SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	**West Artesia Grayburg Unit # 13**					
Company:	**Alamo Permian Resources, LLC**					
Section, Township and Range	**Unit I**	**Sec 7**	**T18S**	**R28E**		
Lease Number:	**(API#) 30-015-00169**					
County:	**Eddy County**					
GPS:	**32.760350° N**			**104.206770° W**		
Surface Owner:	State					
Mineral Owner:						
Directions:	From the intersection of Hwy 82 and Illinois Camp Road, travel sout on Illinois Camp Road for 2.25 miles to Buckaroo Road. At Buckaroo Road turn southeast and travel 0.50 miles and turn south into the battery.					

Release Data:	
Date Released:	3/15/2012
Type Release:	Produced Water
Source of Contamination:	Injection Line
Fluid Released:	40 bbls
Fluids Recovered:	0 bbls

Official Communication:			
Name:	Steven Mastin		Ike Tavarez
Company:	Alamo Permian Resources, LLC		Tetra Tech
Address:	415 W. Wall St. Suite 500		4000 N. Big Spring, Suite 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 557-5847		(432) 682-4559
Fax:			
Email:			ike.tavarez@tetratech.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

November 5, 2013

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

Re: Closure Report for the Alamo Permian Resources, LLC., West Artesia Grayburg Unit Tank Battery (#13), Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico (2RP 1070).

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by Alamo Permian Resources, LLC., (Alamo) to assess spills from the West Artesia Grayburg Unit Tank Battery (WAGU #13), Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.7603500°, W 104.2067700°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on March 15, 2012, and released approximately forty (40) barrels of produced water due to a flowline leak from the WAGU #13. The spill occurred in the pasture directly west of the tank battery along Buckaroo Rd and zero (0) barrels were recovered. Tetra Tech and the OCD met on-site on August 15, 2013 to discuss the site. The spill area was excavated and sampled by a previous consultant. Based on the data it was agreed upon that vertical delineation on the open excavation would be required prior to lining and backfilling the site. The WAGU #13 C-141 form is enclosed in Appendix A. In addition, an excavated area north of the spill was noted during the inspection. As recommended by the OCD, samples were to be collected from the north spill area.

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

Groundwater

The New Mexico State Engineer's Office data showed two wells located in Section 21 and 35, Township 18 South, Range 28 East, with depths to water ranging from 65' to 225' below surface. According to the NMOCD groundwater map, the closest wells are listed in Section 7 and 8, with reported depths to groundwater of 49' and 69', respectively. According to the topographic map, the site location shows a relative surface elevation of 3622'. Based on the water wells and the relative elevations (Section 7 - 3594' and Section 8 - 3599'), the groundwater depth at the site appears to range from 75' to 90' 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-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. Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Assessment Work Plan

On September 5, 2013 Tetra Tech personnel inspected and sampled the WAGU TB (#13) spill area. The WAGU TB (#13) spill area had already been excavated and sampled by a previous consultant and results are attached in Table 1 – Soil Sample Analytical Data Summary.

In addition Tetra Tech collected samples from the north excavation (North Spill Area) for bottom hole (AH-1 and AH-2) and sidewall samples. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in the WAGU TB – North Spill Table 3. The sample locations are shown on the WAGU Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, bottom hole samples SS-8 and SS-9 were both elevated for chlorides at 2,560 mg/kg and 3,460 mg/kg, respectively and several sidewalls also showed elevated chlorides. Referring to Table 3, the area of the north spill AH-1 and AH-2 showed elevated chloride levels. In the area of AH-1 the chloride level was reported at 2,260 mg/kg and was undefined. In the area of AH-2 the chloride level was reported at 11,700 mg/kg and was also undefined. Several of the sidewall samples also showed elevated chloride readings.

On September 17, 2013, Tetra Tech personnel supervised the installation of boreholes (B-1, B-2 and B-3) utilizing an air rotary drilling rig to define the vertical extents. The soil borings were installed to a total depth of 51.0' for B-1 (between SS-8 and SS-9), 51.0' for B-2 (North Spill - AH-1) and 21.0' for B-3 (North Spill – AH-2). The sampling results are summarized in Table 2 and Table 3. Referring to Table 2, chloride concentrations decreased with depth and were vertically defined. Boreholes (B-1 and B-2) showed a deeper impact the subsurface soils; however B-1 decreased to 862 mg/kg at 40.0' and B-2 decreased to 675 mg/kg at 30.0' below surface. B-3 did not show a significant chloride impact to the subsurface soils and appears to have shallow concentrations of 1,160 mg/kg at 10.0' and declined to 380 mg/kg at 15.0' below surface. The borehole results are summarized in Table 2 and Table 3.

Remediation and Conclusion

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met as stated in the approved work plan. The excavated areas and depths are highlighted in Tables 2 and Table 3 and shown in Figures 4. The excavated areas of the WAGU TB and WAGU TB (North Spill) were capped at 4.0' below surface with 40 mil plastic liner and backfilled with clean soils to grade. Several of the sidewalls were over excavated to address the elevated chlorides and confirmation samples are included in Table 1.

Prior to the lining, Tetra Tech contacted the OCD and discussed the drilling sampling results. The OCD approved lining and backfilling the areas of the WAGU TB and WAGU TB North Spill. Approximately 3,080 cubic yards of stockpiled and excavated soil were transported to the Lea Land facility for proper disposal.

TETRA TECH

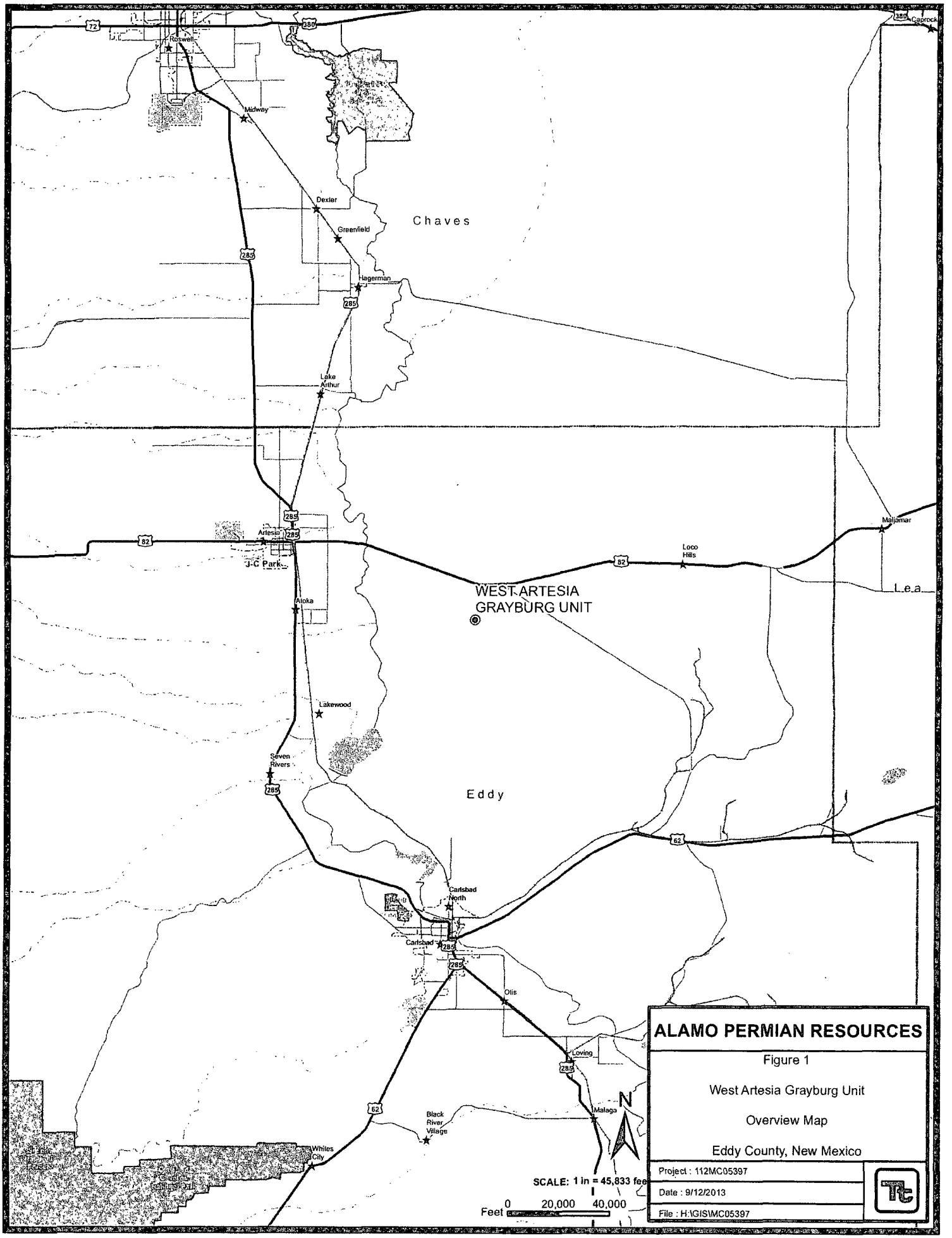
Based on the remedial activities performed, Alamo request closure of the site. A copy of the C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

