0.02
Toluene		1	<0.00966	mg/Kg	0.02
Ethylbenzene		1	<0.00790	mg/Kg	0.02
Xylene		1	<0.00667	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	70 - 130

Method Blank (1) QC Batch: 107962

QC Batch: 107962
Prep Batch: 91365

Date Analyzed: 2014-01-02
QC Preparation: 2014-01-02

Analyzed By: KC
Prepared By: KC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	10.2	mg/Kg	50

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 36 of 59
Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			115	mg/Kg	1	100	115	88.3 - 126.1

Method Blank (1) QC Batch: 108061

QC Batch: 108061 Date Analyzed: 2014-01-06 Analyzed By: AR
Prep Batch: 91411 QC Preparation: 2014-01-03 Prepared By: AR

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

Method Blank (1) QC Batch: 108134

QC Batch: 108134 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 QC Preparation: 2014-01-03 Prepared By: AR

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

Method Blank (1) QC Batch: 108136

QC Batch: 108136 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 QC Preparation: 2014-01-03 Prepared By: AR

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

Method Blank (1) QC Batch: 108137

QC Batch: 108137 Date Analyzed: 2014-01-09 Analyzed By: AR
Prep Batch: 91411 QC Preparation: 2014-01-03 Prepared By: AR

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 37 of 59
Eddy Co, NM

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 38 of 59
Eddy Co, NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 107808
Prep Batch: 91251

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-23

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	292	mg/Kg	1	250	<6.88	117	79.4 - 120.1

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
DRO		1	291	mg/Kg	1	250	<6.88	116	79.4 - 120.1	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	112	112	mg/Kg	1	100	112	112	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 107810
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.56	mg/Kg	1	2.00	<0.00533	78	70 - 130
Toluene		1	1.74	mg/Kg	1	2.00	<0.00645	87	70 - 130
Ethylbenzene		1	1.66	mg/Kg	1	2.00	<0.0116	83	70 - 130
Xylene		1	5.14	mg/Kg	1	6.00	<0.00874	86	70 - 130

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
Benzene		1	1.60	mg/Kg	1	2.00	<0.00533	80	70 - 130	3	20
Toluene		1	1.60	mg/Kg	1	2.00	<0.00645	80	70 - 130	8	20
Ethylbenzene		1	1.64	mg/Kg	1	2.00	<0.0116	82	70 - 130	1	20
Xylene		1	4.98	mg/Kg	1	6.00	<0.00874	83	70 - 130	3	20

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 39 of 59
Eddy Co, NM

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.83	1.46	mg/Kg	1	2.00	92	73	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.59	mg/Kg	1	2.00	97	80	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107811
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.2	mg/Kg	1	20.0	<2.32	76	70 - 130

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
GRO		1	16.9	mg/Kg	1	20.0	<2.32	84	70 - 130	11	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	2.12	mg/Kg	1	2.00	97	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.42	2.46	mg/Kg	1	2.00	121	123	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107855
Prep Batch: 91258

Date Analyzed: 2013-12-24
QC Preparation: 2013-12-23

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.83	mg/Kg	1	2.00	<0.00354	92	70 - 130
Toluene		1	1.84	mg/Kg	1	2.00	<0.00966	92	70 - 130
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00790	104	70 - 130
Xylene		1	6.35	mg/Kg	1	6.00	<0.00667	106	70 - 130

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
Benzene		1	1.75	mg/Kg	1	2.00	<0.00354	88	70 - 130	5	20

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 40 of 59
Eddy Co, NM

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Toluene		1	1.77	mg/Kg	1	2.00	<0.00966	88	70 - 130	4	20
Ethylbenzene		1	2.02	mg/Kg	1	2.00	<0.00790	101	70 - 130	4	20
Xylene		1	6.11	mg/Kg	1	6.00	<0.00667	102	70 - 130	4	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.93	1.92	mg/Kg	1	2.00	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.11	mg/Kg	1	2.00	105	106	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107859
Prep Batch: 91289

Date Analyzed: 2013-12-27
QC Preparation: 2013-12-27

Analyzed By: KC
Prepared By: KC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	278	mg/Kg	1	250	<6.88	111	79.4 - 120.1

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
DRO		1	277	mg/Kg	1	250	<6.88	111	79.4 - 120.1	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	118	118	mg/Kg	1	100	118	118	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 107889
Prep Batch: 91286

