SITE INFORMATION

Report Type: Closure Report

General Site Information:		
Site:	Parkway Delaware Unit #208	
Company:	SM Energy Company	
Section, Township and Range		
Lease Number:	API 30-015-34433	
County:	Eddy County	
GPS:	32.62035° N	104.04020° W
Surface Owner:	Federal	
Mineral Owner:		
Directions:	Northeast of Carlsbad, from the intersection of 360 and CR235, head WNW on CR235 for 4.8 miles and turn south. Travel the lease road for 1.4 miles, and turn south through another well pad. Continue south for .3 miles to the PDU #2 tank battery and turn east. Travel west (curves to south) for .3 miles. Entrance to well pad is on west side.	

Release Data:	
Date Released:	4/25/2012
Type Release:	Oil/Produced Water
Source of Contamination:	Stuffing box leak
Fluid Released:	9 bbls
Fluids Recovered:	5 bbls

Official Communication:			
Name:	Vickie Martinez		Aaron Hale
Company:	SM Energy Company		Tetra Tech
Address:	3300 N A St. Suite 200		1910 N. Big Spring
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		aaron.hale@tetratech.com

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

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

TETRA TECH

February 25, 2013

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

Re: Closure Report for SM Energy Company
Parkway Delaware Unit Tract 208
Section 35, Township 19S, Range 29E
Eddy County, New Mexico

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by SM Energy Company (SM Energy) to assess a spill from Parkway Delaware Unit Tract 208 (PDU #208) well, located in Section 35, Township 19S, Range 29E, Eddy County, New Mexico (Site). The spill site coordinates are N 32.62035°, W 104.04020°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on April 25, 2012. The spill from the well head released approximately nine (9) barrels (bbls) of oil and produced water. SM Energy was able to recover approximately five (5) bbls of fluid with a vacuum truck. To alleviate the problem, SM Energy repaired the well head.

The spill impacted an area of approximately 12' x 55' on the well pad. The spill area is shown on Figure 3. The final Form C-141 is enclosed in Appendix A.

Groundwater

The New Mexico State Engineers Well Report listed one well in Section 35 with an average depth of 110' and wells in Sections 34 and 36 with reported depths of 60' and 115' , respectively. The well report is shown in Appendix B.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Previously, Tetra Tech personnel supervised the installation of a temporary well (TMW-1) in Section 35 to establish groundwater quality and depth in this section. During the installation, the well drilled dry. The well was drilled through fine grain sand with gypsum layers and red shale to a total depth of 140', to the top of a black and gray shale formation (blue shale). The well was measured two days later and showed a depth to groundwater of 121 TOC.

Regulatory

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

Soil Assessment

On July 12, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of two (2) auger holes (AH-1 through AH-2) were installed using a stainless steel hand auger to assess the impacted areas. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Analytical Results

Referring to Table 1, both of the auger hole samples were below the RRAL for TPH and BTEX. However, chloride impact was detected in both AH-1 and AH-2 showing chloride concentrations of 3,030 mg/kg (2-2.5') and 1,900 mg/kg (2-2.5'), respectively. Refusal was encountered at 2.5' bgs at each location.

Remediation and Conclusion

On December 5, 2012, Tetra Tech personnel supervised the excavation of the spill area. Two trenches were also installed in the excavation to further delineate the chloride impacts. Samples were collected from the trenches and analyzed for chlorides. Referring to Table 1, the trench samples exhibited a maximum chloride concentration of 645 mg/kg and declined to 308 mg/kg in AH-1 at 3' and 4' below surface.

TETRA TECH

The spill foot print and final excavation depths of the soil remediation were met as stated in the approved work plan with the exception that north side of the excavation was shortened by 5' to maintain 10' from the well. The excavation maintained a depth of 3' below surface to remove the maximum amount of chlorides and clay was also added to the north side of the excavation. Approximately 120 cubic yards were removed and disposed of at Lea Land disposal facility. The excavated area was then backfilled with clean material to grade.