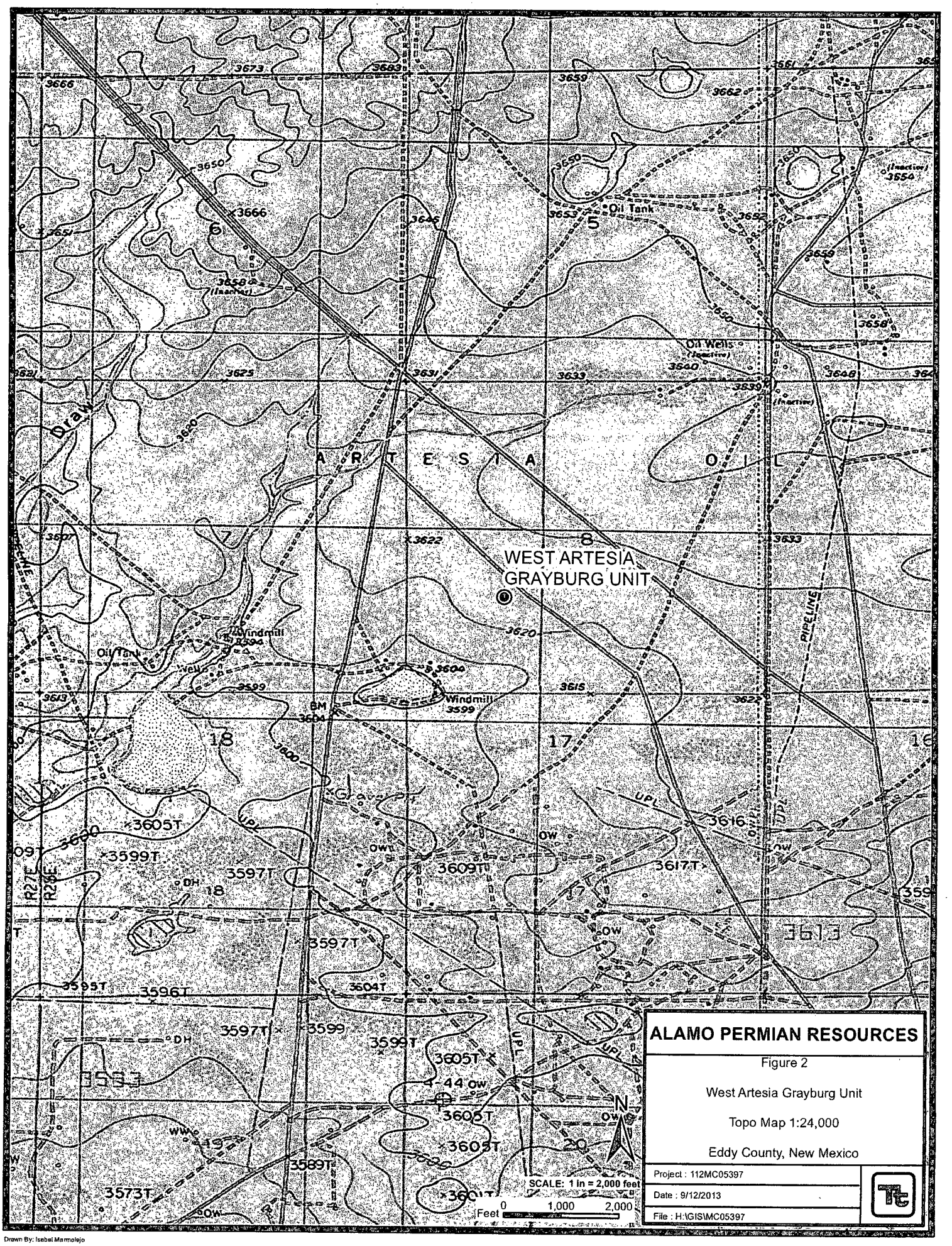
Tom Elliott
Project Manager

cc: Helms Oil – Hollie Lamb

FIGURES



Drawn By: Isabel Marmolejo



ALAMO PERMIAN RESOURCES

Figure 2

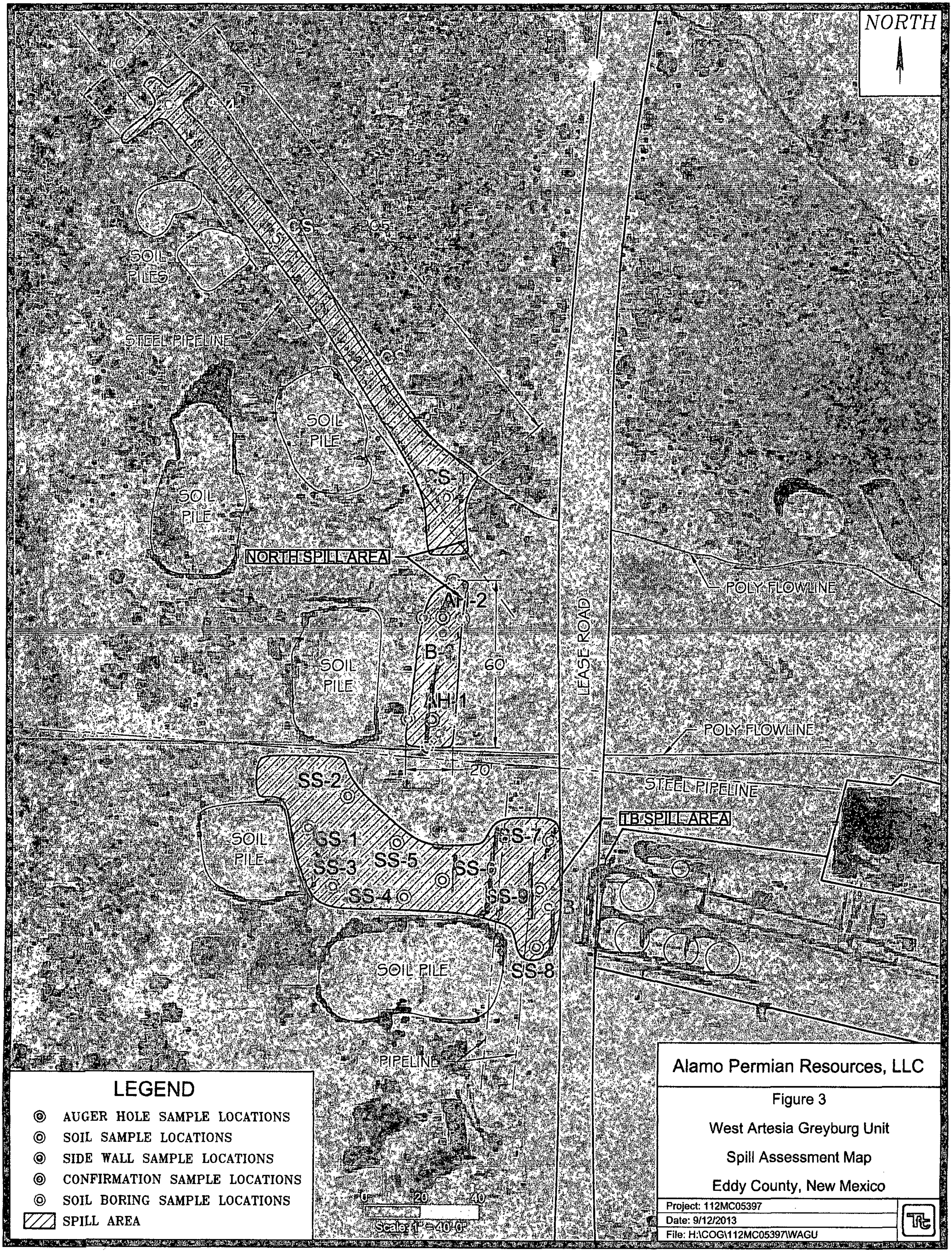
West Artesia Grayburg Unit