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-24

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.9	mg/Kg	1	20.0	<2.32	90	70 - 130

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 41 of 59
Eddy Co, NM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.8	mg/Kg	1	20.0	<2.32	89	70 - 130	1	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.81	mg/Kg	1	2.00	97	90	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.08	mg/Kg	1	2.00	106	104	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107900
Prep Batch: 91310

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-30

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.64	mg/Kg	1	2.00	<0.00354	82	70 - 130
Toluene		1	1.65	mg/Kg	1	2.00	<0.00966	82	70 - 130
Ethylbenzene		1	1.82	mg/Kg	1	2.00	<0.00790	91	70 - 130
Xylene		1	5.56	mg/Kg	1	6.00	<0.00667	93	70 - 130

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

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.76	mg/Kg	1	2.00	<0.00354	88	70 - 130	7	20
Toluene		1	1.76	mg/Kg	1	2.00	<0.00966	88	70 - 130	6	20
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00790	100	70 - 130	9	20
Xylene		1	6.04	mg/Kg	1	6.00	<0.00667	101	70 - 130	8	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.26	2.12	mg/Kg	1	2.00	113	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.45	2.31	mg/Kg	1	2.00	122	116	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 107962
Prep Batch: 91365

Date Analyzed: 2014-01-02
QC Preparation: 2014-01-02

Analyzed By: KC
Prepared By: KC

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 42 of 59
Eddy Co, NM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	276	mg/Kg	1	250	10.2	106	79.4 - 120.1

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
DRO		1	284	mg/Kg	1	250	10.2	110	79.4 - 120.1	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	117	118	mg/Kg	1	100	117	118	92.9 - 137.7

Laboratory Control Spike (LCS-1)

QC Batch: 108061
Prep Batch: 91411

Date Analyzed: 2014-01-06
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2630	mg/Kg	1	2500	<3.85	105	89.7 - 115.9

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			2570	mg/Kg	1	2500	<3.85	103	89.7 - 115.9	2	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: 108134
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2480	mg/Kg	1	2500	<3.85	99	89.7 - 115.9

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 43 of 59
Eddy Co, NM

Param	F	C	LCSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units							
Chloride			2620	mg/Kg	1	2500	<3.85	105	89.7 - 115.9	6	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: 108136
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
			Result	Units					
Chloride			2340	mg/Kg	1	2500	<3.85	94	89.7 - 115.9

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

Param	F	C	LCSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units							
Chloride			2420	mg/Kg	1	2500	<3.85	97	89.7 - 115.9	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: 108137
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
			Result	Units					
Chloride			2630	mg/Kg	1	2500	<3.85	105	89.7 - 115.9

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

Param	F	C	LCSD		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units							
Chloride			2470	mg/Kg	1	2500	<3.85	99	89.7 - 115.9	6	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: 349344

QC Batch: 107808
Prep Batch: 91251

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-23

Analyzed By: KC
Prepared By: KC

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 44 of 59
Eddy Co, NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	273	mg/Kg	1	250	<6.88	109	64.8 - 149.9

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
DRO		1	265	mg/Kg	1	250	<6.88	106	64.8 - 149.9	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	108	104	mg/Kg	1	100	108	104	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch: 107810
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.52	mg/Kg	1	2.00	<0.00533	76	70 - 130
Toluene		1	1.54	mg/Kg	1	2.00	<0.00645	77	70 - 130
Ethylbenzene		1	1.57	mg/Kg	1	2.00	<0.0116	78	70 - 130
Xylene		1	4.72	mg/Kg	1	6.00	<0.00874	79	70 - 130

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
Benzene		1	1.47	mg/Kg	1	2.00	<0.00533	74	70 - 130	3	20
Toluene		1	1.50	mg/Kg	1	2.00	<0.00645	75	70 - 130	3	20
Ethylbenzene		1	1.50	mg/Kg	1	2.00	<0.0116	75	70 - 130	5	20
Xylene		1	4.57	mg/Kg	1	6.00	<0.00874	76	70 - 130	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	Qsr	Qsr	1.33	mg/Kg	1	2	66	64 70 - 130
4-Bromofluorobenzene (4-BFB)			1.55	mg/Kg	1	2	78	74 70 - 130

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 45 of 59
Eddy Co, NM

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch: 107811
Prep Batch: 91224