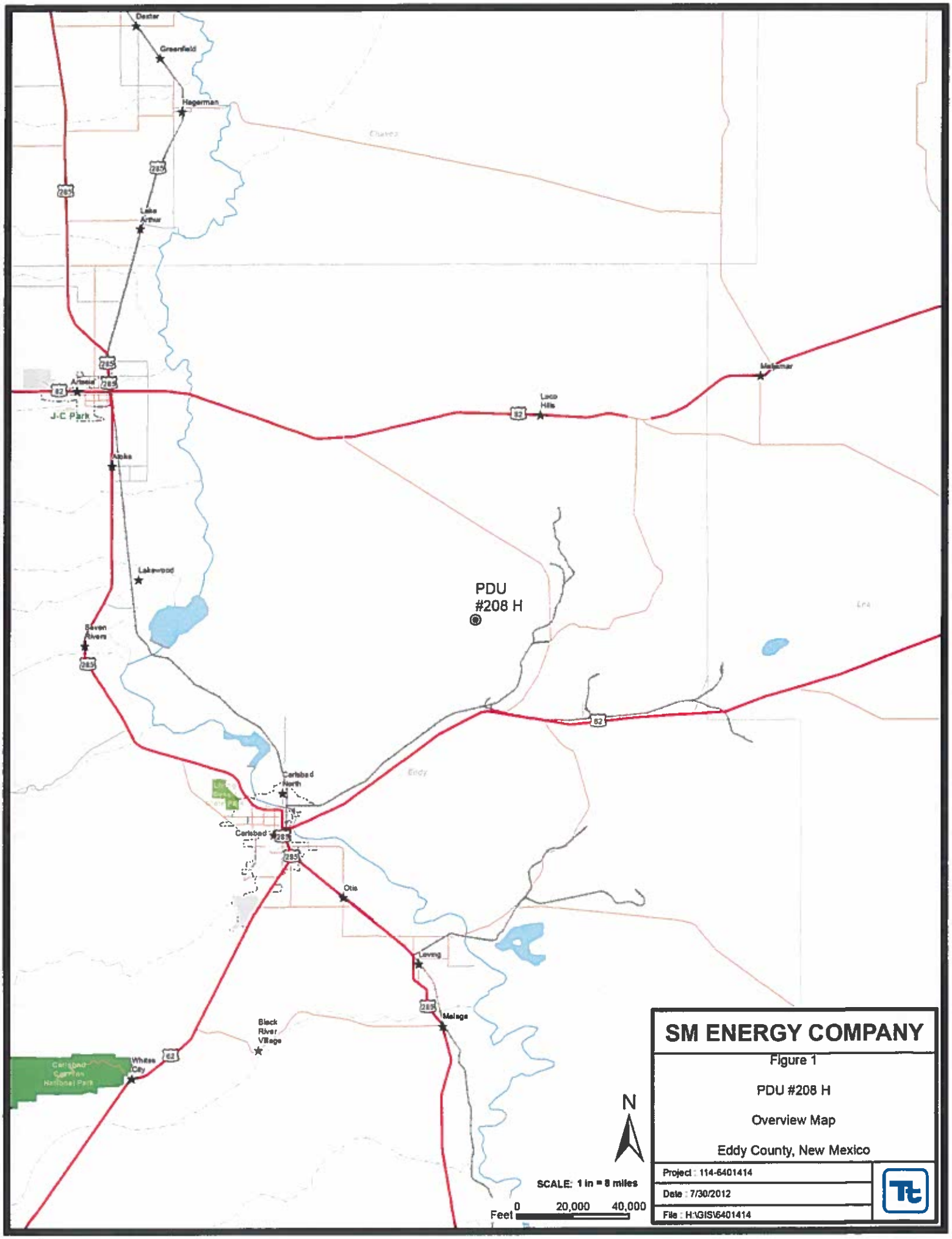
Based on the remediation activities performed at this location, SM Energy requests closure for this site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH, Inc.