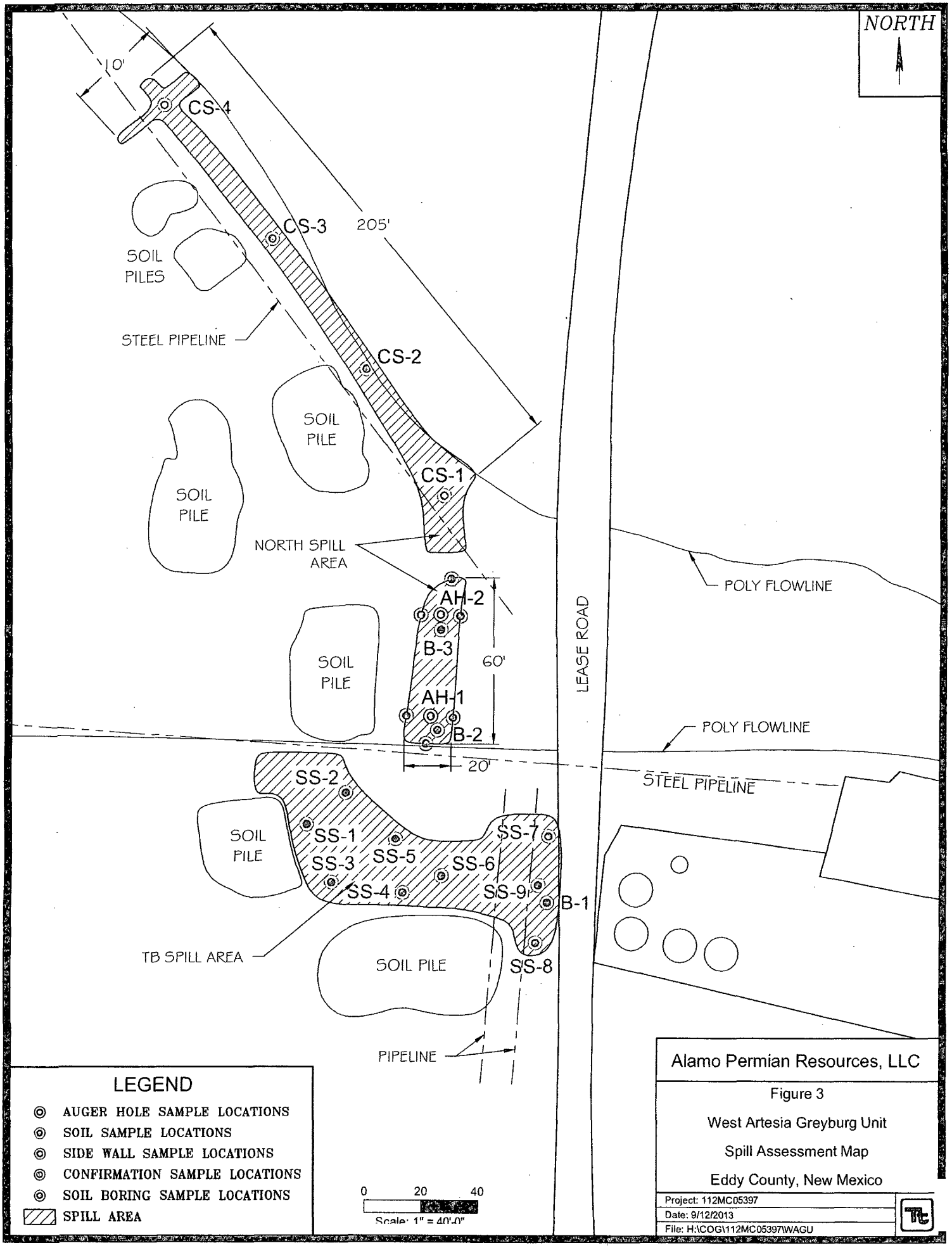
Topo Map 1:24,000

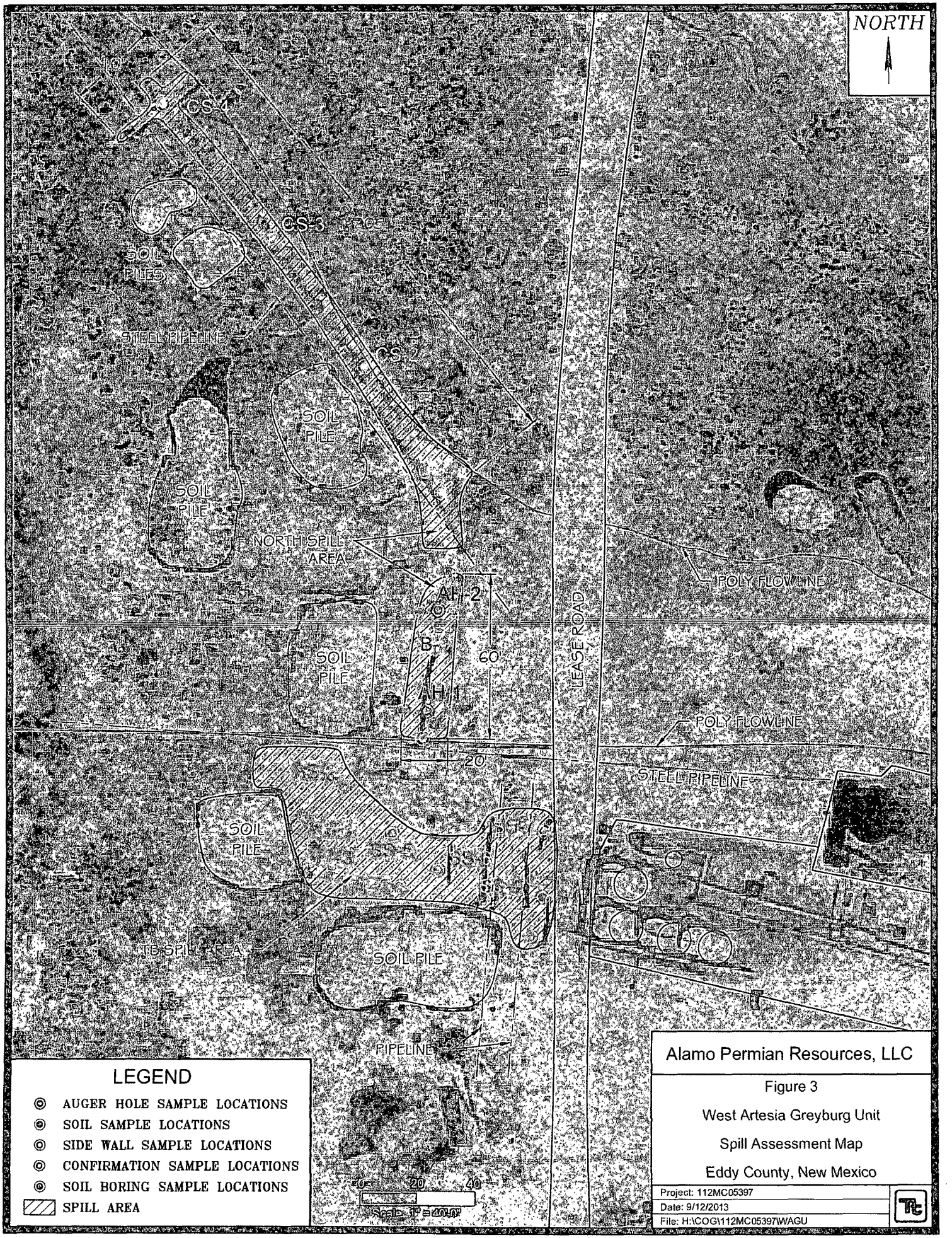
Eddy County, New Mexico

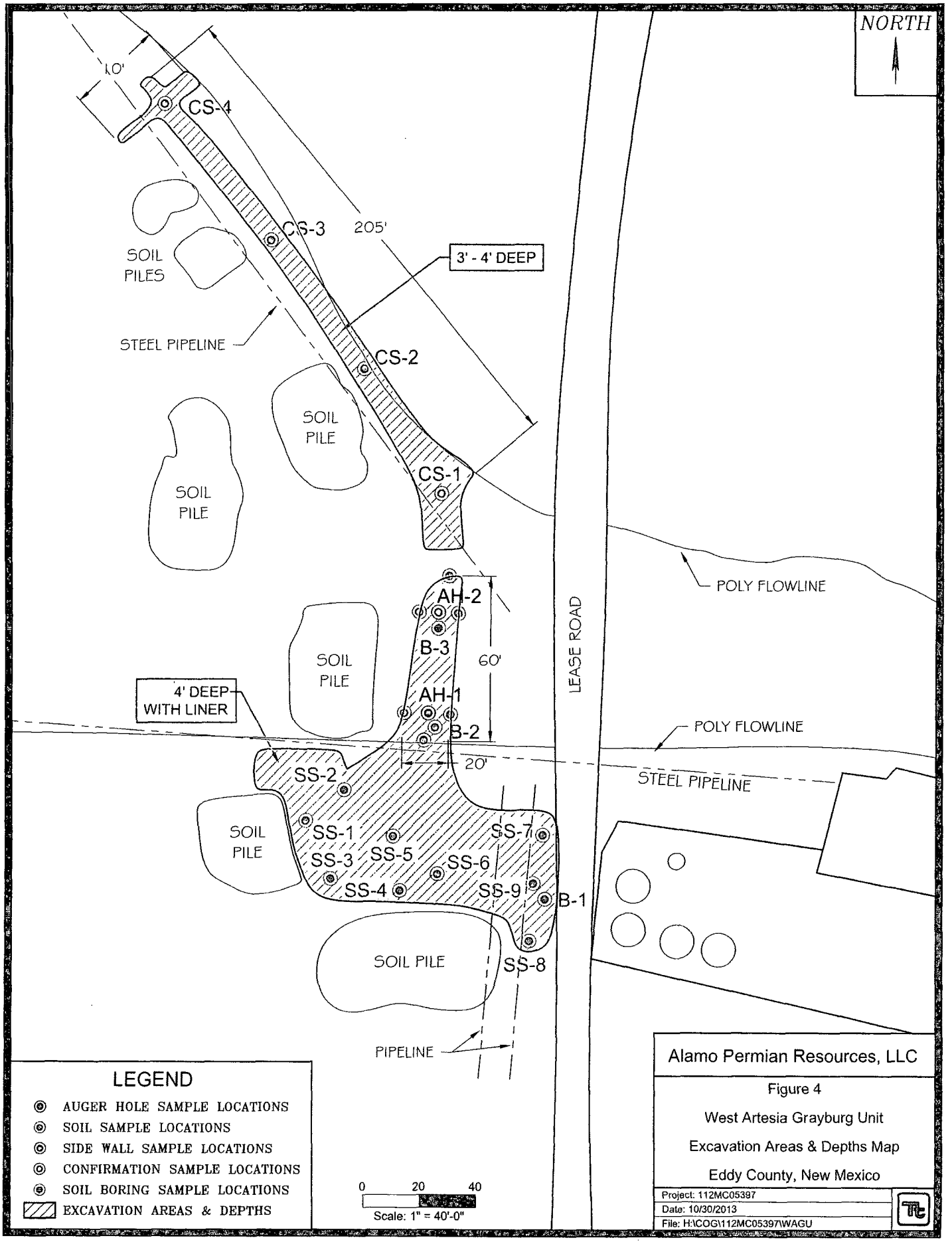
Project : 112MC05397	
Date : 9/12/2013	
File : H:\GIS\MC05397	