Date Analyzed: 2013-12-23
QC Preparation: 2013-12-20

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.4	mg/Kg	1	20.0	<2.32	77	70 - 130

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
GRO		1	15.2	mg/Kg	1	20.0	<2.32	76	70 - 130	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.91	mg/Kg	1	2	98	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.38	2.41	mg/Kg	1	2	119	120	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349304

QC Batch: 107855
Prep Batch: 91258

Date Analyzed: 2013-12-24
QC Preparation: 2013-12-23

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.71	mg/Kg	1	2.00	<0.00354	86	70 - 130
Toluene		1	1.75	mg/Kg	1	2.00	<0.00966	88	70 - 130
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00790	100	70 - 130
Xylene		1	6.05	mg/Kg	1	6.00	<0.00667	101	70 - 130

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
Benzene		1	1.66	mg/Kg	1	2.00	<0.00354	83	70 - 130	3	20
Toluene		1	1.68	mg/Kg	1	2.00	<0.00966	84	70 - 130	4	20
Ethylbenzene		1	1.91	mg/Kg	1	2.00	<0.00790	96	70 - 130	5	20
Xylene		1	5.73	mg/Kg	1	6.00	<0.00667	96	70 - 130	5	20

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

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 46 of 59
Eddy Co, NM

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	1.92	mg/Kg	1	2	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.11	mg/Kg	1	2	105	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349560

QC Batch: 107859
Prep Batch: 91289

Date Analyzed: 2013-12-27
QC Preparation: 2013-12-27

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	265	mg/Kg	1	250	9.83	102	64.8 - 149.9

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 Limit
DRO		1	269	mg/Kg	1	250	9.83	104	64.8 - 149.9	2

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	115	117	mg/Kg	1	100	115	117	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 349560

QC Batch: 107889
Prep Batch: 91286

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-24

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.2	mg/Kg	1	20.0	2.84	72	70 - 130

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 Limit
GRO		1	17.8	mg/Kg	1	20.0	2.84	75	70 - 130	3

Report Date: January 13, 2014
TED

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 47 of 59
Eddy Co, NM

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.20	1.76	mg/Kg	1	2	110	88	70 - 130
4-Bromofluorobenzene (4-BFB)	2.48	1.99	mg/Kg	1	2	124	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 350228

QC Batch: 107900
Prep Batch: 91310

Date Analyzed: 2013-12-30
QC Preparation: 2013-12-30

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.57	mg/Kg	1	2.00	<0.00354	78	70 - 130
Toluene		1	1.58	mg/Kg	1	2.00	<0.00966	79	70 - 130
Ethylbenzene		1	1.76	mg/Kg	1	2.00	<0.00790	88	70 - 130
Xylene		1	5.32	mg/Kg	1	6.00	<0.00667	89	70 - 130

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
Benzene		1	1.58	mg/Kg	1	2.00	<0.00354	79	70 - 130	1	20
Toluene		1	1.59	mg/Kg	1	2.00	<0.00966	80	70 - 130	1	20
Ethylbenzene		1	1.78	mg/Kg	1	2.00	<0.00790	89	70 - 130	1	20
Xylene		1	5.39	mg/Kg	1	6.00	<0.00667	90	70 - 130	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.06	1.99	mg/Kg	1	2	103	100	70 - 130
4-Bromofluorobenzene (4-BFB)	2.22	2.19	mg/Kg	1	2	111	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 350260

QC Batch: 107962
Prep Batch: 91365

Date Analyzed: 2014-01-02
QC Preparation: 2014-01-02

Analyzed By: KC
Prepared By: KC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	250	mg/Kg	1	250	7.67	97	64.8 - 149.9

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 48 of 59
Eddy Co, NM

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO			263	mg/Kg	1	250	7.67	105	64.8 - 149.9	5	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	105	112	mg/Kg	1	100	105	112	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 349557

QC Batch: 108061
Prep Batch: 91411

Date Analyzed: 2014-01-06
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2450	mg/Kg	5	2500	<19.2	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			2580	mg/Kg	5	2500	<19.2	103	78.9 - 121	5	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: 349567

QC Batch: 108134
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2580	mg/Kg	5	2500	25.1	102	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			2670	mg/Kg	5	2500	25.1	106	78.9 - 121	3	20

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

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 49 of 59
Eddy Co, NM

Matrix Spike (MS-1) Spiked Sample: 349577

QC Batch: 108136
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5540	mg/Kg	10	2500	3050	100	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			5700	mg/Kg	10	2500	3050	106	78.9 - 121	3	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: 349587

QC Batch: 108137
Prep Batch: 91411

Date Analyzed: 2014-01-09
QC Preparation: 2014-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5310	mg/Kg	10	2500	2900	96	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			5500	mg/Kg	10	2500	2900	104	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: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	254	102	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	284	114	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	273	109	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0860	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0847	85	80 - 120	2013-12-23

continued ...