Tom Elliott
Staff Scientist

cc: SM Energy Company – File Copy
BLM – Jim Amos

FIGURES



SM ENERGY COMPANY

Figure 1

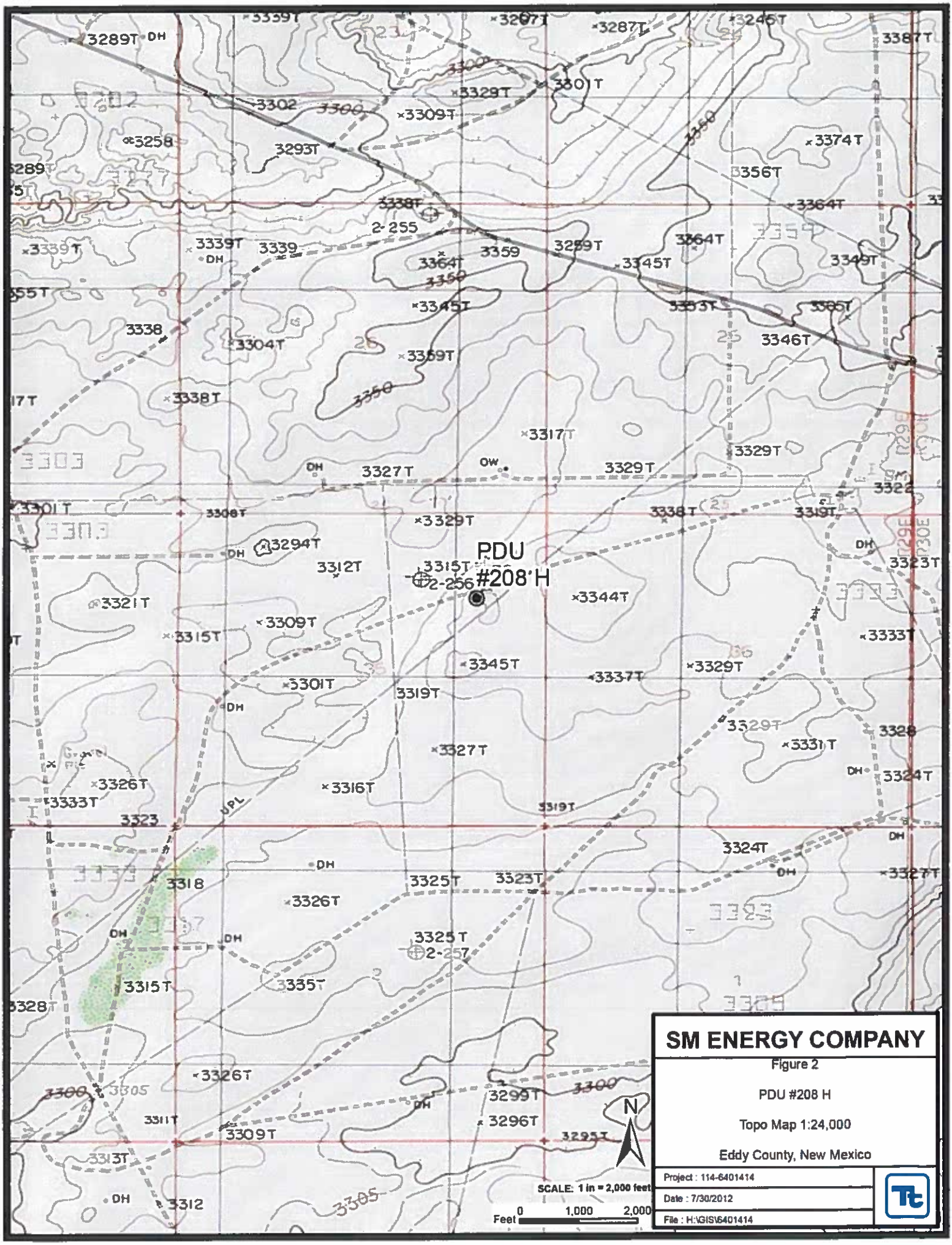
PDU #208 H

Overview Map

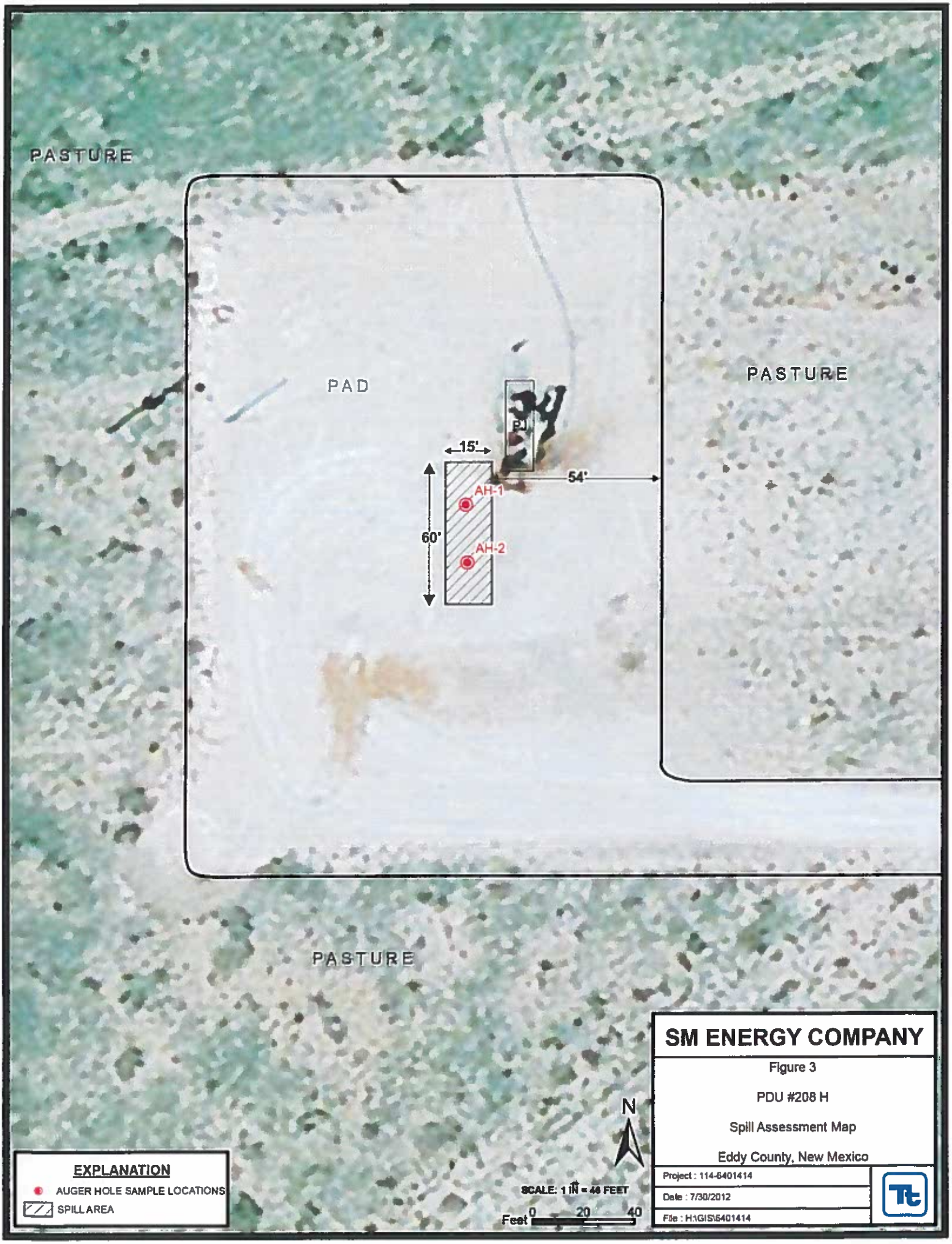
Eddy County, New Mexico

Project : 114-6401414	
Date : 7/30/2012	
File : H:\GIS\6401414	