Drawn By: Isabel Mamolejo


NORTH
CS
SOIL PILES
STEEL PIPELINE
SOIL PILE
SOIL PILE
CS-1
NORTH SPILL AREA
AH-2
B
60'
AH-1
SOIL PILE
LEASE ROAD
POLY FLOWLINE
POLY FLOWLINE
20'
STEEL PIPELINE
SS-2
TB SPILL AREA
SOIL PILE
SS-1
SS-3
SS-5
SS-4
SS-6
SS-7
SS-9
SS-8
SOIL PILE
PIPELINE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SOIL SAMPLE LOCATIONS
SIDE WALL SAMPLE LOCATIONS
CONFIRMATION SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
SPILL AREA
0 20 40
Scale 1" = 40'-0"
Alamo Permian Resources, LLC
Figure 3
West Artesia Greyburg Unit
Spill Assessment Map
Eddy County, New Mexico
Project: 112MC05397
Date: 9/12/2013
File: H:\COG\112MC05397\WAGU


NORTH
10'
CS-4
CS-3
205'
SOIL PILES
STEEL PIPELINE
CS-2
SOIL PILE
SOIL PILE
CS-1
NORTH SPILL AREA
POLY FLOWLINE
AH-2
B-3
60'
SOIL PILE
LEASE ROAD
AH-1
B-2
POLY FLOWLINE
20'
STEEL PIPELINE
SS-2
SOIL PILE
SS-1
SS-7
SS-3
SS-5
SS-6
SS-4
SS-9
B-1
TB SPILL AREA
SOIL PILE
SS-8
PIPELINE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SOIL SAMPLE LOCATIONS
SIDE WALL SAMPLE LOCATIONS
CONFIRMATION SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
SPILL AREA
0 20 40
Scale: 1" = 40'-0"
Alamo Permian Resources, LLC
Figure 3
West Artesia Greyburg Unit
Spill Assessment Map
Eddy County, New Mexico
Project: 112MC05397
Date: 9/12/2013
File: H:\COG\112MC05397\WAGU

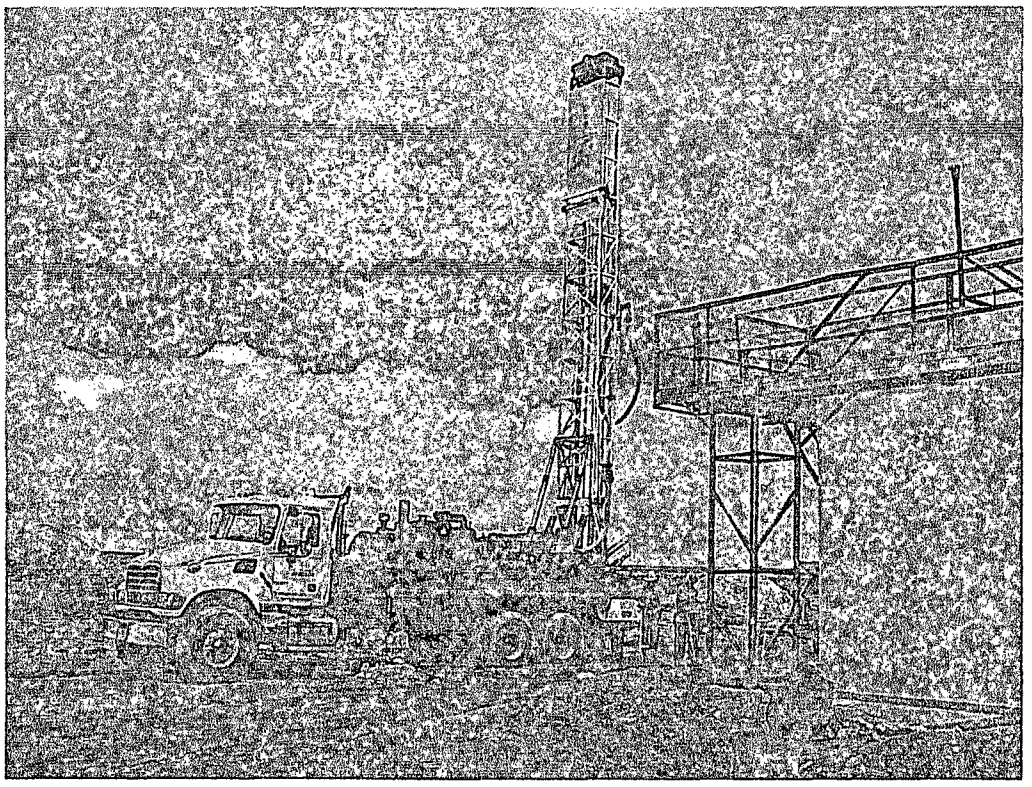

NORTH
CS-1
CS-3
CS-2
SOIL PILE
SOIL PILE
STEEL PIPELINE
SOIL PILE
SOIL PILE
NORTH SPILL AREA
AH-2
AH-1
60
20
LEASE ROAD
POLY FLOWLINE
POLY FLOWLINE
STEEL PIPELINE
SOIL PILE
SOIL PILE
TB SPILL AREA
PIPELINE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SOIL SAMPLE LOCATIONS
SIDE WALL SAMPLE LOCATIONS
CONFIRMATION SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
SPILL AREA
0 20 40
Scale: 1" = 40'
Alamo Permian Resources, LLC
Figure 3
West Artesia Greyburg Unit
Spill Assessment Map
Eddy County, New Mexico
Project: 112MC05397
Date: 9/12/2013
File: H:\COG\112MC05397\WAGU


NORTH
10'
CS-4
CS-3
205'
3' - 4' DEEP
SOIL PILES
STEEL PIPELINE
CS-2
SOIL PILE
SOIL PILE
CS-1
POLY FLOWLINE
AH-2
B-3
60'
SOIL PILE
4' DEEP WITH LINER
AH-1
B-2
LEASE ROAD
POLY FLOWLINE
20'
SS-2
STEEL PIPELINE
SOIL PILE
SS-1
SS-7
SS-3
SS-5
SS-6
SS-4
SS-9
B-1
SOIL PILE
SS-8
PIPELINE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SOIL SAMPLE LOCATIONS
SIDE WALL SAMPLE LOCATIONS
CONFIRMATION SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
EXCAVATION AREAS & DEPTHS
0 20 40
Scale: 1" = 40'-0"
Alamo Permian Resources, LLC
Figure 4
West Artesia Grayburg Unit
Excavation Areas & Depths Map
Eddy County, New Mexico
Project: 112MC05397
Date: 10/30/2013
File: H:\COG\112MC05397\WAGU

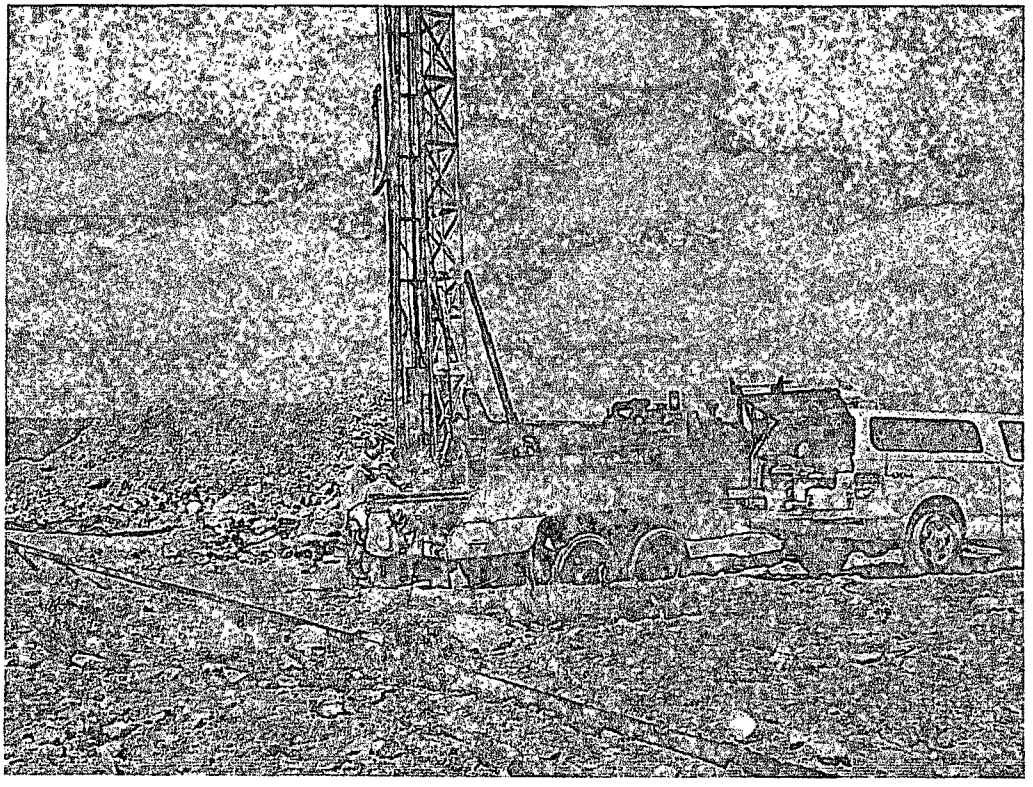
PHOTOGRAPHS

Alamo Permian Resources, LLC
West Artesia Grayburg Unit 13
Eddy County, New Mexico