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 51 of 59
Eddy Co, NM

standard continued ...

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		1	mg/kg	0.100	0.0814	81	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0852	85	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0832	83	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0797	80	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0864	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0842	84	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0796	80	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.906	91	80 - 120	2013-12-23

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 52 of 59
Eddy Co, NM

Standard (CCV-2)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.837	84	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0955	96	80 - 120	2013-12-24
Toluene		1	mg/kg	0.100	0.0931	93	80 - 120	2013-12-24
Ethylbenzene		1	mg/kg	0.100	0.100	100	80 - 120	2013-12-24
Xylene		1	mg/kg	0.300	0.304	101	80 - 120	2013-12-24

Standard (CCV-2)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0909	91	80 - 120	2013-12-24
Toluene		1	mg/kg	0.100	0.0891	89	80 - 120	2013-12-24
Ethylbenzene		1	mg/kg	0.100	0.0962	96	80 - 120	2013-12-24
Xylene		1	mg/kg	0.300	0.291	97	80 - 120	2013-12-24

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 53 of 59
Eddy Co, NM

Standard (CCV-3)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0942	94	80 - 120	2013-12-24
Toluene		1	mg/kg	0.100	0.0918	92	80 - 120	2013-12-24
Ethylbenzene		1	mg/kg	0.100	0.0975	98	80 - 120	2013-12-24
Xylene		1	mg/kg	0.300	0.295	98	80 - 120	2013-12-24

Standard (CCV-1)

QC Batch: 107859

Date Analyzed: 2013-12-27

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	266	106	80 - 120	2013-12-27

Standard (CCV-2)

QC Batch: 107859

Date Analyzed: 2013-12-27

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	277	111	80 - 120	2013-12-27

Standard (CCV-1)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.13	113	80 - 120	2013-12-30

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 54 of 59
Eddy Co, NM

Standard (CCV-2)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2013-12-30

Standard (CCV-3)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.02	102	80 - 120	2013-12-30

Standard (CCV-1)

QC Batch: 107900

Date Analyzed: 2013-12-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0933	93	80 - 120	2013-12-30
Toluene		1	mg/kg	0.100	0.0908	91	80 - 120	2013-12-30
Ethylbenzene		1	mg/kg	0.100	0.0971	97	80 - 120	2013-12-30
Xylene		1	mg/kg	0.300	0.293	98	80 - 120	2013-12-30

Standard (CCV-2)

QC Batch: 107900

Date Analyzed: 2013-12-30

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0909	91	80 - 120	2013-12-30
Toluene		1	mg/kg	0.100	0.0876	88	80 - 120	2013-12-30
Ethylbenzene		1	mg/kg	0.100	0.0932	93	80 - 120	2013-12-30
Xylene		1	mg/kg	0.300	0.285	95	80 - 120	2013-12-30

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 55 of 59
Eddy Co, NM

Standard (CCV-1)

QC Batch: 107962

Date Analyzed: 2014-01-02

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	283	113	80 - 120	2014-01-02

Standard (CCV-2)

QC Batch: 107962

Date Analyzed: 2014-01-02

Analyzed By: KC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	283	113	80 - 120	2014-01-02

Standard (CCV-1)

QC Batch: 108061

Date Analyzed: 2014-01-06

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2014-01-06

Standard (CCV-2)

QC Batch: 108061

Date Analyzed: 2014-01-06

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.1	98	85 - 115	2014-01-06

Standard (CCV-1)

QC Batch: 108134

Date Analyzed: 2014-01-09

Analyzed By: AR

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 56 of 59
Eddy Co, NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.3	98	85 - 115	2014-01-09

Standard (CCV-2)

QC Batch: 108134

Date Analyzed: 2014-01-09

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2014-01-09

Standard (CCV-1)