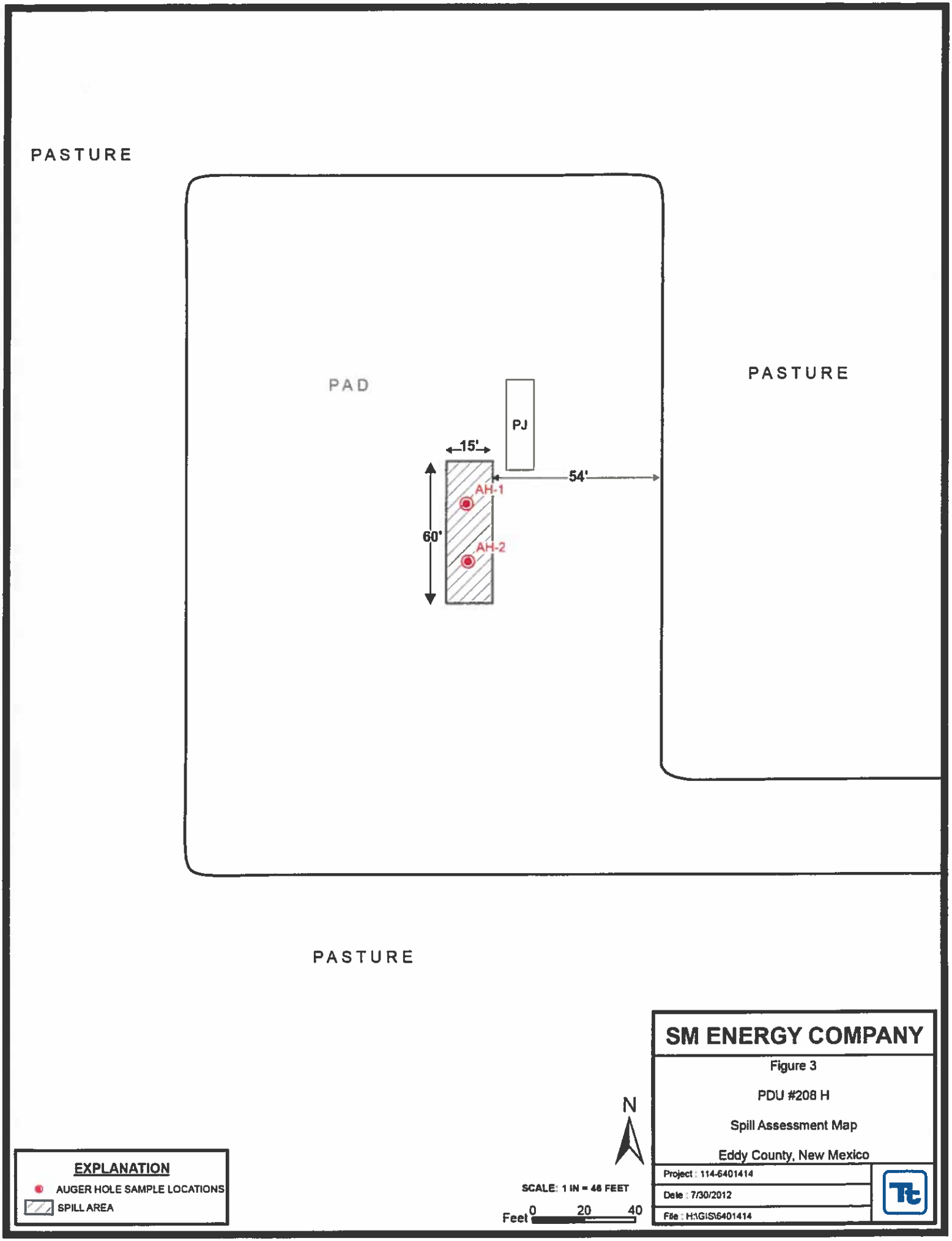
Drawn By: Isabel Manriquez



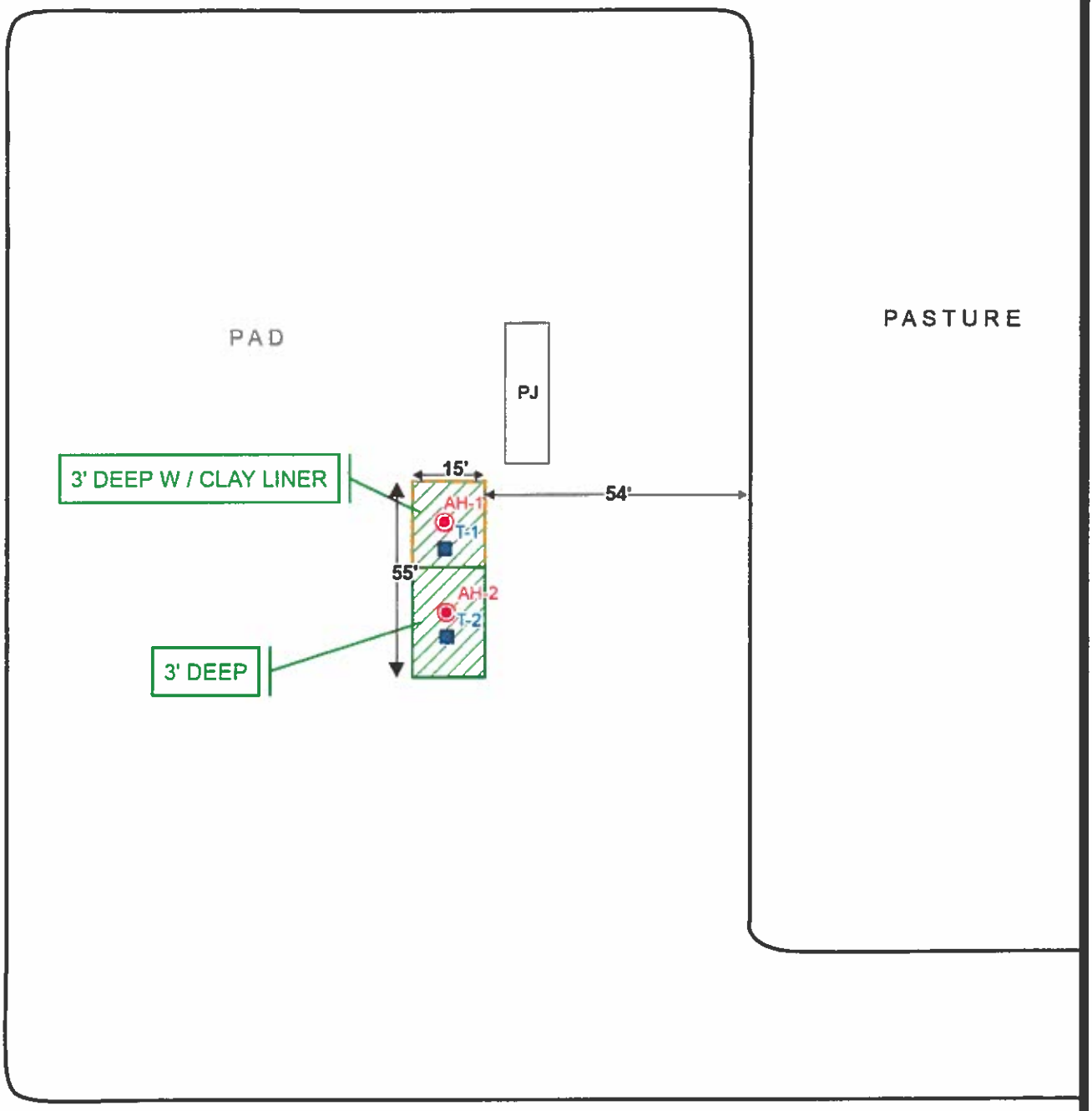
Drawn By: Isabel Mazmanian



Drawn By: Isabel Mesmiago



Drawn By: Isabel Mesmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- TRENCH LOCATIONS
- CLAY LINER
- EXCAVATED AREAS