TETRA TECH



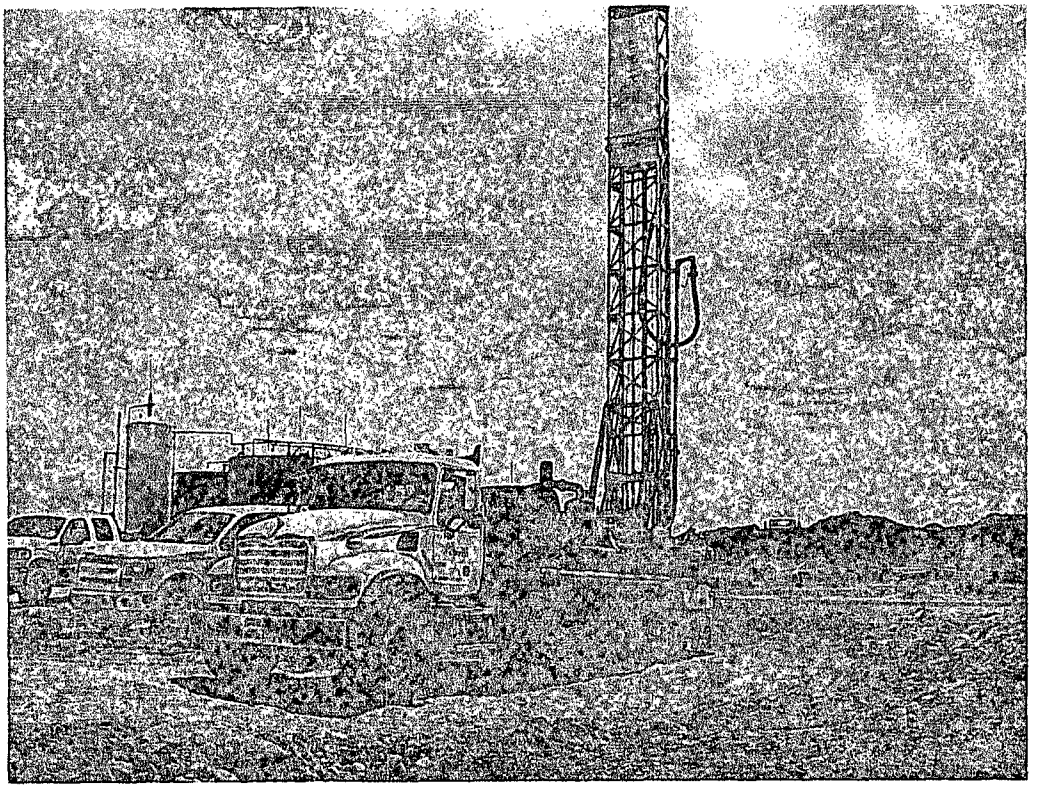
View Northwest – B-1 being installed in the area of SS-8 and SS-9.



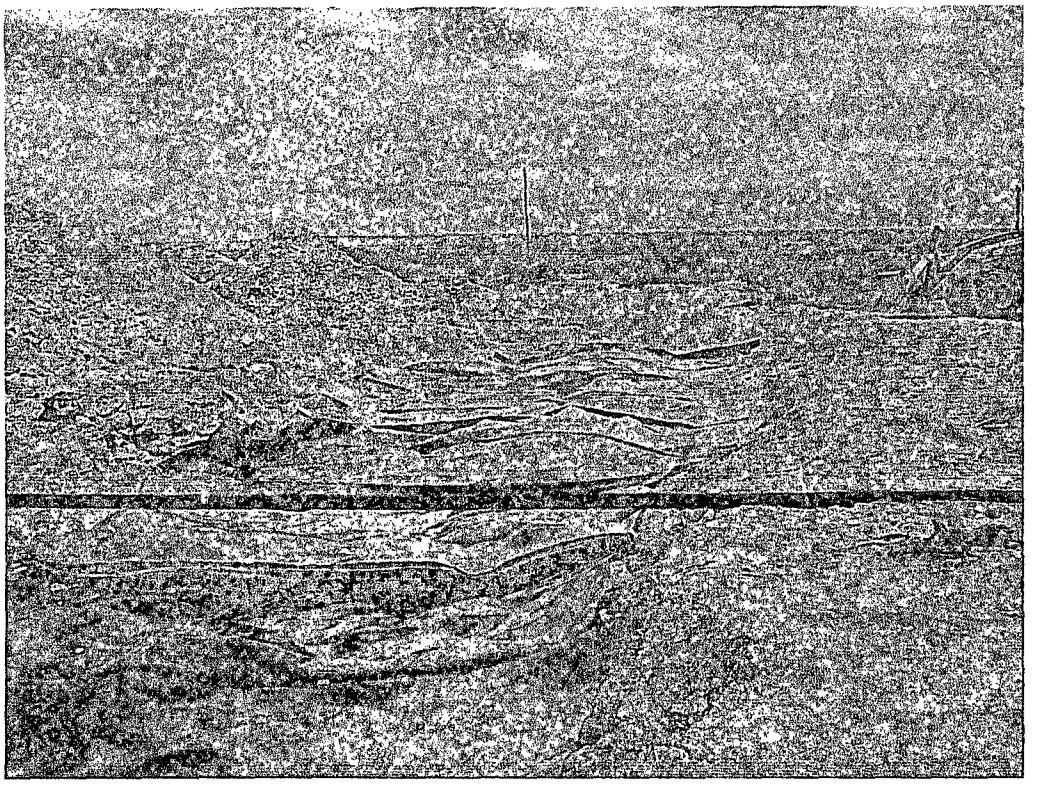
View Northwest – B-2 being installed in the area of AH-1 and AH-2.

Alamo Permian Resources, LLC
West Artesia Grayburg Unit 13
Eddy County, New Mexico

TETRA TECH



View Southeast – B-3 being installed in the area of AH-1 and AH-2.

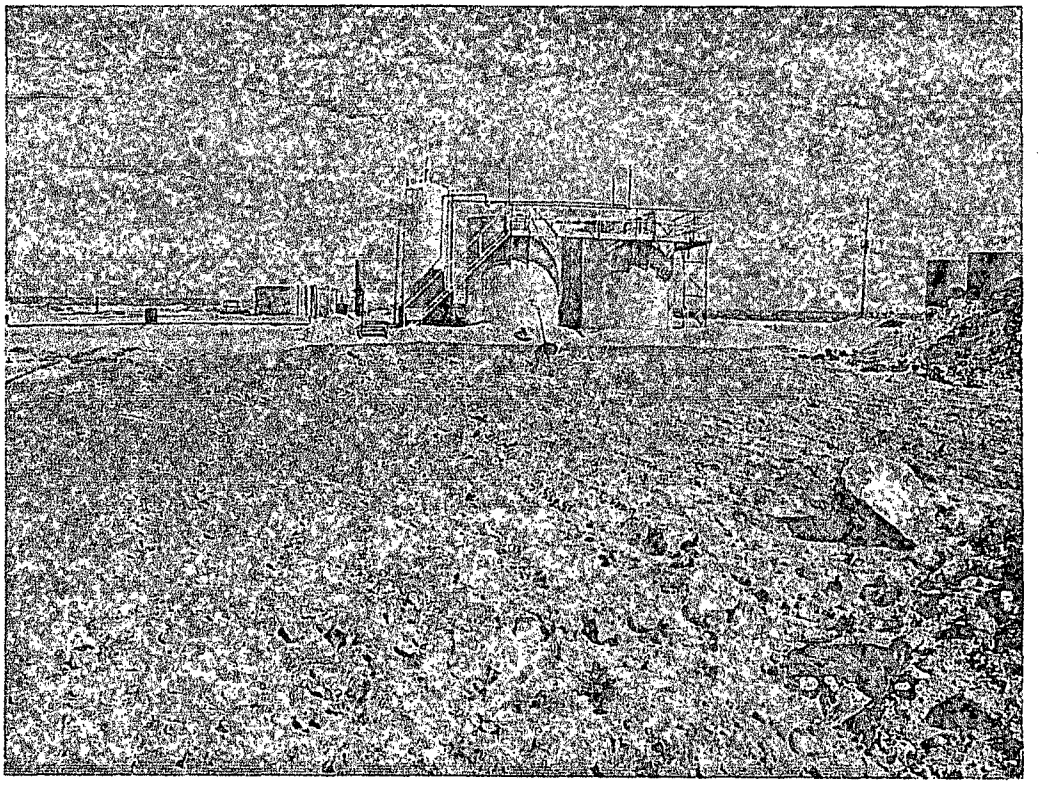


View North – Liner installed in area of AH-1 and AH-2.