QC Batch: 108136

Date Analyzed: 2014-01-09

Analyzed By: AR

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	2014-01-09

Standard (CCV-2)

QC Batch: 108136

Date Analyzed: 2014-01-09

Analyzed By: AR

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	2014-01-09

Standard (CCV-1)

QC Batch: 108137

Date Analyzed: 2014-01-09

Analyzed By: AR

Report Date: January 13, 2014
TBD

Work Order: 13121935
SME/Osage Fed 34 1H

Page Number: 57 of 59
Eddy Co, NM

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	2014-01-09

Standard (CCV-2)

QC Batch: 108137

Date Analyzed: 2014-01-09

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.6	99	85 - 115	2014-01-09

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
1	NELAP	T104704392-13-7	Midland

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

Result Comments

- 1 Surrogate low due to possible dilution out of sample.
- 2 Surrogate low due to possible dilution out of sample.
- 3 Surrogate low due to possible dilution out of sample.
- 4 Surrogate low due to possible dilution out of sample.
- 5 Surrogate low due to possible dilution out of sample.
- 6 Surrogate low due to possible dilution out of sample.
- 7 Surrogate low due to possible dilution out of sample.

Attachments

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

15121935

Analysis Request of Chain of Custody Record

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

PAGE: 1 OF: 4

 ANALYSIS REQUEST
 (Circle or Specify Method No.)

CLIENT NAME:

SM Energy

SITE MANAGER:

Tom Elliott

PROJECT NO.:

PROJECT NAME:

 SM Energy - Osage Fed 34-1H
 Eddy Co. NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMR	GRAB	SAMPLE IDENTIFICATION	NUMBER	FILTERED	HCL	HNO3	ICE	NONE	BTEX 8021	CEPH 8021	PAH 8270	RCRA Metals	TCLP Metals	TCLP Volatiles	TCLP Semivolatiles	RCI	GC/MS Volatiles	GC/MS Semivolatiles	PCBs 8080	Pest. 8080	Chlorides	Gamma Spec.	Alpha Beta	PLM (Asbestos)	Major Anions/Cations, pH, TDS			
49548	12/18		S		X	AH 1 (0-6")	1	N			X		X	X											X							
549	}		}	}	}	AH 2 (0-6")							X	X																		
550		AH 3 (0-6")													X	X																
551		AH 4 (0-1')													X	X																
552		AH 5 (0-1')													X	X																
553		AH 6 (0-1')														X	X															
554		(1-1.5')																														
555		(2-2.5')																														
556	↓		↓	↓	↓	(3-3.5')																										
557		(4-4.5')																														

RELINQUISHED BY: (Signature)

Adrian Garza

Date: 12/19/13

Time: 12:38

RECEIVED BY: (Signature)

Adrian Garza

Date: 12/19/13

Time: 12:38

SAMPLED BY: (Print & Initial)

Adrian Garza

Date: 12/18/13

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavaraz

OTHER:

RECEIVING LABORATORY:

Trace

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

1.40

REMARKS:

Run 0-1 for TPH and BTEX, run deeper sample if Benzene exceeds 10 or Total BTEX exceeds 50, run deeper sample if TPH exceeds 1000 mg/kg

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

✓

13121935

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 4

**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.:

PROJECT NAME:

 SM Energy - Orange Fed 34-1H
 Eddy Co. N.M.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8021B 8015 PAH 8270	RCRA Metals	TCLP Metals	TCLP Volatile	TCLP Semi V	RCI	GC/MS Vol. &	GC/MS Semi	PCBs 8080/0	Pest. 808/600	Chlordane	Gamma Spec	Alpha Beta (	PLM (Asbest	Major Anions	
558	2013 12/18		S		X	AH 6 (5-5.5')	1	N		X													X				
559			S			AH 7 (0-1')						X	X														
560						(1-1.5')																					
561						(2-2.5')																					
562						(3-3.5')																					
563						(4-4.5')																					
564						(5-5.5')																					
565						(6-6.5')																					
566						(7-7.5')																					
567						(8-8.5')																					

RELINQUISHED BY: (Signature)

Adrian Garcia

Date: 12/18/13

Time: 12:38

RECEIVED BY: (Signature)

Adrian Garcia

Date: 12/18/13

Time: 12:38

SAMPLED BY: (Print & Initial)

Adrian Garcia / AG

Date: 12/18/13

Time: 12:38

RELINQUISHED BY: (Signature)