N

SCALE: 1 IN = 40 FEET

Feet 0 20 40

SM ENERGY COMPANY

Figure 4

PDU #208 H

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 114-6401414

Date : 7/30/2012

File : H:\GIS\6401414

Drawn By: Isabel Manriquez

TABLES

Table 1
SM Energy
Parkway Delaware 208
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
AH-1	7/12/2012	1-1.5 Bottom	-		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	4,680
	"	2-2.5	-		X	-	-	-	-	-	-	-	-	3,030
	12/5/2012	3	-		X	-	-	-	-	-	-	-	-	645
	"	4	-	X		-	-	-	-	-	-	-	-	308
AH-2	7/12/2012	1-1.5 Bottom	-		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,440
	"	2-2.5	-		X	-	-	-	-	-	-	-	-	1,900
	12/5/2012	3	-		X	-	-	-	-	-	-	-	-	212
	"	4	-	X		-	-	-	-	-	-	-	-	230

(-) Not Analyzed

(BEB) Below Excavation Bottom

Excavated Material

PHOTOGRAPHS

SM Energy Company
PDU #208
Eddy County, New Mexico

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View North – Excavation of AH-1 and AH-2.

View Northeast – Clay Cap added to Excavation.

SM Energy Company
PDU #208
Eddy County, New Mexico

TETRA TECH

View North – Backfill of AH-1 and AH-2.

APPENDIX A

APPENDIX B

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00681			ED	1	1	3	34	19S	29E	587230	3609127*			
CP 00703			ED		4	1	36	19S	29E	590945	3609441*	225	115	110
CP 00739			ED	3	4	4	35	19S	29E	589246	3608217	200	110	90
CP 00741			ED	1	3	2	34	19S	29E	588030	3609533*	230	60	170

Average Depth to Water: **95 feet**

Minimum Depth: **60 feet**

Maximum Depth: **115 feet**

Record Count: 4

PLSS Search:

Section(s): 34-36 **Township:** 19S **Range:** 29E

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

APPENDIX C

Summary Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: July 23, 2012

Work Order: 12071338

Project Name: SME/PDU 208
Project Number: 114-6401414

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
303708	AH-1 (1-1.5') Bottom	soil	2012-07-12	00:00	2012-07-13
303709	AH-1 (2-2.5')	soil	2012-07-12	00:00	2012-07-13
303710	AH-2 (1-1.5') Bottom	soil	2012-07-12	00:00	2012-07-13
303711	AH-2 (2-2.5')	soil	2012-07-12	00:00	2012-07-13

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
303708 - AH-1 (1-1.5') Bottom	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
303710 - AH-2 (1-1.5') Bottom	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 303708 - AH-1 (1-1.5') Bottom

Param	Flag	Result	Units	RL
Chloride		**4680**	mg/Kg	4

Sample: 303709 - AH-1 (2-2.5')

Param	Flag	Result	Units	RL
Chloride		**3030**	mg/Kg	4

Sample: 303710 - AH-2 (1-1.5') Bottom

Param	Flag	Result	Units	RL
Chloride		**2440**	mg/Kg	4

Sample: 303711 - AH-2 (2-2.5')

Param	Flag	Result	Units	RL
Chloride		**1900**	mg/Kg	4

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: July 23, 2012

Work Order: 12071338

Project Name: SME/PDU 208
Project Number: 114-6401414

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
303708	AH-1 (1-1.5') Bottom	soil	2012-07-12	00:00	2012-07-13
303709	AH-1 (2-2.5')	soil	2012-07-12	00:00	2012-07-13
303710	AH-2 (1-1.5') Bottom	soil	2012-07-12	00:00	2012-07-13
303711	AH-2 (2-2.5')	soil	2012-07-12	00:00	2012-07-13

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 18 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

Samples for project SME/PDU 208 were received by TraceAnalysis, Inc. on 2012-07-13 and assigned to work order 12071338. Samples for work order 12071338 were received intact at a temperature of 4.8 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	79057	2012-07-20 at 16:07	93245	2012-07-20 at 16:07
Chloride (Titration)	SM 4500-Cl B	78955	2012-07-17 at 12:43	93166	2012-07-18 at 16:04
TPH DRO - NEW	S 8015 D	78968	2012-07-17 at 16:30	93140	2012-07-18 at 19:00
TPH GRO	S 8015 D	79057	2012-07-20 at 16:07	93244	2012-07-20 at 16:07

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 12071338 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 303708 - AH-1 (1-1.5') Bottom

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	93245	Date Analyzed:	2012-07-20	Analyzed By:	MT
Prep Batch:	79057	Sample Preparation:	2012-07-20	Prepared By:	MT

Parameter	Flag	Cert	Result	RL 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	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.75	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	1	2.00	88	70 - 130

Sample: 303708 - AH-1 (1-1.5') Bottom

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	93166	Date Analyzed:	2012-07-18	Analyzed By:	AR
Prep Batch:	78955	Sample Preparation:	2012-07-17	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			4680	mg/Kg	10	4.00