Alamo Permian Resources, LLC
West Artesia Grayburg Unit 13
Eddy County, New Mexico

TETRA TECH

View East – Liner installed in the area of SS-1 thru SS-9.



View East – Backfill

TABLES

Table 1
Soil Sample Analytical Data Summary
Alamo Permian Resources LLC
West Artesia Grayburg Tank Battery Spill
11-0117-05

Location (West)	Date	Depth Feet BGS	Status	Location	Field EC (mS/cm)	Chloride mg/Kg	GRO mg/Kg	DRO mg/Kg	ORH mg/Kg	Total TPH mg/Kg
RRAL:						1,000				1,000
SS-1	8/4/2011	3	in-situ	Side	0.7	**848**	<19.5	**96.8**	<19.5	**96.8**
SS-2	8/4/2011	3	in-situ	Side	1.3	**3,510**	<17.9	**24.4**	<17.9	**24.4**
SS-3	8/3/2011	2	in-situ	Side	0.8	**1,720**	<15.5	**569**	<15.5	**569**
SS-4	8/3/2011	1	in-situ	Bottom	0.6	**527**	**80.8**	**1,610**	<77.7	**1,690**
SS-5	8/3/2011	5	in-situ	Side	0.8	**2,340**	<16.7	**26.6**	<16.7	**26.6**
SS-6	8/4/2011	2	in-situ	Bottom	0.4	**527**	**127**	**838**	<16.4	**965**
SS-7	8/4/2011	2	in-situ	Bottom	2.8	--	<16.7	**60.6**	<16.7	**60.6**
	8/4/2011	8	in-situ		0.8	**567**	--	--	--	--
SS-8	8/4/2011	2	in-situ	Bottom	3.4	--	<16.3	<16.3	<16.3	<16.3
	8/5/2011	12	in-situ		1.3	**2,560**	--	--	--	--
SS-9	8/4/2011	2	in-situ	Bottom	1.8	--	<16.2	**22.7**	<16.2	**22.7**
	8/4/2011	14	in-situ		1.6	**3,460**	--	--	--	--

Notes: Analysis performed by Xenco Laboratories, Odessa, Texas
Bold indicates analyte was detected.
Bold and blue indicates analyte is above recommneded remediation action levels.
All results are reported in mg/Kg.
TPH was analyzed via Method SW8015 Mod.
Chloride was analyzed via Method EPA 300/300.1.
Symbol " - " indicates analyte was not sampled.

Table 2
Alamo Permian
W. Artesia Grayburg (WAGU) Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Depth (ft)	Soil Status		Chloride (mg/kg)
				In-Situ	Removed	
B-1	9/17/2013	0-1	-		X	210
	"	2-3	-		X	1,410
	"	5-6	-	X		**6,990**
	"	7-8	-	X		**3,270**
	"	10-11	-	X		**3,950**
	"	15-16	-	X		**1,500**
	"	20-21	-	X		**1,150**
	"	25-26	-	X		**2,110**
	"	30-31	-	X		**1,610**
	"	40-41	-	X		862
	"	50-51	-	X		381
SS-2 Sidewall	9/27/2013	-	-	X		108
SS-3 Sidewall	9/27/2013	-	-	X		789
SS-5 Sidewall	9/27/2013	-	-	X		793

(-) Not Analyzed

(BEB) Below Excavation Bottom

Excavation Depths

40 Mil Liner Installed

Table 3
Alamo
West Artesia Grayburg Unit TB - North Spill
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1 (3' Bottom Hole)	9/5/2013	0-1 BEB			<50.0	<4.00	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	389
	"	1-1.5 BEB			---	---	---	---	---	---	---	---	**2,260**
South Wall	9/5/2013	-	X		<50.0	<20.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	557
East Wall	9/5/2013	-	X		<50.0	<20.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**2,330**
West Wall	9/5/2013	-	X		122	<8.0	122	<0.0400	<0.0400	<0.0400	0.0797	0.0797	**1,770**
West Sidewall	9/27/2013	-	X		-	-	-	-	-	-	-	-	**44.4**
B-2	9/17/2013	0-1		X									**1650**
	"	2-3		X									**2,410**
	"	5-6	X		-	-	-	-	-	-	-	-	**2,950**
	"	7-8	X		-	-	-	-	-	-	-	-	**3,600**
	"	10-11	X		-	-	-	-	-	-	-	-	**1,830**
	"	15-16	X		-	-	-	-	-	-	-	-	**1,250**
	"	20-21	X		-	-	-	-	-	-	-	-	**1,530**
	"	25-26	X		-	-	-	-	-	-	-	-	**1,920**
	"	30-31	X		-	-	-	-	-	-	-	-	675
	"	40-41	X		-	-	-	-	-	-	-	-	335
	"	50-51	X		-	-	-	-	-	-	-	-	970
AH-2 (2' Botom Hole)	9/5/2013	0-1 BEB	X		64.7	<20.0	64.7	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**11,700**
East Wall	9/5/2013	-	X		52.7	<20.0	52.7	<0.100	<0.100	<0.100	0.148	0.148	533
West Wall	9/5/2013	-	X		165	<20.0	165	<0.0100	<0.0100	<0.0100	0.175	0.175	**1,930**
West Sidewall	9/27/2013	-	X		-	-	-	-	-	-	-	-	**<20.0**
B-3	9/17/2013	0-1		X									205
	"	2-3		X									**1,850**
	"	5-6	X		-	-	-	-	-	-	-	-	960
	"	7-8	X		-	-	-	-	-	-	-	-	**2,150**
	"	10-11	X		-	-	-	-	-	-	-	-	**1,160**
	"	15-16	X		-	-	-	-	-	-	-	-	380
	"	20-21	X		-	-	-	-	-	-	-	-	250

Table 3
Alamo
West Artesia Grayburg Unit TB - North Spill
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						
CS-1 (2' Bottom Hole)	9/5/2013	-	X		<50.0	<20.0	<50.0	<0.100	<0.100	<0.100	0.150	0.150	102
CS-2 (3' Bottom Hole)	9/5/2013	-	X		<50.0	<4.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
CS-3 (3' Bottom Hole)	9/5/2013	-	X		<50.0	<4.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
CS-4 (2' Bottom Hole)	9/5/2013	-	X		<50.0	<4.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	873

BEB - Below Excavation Bottom

Excavation Depths
40 Mil Liner Installed

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

RECEIVED
MAR 16 2012
NMOCD ARTESIA

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

nMLB1208658510 274841 **OPERATOR** ☒ Initial Report. ☐ Final Report

Name of Company ALAMO PERMIAN RESOUCES, LLC	Contact STEVEN MASTIN
Address 415 W. WALL ST. SUITE 500	Telephone No. 432 557 5847
Facility Name WEST ARTESIA GRAYBURG UNIT 13	Facility Type INJECTION

Surface Owner STATE	Mineral Owner STATE	API No. 30-015-02636

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	7	18S	28E	2310	S	330	E	EDDY

Latitude 32.7603500 **Longitude** -104.2067700

NATURE OF RELEASE

Type of Release: BRINE WATER.	Volume of Release: EST 40 bbls BRINE WATER	Volume Recovered: 0 bbls
Source of Release: FLOWLINE	Date and Hour of Occurrence: 3/15/12	Date and Hour of Discovery 3/15/12
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? STEVEN MASTIN NMOCD Notified 3/15/12 @ 2:19 PM	
By Whom? RICKY RODRIGUEZ	Date and Hour 3/15/12 1:00 P.M.	
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.*

Cause of problem: LEAK IN FLOWLINE
Remedial Action Taken: A BACKHOE WAS DISBATCHED TO LOCATION TO SCRAPE UP THE CONTAMINATED SOIL TO REDUCE THE PENETRATION OF CONTAMINATES; CONTAMINATED SOIL WILL BE HAULED TO GANDY MARLEY FOR DISPOSAL.

Describe Area Affected and Cleanup Action Taken.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Carie Stoker	OIL CONSERVATION DIVISION Signed By Mike Bratcher Approved by Environmental Specialist:
Printed Name: CARIE STOKER	
Title: REGULATORY COORDINATOR	Approval Date: MAR 26 2012 Expiration Date:
E-mail Address: cstoker@alamoresources.com	Conditions of Approval: Attached ☐
Date: 03/16/2012 Phone: 432 664 7659	Remediation per OCD Rules & Guidelines. SUBMIT REMEDIATION PROPOSAL NOT LATER THAN: 4/26/2012

* Attach Additional Sheets If Necessary

2RP-1070

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED
JAN 13 2014
NMOCD ARTESIA

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	**Alamo Permian Resources, LLC**	Contact	**Steven Mastin**
Address	**415 W. Wall St. Suite 500**	Telephone No.	**(432) 5557-5847**
Facility Name	**West Artesia Grayburg Unit 13**	Facility Type	**Injection Line**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-02636

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	7	18S	28E	2310	S	330	E	Eddy

Latitude N 32.7603500° **Longitude** W 104.2067700°

NATURE OF RELEASE

Type of Release: Brine Water	Volume of Release: Est 40 bbls	Volume Recovered 0 bbls
Source of Release: Flowline	Date and Hour of Occurrence 03/15/2012	Date and Hour of Discovery 03/15/2012 1:00 PM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom? Ricky Rodriguez	Date and Hour 03/315/2012 1:00 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The leak in the flowline was repaired and the line was put back into service. Alamo scraped the area using a backhoe.