Date: _____

Time: _____

RECEIVED BY: (Signature)

Date: _____

Time: _____

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date: _____

Time: _____

RECEIVED BY: (Signature)

Date: _____

Time: _____

TETRA TECH CONTACT PERSON:

 Ike Tavares/
 Tom Elliott

Results by:

RUSH Charges Authorized:

Yes No

SAMPLE CONDITION WHEN RECEIVED:

1.40

REMARKS:

 Run 6-1 for TPH and BTEX, run deeper sample if Benzene exceeds 10 or Total BTEX exceeds 50,
 run deeper sample if TPH exceeds 1000 mg/kg

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

KC

13/21935

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 4

**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.:

PROJECT NAME:

SM Energy - Usage Fed. 34-1H
Eddy Co. NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS FILTERED (Y/N)	PRESERVATIVE METHOD				BTEX 8021A	TPH 8015 MOD. (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/824	GC/MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	Chlordane	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
								HCL	HNO3	ICE	NONE																	
568	12/18		S		X	AH 7(9-9.5')	1	N		X														X				
569						AH 8(0-1')							X	X														
570						(1-1.5')																						
571						(2-2.5')																						
572						(3-3.5')																						
573						(4-4.5')																						
574						(5-5.5')																						
575						(6-6.5')																						
576						AH 9(0-1')							X	X														
577						(1-1.5')																						

RELINQUISHED BY: (Signature)

Adrian Garcia

Date: 12/19/13

Time: 12:38

RECEIVED BY: (Signature)

800

Date: 12/19/13

Time: 12:38

SAMPLED BY: (Print & Initial)

Adrian Garcia / AG

Date: 12/18/13

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Ike Tavarez / Tom Elliott

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY: Midland

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

1.40

REMARKS:

Run 0-1 for TPH and BTEX, run deeper sample if Benzene exceeds 10 or Total BTEX exceeds 50, run deeper if TPH exceeds 1000 mg/kg

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

KLC

Emailed CAP.
Hard copy to follow

2RP - 2136

Bratcher, Mike, EMNRD

From: Elliott, Tom <Tom.Elliott@tetrattech.com>
Sent: Thursday, January 23, 2014 1:55 PM
To: Bratcher, Mike, EMNRD; James_Amos@blm.gov
Cc: Vickie Martinez (vmartinez@sm-energy.com); mlowe@contekllc.com
Subject: SM Energy - Osage Fed 34 1H Work Plan
Attachments: SM Energy - Osage 34 1H Work Plan.pdf

Mike and Jim,

Please find the enclosed Work Plan for the above reference spill site located in Eddy County, New Mexico. The work plan includes the soil assessment and remedial recommendations for the spill. I will mail you a hard copy of the work plan for your files. Once approved, Tetra Tech will schedule the soil remediation and notify you prior to implementing the work plan. Please let me or Ike Tavarez know if you need additional information.

Thanks,

Tom Elliott | Project Manager / Environmental Scientist
Phone: 432.687.8120 | Mobile 432-631-0348 | Fax: 432.682.3946
Tom.Elliott@tetrattech.com

Tetra Tech | Complex World, CLEAR SOLUTIONS™
4000 N. Big Spring | Suite 401 | Midland, TX 79705 | www.tetrattech.com

PLEASE NOTE: This message, including any attachments, may include privileged, confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Osage Federal 34 #1H					
Company:	SM Energy Company					
Section, Township and Range	Unit	Sec 34	T19S	R29E		
Lease Number:	30-015-41508					
County:	Eddy County					
GPS:	32.62298° N			104.05507° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	East of Carlsbad, from the intersection of US 62 and Burton Flats Rd. travel North for 3.85 miles.					
	Turn right traveling East for 1.0 miles. Turn left traveling North for 0.40 miles. The location will be on the left.					

Release Data:

Date Released:	12/12/2013
Type Release:	Foamy mixture of water, gas, oil and sand.
Source of Contamination:	Well blowout
Fluid Released:	440
Fluids Recovered:	270

Official Communication:

Name:	Vickie Martinez	Tom Elliott
Company:	SM Energy Company	Tetra Tech
Address:	3300 N A St. Suite 200	4000 N. Big Spring Suite 410
P.O. Box		
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@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	10
>100 ft.	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:	10	

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	1,000