Sample: 303708 - AH-1 (1-1.5') Bottom

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	93140	Date Analyzed:	2012-07-18	Analyzed By:	CW
Prep Batch:	78968	Sample Preparation:	2012-07-17	Prepared By:	CW

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	2	<50.0	mg/Kg	1	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		210	mg/Kg	1	100	210	49.3 - 157.5

Sample: 303708 - AH-1 (1-1.5') Bottom

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	93244	Date Analyzed:	2012-07-20	Analyzed By:	MT
Prep Batch:	79057	Sample Preparation:	2012-07-20	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.62	mg/Kg	1	2.00	81	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Sample: 303709 - AH-1 (2-2.5')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	93166	Date Analyzed:	2012-07-18	Analyzed By:	AR
Prep Batch:	78955	Sample Preparation:	2012-07-17	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3030	mg/Kg	10	4.00

Sample: 303710 - AH-2 (1-1.5') Bottom

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	93245	Date Analyzed:	2012-07-20	Analyzed By:	MT
Prep Batch:	79057	Sample Preparation:	2012-07-20	Prepared By:	MT

continued ...

sample 303710 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

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	U	1	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	70 - 130

Sample: 303710 - AH-2 (1-1.5') Bottom

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	93166	Date Analyzed:	2012-07-18	Analyzed By:	AR
Prep Batch:	78955	Sample Preparation:	2012-07-17	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2440**	mg/Kg	10	4.00

Sample: 303710 - AH-2 (1-1.5') Bottom

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	93140	Date Analyzed:	2012-07-18	Analyzed By:	CW
Prep Batch:	78968	Sample Preparation:	2012-07-17	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			131	mg/Kg	1	100	131	49.3 - 157.5

Sample: 303710 - AH-2 (1-1.5') Bottom

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	93244	Date Analyzed:	2012-07-20	Analyzed By:	MT
Prep Batch:	79057	Sample Preparation:	2012-07-20	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<2.00	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			2.07	mg/Kg	1	2.00	104	70 - 130

Sample: 303711 - AH-2 (2-2.5')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	93166	Date Analyzed:	2012-07-18	Analyzed By:	AR
Prep Batch:	78955	Sample Preparation:	2012-07-17	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1900	mg/Kg	10	4.00

Method Blanks

Method Blank (1) QC Batch: 93140

QC Batch: 93140 Date Analyzed: 2012-07-18 Analyzed By: CW
Prep Batch: 78968 QC Preparation: 2012-07-17 Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			107	mg/Kg	1	100	107	52 - 160.8

Method Blank (1) QC Batch: 93166

QC Batch: 93166 Date Analyzed: 2012-07-18 Analyzed By: AR
Prep Batch: 78955 QC Preparation: 2012-07-17 Prepared By: AR

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

Method Blank (1) QC Batch: 93244

QC Batch: 93244 Date Analyzed: 2012-07-20 Analyzed By: MT
Prep Batch: 79057 QC Preparation: 2012-07-20 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.55	mg/Kg	1	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)			1.83	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 93245

QC Batch:	93245	Date Analyzed:	2012-07-20	Analyzed By:	MT
Prep Batch:	79057	QC Preparation:	2012-07-20	Prepared By:	MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	0.0121	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.63	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 93140
Prep Batch: 78968

Date Analyzed: 2012-07-18
QC Preparation: 2012-07-17

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	213	mg/Kg	1	250	<14.5	85	62 - 128.3

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		2	224	mg/Kg	1	250	<14.5	90	62 - 128.3	5	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	122	126	mg/Kg	1	100	122	126	58.6 - 149.6

Laboratory Control Spike (LCS-1)

QC Batch: 93166
Prep Batch: 78955

Date Analyzed: 2012-07-18
QC Preparation: 2012-07-17

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2680	mg/Kg	1	2500	<3.85	107	85 - 115	4	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: 93244
Prep Batch: 79057
Date Analyzed: 2012-07-20
QC Preparation: 2012-07-20
Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.4	mg/Kg	1	20.0	<0.359	82	68.9 - 120

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	16.0	mg/Kg	1	20.0	<0.359	80	68.9 - 120	2	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)	1.68	1.49	mg/Kg	1	2.00	84	74	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.89	mg/Kg	1	2.00	97	94	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 93245
Prep Batch: 79057
Date Analyzed: 2012-07-20
QC Preparation: 2012-07-20
Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.82	mg/Kg	1	2.00	<0.00365	91	75.4 - 120
Toluene		1	1.76	mg/Kg	1	2.00	<0.00816	88	74.9 - 120
Ethylbenzene		1	1.74	mg/Kg	1	2.00	<0.00560	87	78.1 - 120
Xylene		1	5.25	mg/Kg	1	6.00	0.0121	88	77.3 - 120

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	1.78	mg/Kg	1	2.00	<0.00365	89	75.4 - 120	2	20
Toluene		1	1.77	mg/Kg	1	2.00	<0.00816	88	74.9 - 120	1	20
Ethylbenzene		1	1.76	mg/Kg	1	2.00	<0.00560	88	78.1 - 120	1	20
Xylene		1	5.26	mg/Kg	1	6.00	0.0121	88	77.3 - 120	0	20

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

continued ...