Describe Area Affected and Cleanup Action Taken.*

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
West Artesia Grayburg Unit #13 Injection
Eddy County, New Mexico

17 South 27 East

6	5 30	4	3	2	1
7 14	8	9	10	11 54 50	12
18 111	17 90	16 175	15	14	13
19	20	21	22	23 40	24
30	29	28	27	26	25
31	32 140	33	34	35	36

17 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 79	23	24
30	29	28	27	26	25
31	32	33	34	35	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 80	23	24
30	29 210 208'	28	27	26	25
31	32	33	34	35 153	36

18 South 27 East

6	5	4	3	2	1
7	8	9	10 50	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 100	27	26	25
31 65	32	33	34	35	36

18 South 28 East

6	5	4 108	3	2	1
7 Site 49	8 69	9	10	11	12
18	17	16	15	14	13
19	20	21 225	22	23	24
49	29	28	27	26	25
31	32	33	34	35 65	36

18 South 29 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 27 East

6	5 20	4	3	2	1
7	8 50	9	10	11	12
18	17	16 18	15	1482.4 107.7	13 60.7
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	9 246 265	10	11	12
18 91	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 29 East

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

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

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	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00361			ED		1	3	09	19S	28E	576195	3615347*	365	265	100
CP 00361 EXPL			ED	3	1	3	09	19S	28E	576094	3615246*	365	265	100
CP 00502			ED		1	1	18	19S	28E	573001	3614478*	100	91	9
CP 00836			ED		1	1	18	19S	28E	573001	3614478*	110		
CP 00837			ED		1	1	18	19S	28E	573001	3614478*	110		
CP 00838			ED		1	1	18	19S	28E	573001	3614478*			

Average Depth to Water: **207 feet**

Minimum Depth: **91 feet**

Maximum Depth: **265 feet**

Record Count: 6

PLSS Search:

Township: 19S Range: 28E

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

4/16/12 8:43 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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

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

No records found.

PLSS Search:

Township: 17S Range: 28E

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	Twp	Rng	X	Y	Depth Well	Depth Water	Water Column
L 01142 POD1		L	LE	2	4	15	18S	28E	578921	3623453*	80			
L 01150 POD1		L	LE	1	1	35	18S	28E	579344	3619433*	135	65		70
RA 09588			ED	1	2	33	18S	28E	576976	3619384*	300			

Average Depth to Water: **65 feet**

Minimum Depth: **65 feet**

Maximum Depth: **65 feet**

Record Count: 3

PLSS Search:

Township: 18S **Range:** 28E

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

4/16/12 8:39 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 03714			CH	4	4	2	08	18S	27E	566212	3625253*	381		
RA 03917			LE	4	1	2	10	18S	27E	569019	3625660*	130	50	80
RA 04048			LE	1	4	4	14	18S	27E	570841	3623030*	2096		
RA 04211			CH		3	1	26	18S	27E	566512	3620562*	120	100	20
RA 04298			ED		1	2	19	18S	27E	564082	3622523*	92		
RA 05524			ED		2	4	33	18S	27E	567721	3618532*	90	49	41
RA 05660			ED		3	4	31	18S	27E	564094	3618090*	305	65	240
RA 05664			ED		4	1	33	18S	27E	566914	3618936*		145	
RA 08091			ED	1	2	3	29	18S	27E	565211	3620222*	90	17	73

Average Depth to Water: 71 feet

Minimum Depth: 17 feet

Maximum Depth: 145 feet

Record Count: 9

PLSS Search:

Township: 18S *Range: 27E*

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

4/16/12 8:40 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 01493			ED		2	1	27	17S	27E	568468	3630529*	876		
RA 01716 (D)	O		ED	4	4	3	16	17S	27E	566953	3632420*	1220	175	1045
RA 01716 S			ED	4	4	3	16	17S	27E	566953	3632420*	1200		
RA 02966			ED	4	4	4	05	17S	27E	566117	3635707*	80	30	50
RA 03279			ED		3	2	07	17S	27E	564020	3635011*	250	14	236
RA 03661			ED	3	2	3	32	17S	27E	565186	3628038*	330	140	190
RA 03664			CH	3	2	3	32	17S	27E	565186	3628038*	400	100	300
RA 03694			ED			4	17	17S	27E	565854	3632721*	300	90	210
RA 03816			CH			4	17	17S	27E	565854	3632721*	945	931	14
RA 04114			LE	4	4	3	16	17S	27E	566953	3632420*	1042	260	782
RA 04153			CH	4	4	3	16	17S	27E	566953	3632420*	1220	175	1045
RA 04320			ED			3	17	17S	27E	565053	3632719*	120	50	70
RA 04554			ED			1	23	17S	27E	569859	3631947*	220	40	180
RA 04581			ED		4	2	26	17S	27E	570871	3630142*	250		
RA 04786			ED	4	3	2	18	17S	27E	564133	3633277*	138	111	27
RA 06531			ED	4	1	4	17	17S	27E	565747	3632821*	200		
RA 06560			CH	2	1	2	20	17S	27E	565757	3632217*	133	80	53
RA 06635			ED	2	2	2	18	17S	27E	564531	3633852*	325	60	265
RA 07774			ED	3	2	1	11	17S	27E	569933	3635251*	100	50	50
RA 07844			ED	3	4	3	16	17S	27E	566753	3632420*	1300	180	1120
RA 07844 EXPL			ED		4	3	16	17S	27E	568854	3632521*	1300	180	1120
RA 08823			ED	1	1	3	17	17S	27E	564745	3633019*	348	60	288
RA 11691 POD1			ED	2	1	4	17	17S	27E	565800	3633029	150	0	150

Average Depth to Water: 143 feet

Minimum Depth: 0 feet

Maximum Depth: 931 feet

Record Count: 23

PLSS Search:

Township: 17S Range: 27E

*UTM location was derived from PLSS - see Help

USGS Home
Contact USGS
Search USGS

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

News updated March, 2012

Groundwater levels for New Mexico

NM

Search Results -- 1 sites found

Search Criteria

site_no list =
- 324424104103901

Minimum number of levels = 1

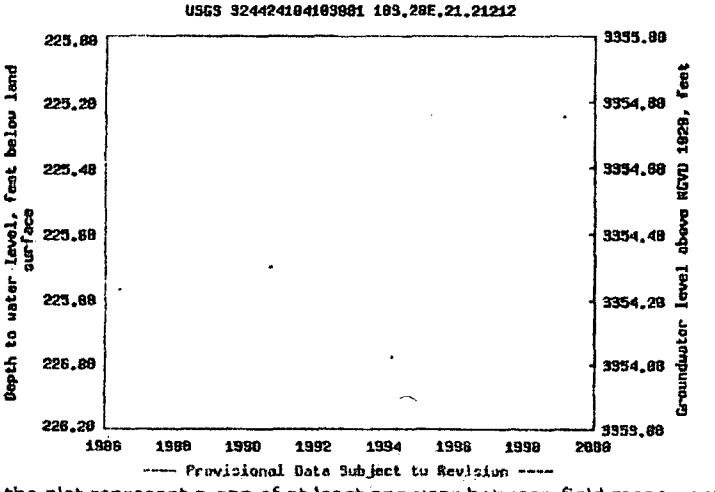
Save file of selected sites to local disk for future upload

USGS 324424104103901 18S.28E.21.21212

Available data for this site | Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°44'24", Longitude 104°10'39" NAD27
Land-surface elevation 3,580 feet above NGVD29
The depth of the well is 250.00 feet below land surface.
This well is completed in the Artesia Group (313ARTS) local aquifer.