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.58	mg/Kg	1	2.00	86	79	70 - 130
4-Bromofluorobenzene (4-BFB)	1.79	1.75	mg/Kg	1	2.00	90	88	70 - 130

Matrix Spike (MS-1) Spiked Sample: 303708

QC Batch: 93140
Prep Batch: 78968

Date Analyzed: 2012-07-18
QC Preparation: 2012-07-17

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	236	mg/Kg	1	250	<14.5	94	45.5 - 127

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		2	240	mg/Kg	1	250	<14.5	96	45.5 - 127	2	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	120	115	mg/Kg	1	100	120	115	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 303726

QC Batch: 93166
Prep Batch: 78955

Date Analyzed: 2012-07-18
QC Preparation: 2012-07-17

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2640	mg/Kg	5	2500	<19.2	106	79.4 - 120.6

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			2770	mg/Kg	5	2500	<19.2	111	79.4 - 120.6	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: 303804

QC Batch: 93244 | Date Analyzed: 2012-07-20 | Analyzed By: MT
Prep Batch: 79057 | QC Preparation: 2012-07-20 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	16.3	mg/Kg	1	20.0	<0.359	82	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	16.5	mg/Kg	1	20.0	<0.359	82	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)	1.64	1.63	mg/Kg	1	2	82	82	70 - 130
4-Bromofluorobenzene (4-BFB)	2.09	2.11	mg/Kg	1	2	104	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 303804

QC Batch: 93245 | Date Analyzed: 2012-07-20 | Analyzed By: MT
Prep Batch: 79057 | QC Preparation: 2012-07-20 | Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.71	mg/Kg	1	2.00	<0.00365	86	37.6 - 142
Toluene		1	1.83	mg/Kg	1	2.00	<0.00816	92	38.6 - 153
Ethylbenzene		1	1.94	mg/Kg	1	2.00	<0.00560	97	36.7 - 172
Xylene		1	5.87	mg/Kg	1	6.00	<0.00460	98	36.7 - 173

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	1.68	mg/Kg	1	2.00	<0.00365	84	37.6 - 142	2	20
Toluene		1	1.81	mg/Kg	1	2.00	<0.00816	90	38.6 - 153	1	20
Ethylbenzene		1	1.92	mg/Kg	1	2.00	<0.00560	96	36.7 - 172	1	20
Xylene		1	5.81	mg/Kg	1	6.00	<0.00460	97	36.7 - 173	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)	1.90	1.90	mg/Kg	1	2	95	95	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.89	mg/Kg	1	2	97	94	70 - 130

Calibration Standards

Standard (CCV-1)

QC Batch: 93140 Date Analyzed: 2012-07-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	212	85	80 - 120	2012-07-18

Standard (CCV-2)

QC Batch: 93140 Date Analyzed: 2012-07-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	262	105	80 - 120	2012-07-18

Standard (CCV-3)

QC Batch: 93140 Date Analyzed: 2012-07-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	266	106	80 - 120	2012-07-18

Standard (CCV-4)

QC Batch: 93140 Date Analyzed: 2012-07-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	253	101	80 - 120	2012-07-18

Standard (CCV-1)

QC Batch: 93166 | Date Analyzed: 2012-07-18 | 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	2012-07-18

Standard (CCV-2)

QC Batch: 93166 | Date Analyzed: 2012-07-18 | 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	99.6	100	85 - 115	2012-07-18

Standard (CCV-1)

QC Batch: 93244 | Date Analyzed: 2012-07-20 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.850	85	80 - 120	2012-07-20

Standard (CCV-2)

QC Batch: 93244 | Date Analyzed: 2012-07-20 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.810	81	80 - 120	2012-07-20

Standard (CCV-3)

QC Batch: 93244 | Date Analyzed: 2012-07-20 | Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.805	80	80 - 120	2012-07-20

Standard (CCV-1)

QC Batch: 93245 Date Analyzed: 2012-07-20 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0913	91	80 - 120	2012-07-20
Toluene		1	mg/kg	0.100	0.0895	90	80 - 120	2012-07-20
Ethylbenzene		1	mg/kg	0.100	0.0888	89	80 - 120	2012-07-20
Xylene		1	mg/kg	0.300	0.267	89	80 - 120	2012-07-20

Standard (CCV-2)

QC Batch: 93245 Date Analyzed: 2012-07-20 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0868	87	80 - 120	2012-07-20
Toluene		1	mg/kg	0.100	0.0849	85	80 - 120	2012-07-20
Ethylbenzene		1	mg/kg	0.100	0.0838	84	80 - 120	2012-07-20
Xylene		1	mg/kg	0.300	0.251	84	80 - 120	2012-07-20

Standard (CCV-3)

QC Batch: 93245 Date Analyzed: 2012-07-20 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0845	84	80 - 120	2012-07-20
Toluene		1	mg/kg	0.100	0.0811	81	80 - 120	2012-07-20
Ethylbenzene		1	mg/kg	0.100	0.0808	81	80 - 120	2012-07-20
Xylene		1	mg/kg	0.300	0.243	81	80 - 120	2012-07-20

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	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	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.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

208

1207 1338

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: SM ENERGY

SITE MANAGER: IKE TAVAREZ

PROJECT NO.: 114-6401414

PROJECT NAME: PDU 208

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH TX1005 (Ext. to C35) / 8015 MOD.	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
208108	7/12/12		S		X	AH-1 (1'-1.5'), bottom	1	N			X	X	X	X											X				
709						AH-1 (2'-2.5')																			X				
710						AH-2 (1'-1.5'), bottom							X	X											X				
711	↓		↓		↓	AH-2 (2'-2.5')	↓	↓			↓	↓													X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 7/13/12 Time: 1500	RECEIVED BY: (Signature)	Date: 7/13/12 Time: 1500
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) Marcus Mota — Date: Time:

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

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

TETRA TECH CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 7.80

REMARKS: Rush deeper samples if TPH exceed Low mg/kg

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

Run deeper samples if benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg.

208 1207338

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: SM ENERGY
SITE MANAGER: IKE TAVAREZ
PROJECT NO.: 114-6401414
PROJECT NAME: PDU 208

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TX1005 (Ext. to C35)	8015 MOD. TPH	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
203108	7/12/12		S		X	AH-1 (1'-1.5'), bottom	1	N			X	X	X	X	X											X				
709	"		"		"	AH-1 (2'-2.5')	"	"			"	"														X				
710						AH-2 (1'-1.5'), bottom								X	X												X				
711	↓		↓		↓	AH-2 (2'-2.5')	↓	↓			↓	↓														X				

RELINQUISHED BY: (Signature) — Date: 7/13/12 Time: 1500
RECEIVED BY: (Signature) — Date: 7/13/12 Time: 15:00
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) Marcus Mota — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL 2N90203 — OTHER:

RECEIVING LABORATORY: Pace
ADDRESS: CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) Brenda Ward
DATE: 7/17/12 TIME: 9:05

TETRA TECH CONTACT PERSON: IKE Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 7.8°
REMARKS: Rush deeper samples if TPH exceed 1,000 mg/kg

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

Run deeper samples if benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg

Summary Report

Aaron Hale
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: December 21, 2012

Work Order: 12121105

Project Name: SME/PDU 208
Project Number: 114-6401414

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
316361	AH-1 3'	soil	2012-12-05	00:00	2012-12-11
316362	AH-1 4'	soil	2012-12-05	00:00	2012-12-11
316363	AH-2 3'	soil	2012-12-05	00:00	2012-12-11
316364	AH-2 4'	soil	2012-12-05	00:00	2012-12-11

Sample: 316361 - AH-1 3'

Param	Flag	Result	Units	RL
Chloride		**645**	mg/Kg	4

Sample: 316362 - AH-1 4'

Param	Flag	Result	Units	RL
Chloride		**308**	mg/Kg	4

Sample: 316363 - AH-2 3'

Param	Flag	Result	Units	RL
Chloride		**212**	mg/Kg	4

Sample: 316364 - AH-2 4'

Param	Flag	Result	Units	RL
Chloride		**230**	mg/Kg	4

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Aaron Hale
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: December 21, 2012

Work Order: 12121105

Project Name: SME/PDU 208
Project Number: 114-6401414

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
316361	AH-1 3'	soil	2012-12-05	00:00	2012-12-11
316362	AH-1 4'	soil	2012-12-05	00:00	2012-12-11
316363	AH-2 3'	soil	2012-12-05	00:00	2012-12-11
316364	AH-2 4'	soil	2012-12-05	00:00	2012-12-11

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

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

Report Contents

Case Narrative

Samples for project SME/PDU 208 were received by TraceAnalysis, Inc. on 2012-12-11 and assigned to work order 12121105. Samples for work order 12121105 were received intact at a temperature of 1.2 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	82663	2012-12-19 at 09:02	97585	2012-12-19 at 16:46

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 12121105 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 316361 - AH-1 3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	97585	Date Analyzed:	2012-12-19	Analyzed By:	AR
Prep Batch:	82663	Sample Preparation:	2012-12-19	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**645**	mg/Kg	5	4.00

Sample: 316362 - AH-1 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	97585	Date Analyzed:	2012-12-19	Analyzed By:	AR
Prep Batch:	82663	Sample Preparation:	2012-12-19	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**308**	mg/Kg	5	4.00

Sample: 316363 - AH-2 3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	97585	Date Analyzed:	2012-12-19	Analyzed By:	AR
Prep Batch:	82663	Sample Preparation:	2012-12-19	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**212**	mg/Kg	5	4.00

Sample: 316364 - AH-2 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	97585	Date Analyzed:	2012-12-19	Analyzed By:	AR
Prep Batch:	82663	Sample Preparation:	2012-12-19	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**230**		mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 97585

QC Batch:	97585	Date Analyzed:	2012-12-19	Analyzed By:	AR
Prep Batch:	82663	QC Preparation:	2012-12-19	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 97585
Prep Batch: 82663

Date Analyzed: 2012-12-19
QC Preparation: 2012-12-19

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2620	mg/Kg	1	2500	<3.85	105	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2730	mg/Kg	1	2500	<3.85	109	85 - 115	4	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: 316391

QC Batch: 97585
Prep Batch: 82663

Date Analyzed: 2012-12-19
QC Preparation: 2012-12-19

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			8060	mg/Kg	10	2500	5870	88	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			8190	mg/Kg	10	2500	5870	93	78.9 - 121	2	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: 97585 Date Analyzed: 2012-12-19 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	2012-12-19

Standard (CCV-2)

QC Batch: 97585 Date Analyzed: 2012-12-19 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	99.9	100	85 - 115	2012-12-19

Appendix

Report Definitions

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

Laboratory Certifications

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

Standard Flags

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

Attachments

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

12121105

Analysis Request of Chain of Custody Record

PAGE: 1 of 1

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

CLIENT NAME: SM Energy
SITE MANAGER: Aaron Hale
PROJECT NO.: 1414 114-6401458
PROJECT NAME: SM Energy / PDU # 208 Eddy Co, NM

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
316361	12/5		S		X	AH-1 3'	1				X													X				
362						AH-1 4'																						
363						AH-2 3'																						
364						AH-2 4'																						

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: / Time:	RECEIVED BY: (Signature) Jaime Fitch	Date: 12-11-12 Time: 0900
RELINQUISHED BY: (Signature) Jaime Fitch	Date: 12-11-12 Time: 1008	RECEIVED BY: (Signature)	Date: 12/11/12 Time: 10:08
RELINQUISHED BY: (Signature)	Date: / Time:	RECEIVED BY: (Signature)	Date: / Time:

SAMPLED BY: (Print & Initial) JT — Date: 12/5/12 Time:

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

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

TETRA TECH CONTACT PERSON: Aaron Hale

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 1.2°

REMARKS: Email all Proj # SM 114-6401414 - Jzitch -

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