Output formats
- Table of data
- Tab-separated data
- Graph of data
- Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
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News

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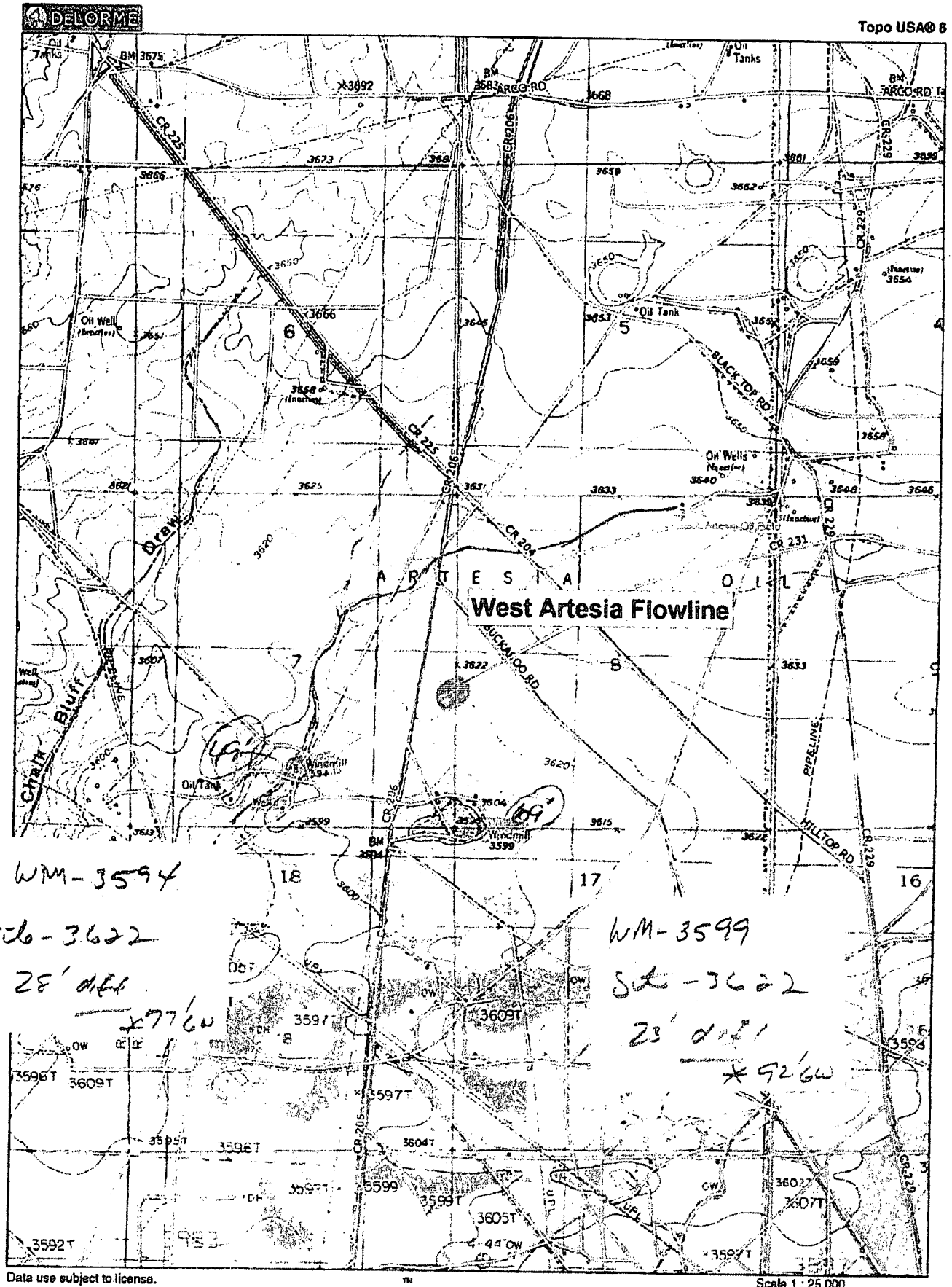
U.S. Department of the Interior | U.S. Geological Survey
Title: Groundwater for New Mexico: Water Levels
URL: http://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?

USA.gov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28' dtl
x776w
WM-3599
Sfc-3622
23' dtl
x926w
Data use subject to license.
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www.delorme.com
Scale 1 : 25,000
1" = 2,083.3 ft
Data Zoom 13-0

APPENDIX C

Summary Report

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

Report Date: September 11, 2013

Work Order: 13090615

Project Location: Eddy Co, NM
Project Name: Alamo/West Artesia Grayburg TB-North Spill
Project Number: 112MC05397

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
341317	AH-1 0-1' (3'BEB)	soil	2013-09-05	00:00	2013-09-06
341318	AH-1 1-1.5'	soil	2013-09-05	00:00	2013-09-06
341319	AH-1 South Wall	soil	2013-09-05	00:00	2013-09-06
341320	AH-1 East Wall	soil	2013-09-05	00:00	2013-09-06
341321	AH-1 West Wall	soil	2013-09-05	00:00	2013-09-06
341322	AH-2 0-1' (2' BEB)	soil	2013-09-05	00:00	2013-09-06
341323	AH-2 East Wall	soil	2013-09-05	00:00	2013-09-06
341324	AH-2 West Wall	soil	2013-09-05	00:00	2013-09-06
341325	CS-1 Botton Hole (2' BEB)	soil	2013-09-05	00:00	2013-09-06
341326	CS-2 Bottom Hole (3' BEB)	soil	2013-09-05	00:00	2013-09-06
341327	CS-3 Botton Hole (3' BEB)	soil	2013-09-05	00:00	2013-09-06
341328	CS-4 Bottom Hole (2' BEB)	soil	2013-09-05	00:00	2013-09-06

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
341317 - AH-1 0-1' (3'BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 $_{Qr,Qs}$	<4.00 $_{Qs}$
341319 - AH-1 South Wall	<0.100 [1]	<0.100	<0.100	<0.100	<50.0 $_{Qr,Qs}$	<20.0 [2] $_{Qs}$
341320 - AH-1 East Wall	<0.100 [3]	<0.100	<0.100	<0.100	<50.0 $_{Qr,Qs}$	<20.0 [4] $_{Qs}$
341321 - AH-1 West Wall	<0.0400 [5]	<0.0400	<0.0400	**0.0797**	**122** $_{Qr,Qs}$	<8.00 [6] $_{Qs}$
341322 - AH-2 0-1' (2' BEB)	<0.100 [7]	<0.100	<0.100	<0.100	**64.7** $_{Qr,Qs}$	<20.0 [8] $_{Qs}$

continued ...

[1]Dilution due to surfactants.
[2]Dilution due to surfactants.
[3]Dilution due to surfactants.
[4]Dilution due to surfactants.
[5]Dilution due to surfactants.
[6]Dilution due to surfactants.
[7]Dilution due to surfactants.
[8]Dilution due to surfactants.

... continued

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
341323 - AH-2 East Wall	<0.100 [9]	<0.100	<0.100	**0.148**	**52.7** Qr,Qs	<20.0 [10] Qs
341324 - AH-2 West Wall	<0.100 [11]	<0.100	<0.100	**0.175**	**165** Qr,Qs	<20.0 [12] Qs
341325 - CS-1 Botton Hole (2' BEB)	<0.100 [13]	<0.100	<0.100	**0.150**	<50.0 Qr,Qs	<20.0 [14] Qs
341326 - CS-2 Bottom Hole (3' BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs
341327 - CS-3 Botton Hole (3' BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs
341328 - CS-4 Bottom Hole (2' BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00 Qs

Sample: 341317 - AH-1 0-1' (3'BEB)

Param	Flag	Result	Units	RL
Chloride		**389**	mg/Kg	4

Sample: 341318 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**2260**	mg/Kg	4

Sample: 341319 - AH-1 South Wall

Param	Flag	Result	Units	RL
Chloride		**557**	mg/Kg	4

Sample: 341320 - AH-1 East Wall

Param	Flag	Result	Units	RL
Chloride		**2330**	mg/Kg	4

Sample: 341321 - AH-1 West Wall

Param	Flag	Result	Units	RL
Chloride		**1770**	mg/Kg	4

[9]Dilution due to surfactants.
[10]Dilution due to surfactants.
[11]Dilution due to surfactants.
[12]Dilution due to surfactants.
[13]Dilution due to surfactants.
[14]Dilution due to surfactants.

Sample: 341322 - AH-2 0-1' (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**11700**	mg/Kg	4

Sample: 341323 - AH-2 East Wall

Param	Flag	Result	Units	RL
Chloride		**533**	mg/Kg	4

Sample: 341324 - AH-2 West Wall

Param	Flag	Result	Units	RL
Chloride		**1930**	mg/Kg	4

Sample: 341325 - CS-1 Botton Hole (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**102**	mg/Kg	4

Sample: 341326 - CS-2 Bottom Hole (3' BEB)

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

Sample: 341327 - CS-3 Botton Hole (3' BEB)

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

Sample: 341328 - CS-4 Bottom Hole (2' BEB)

Param	Flag	Result	Units	RL
Chloride		**873**	mg/Kg	4

Summary Report

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

Report Date: October 7, 2013

Work Order: 13092724

Project Location: Eddy Co., NM
Project Name: Alamo Permian/W. Artesia Grayburg (WAGU) #4
Project Number: 112MC05397

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
342928	SS-2 SW	soil	2013-09-24	00:00	2013-09-27
342929	SS-3 SW	soil	2013-09-24	00:00	2013-09-27
342930	SS-5 SW	soil	2013-09-24	00:00	2013-09-27
342931	AH-1 West Sidewall	soil	2013-09-24	00:00	2013-09-27
342932	AH-2 West Sidewall	soil	2013-09-24	00:00	2013-09-27

Sample: 342928 - SS-2 SW

Param	Flag	Result	Units	RL
Chloride		**108**	mg/Kg	4

Sample: 342929 - SS-3 SW

Param	Flag	Result	Units	RL
Chloride		**789**	mg/Kg	4

Sample: 342930 - SS-5 SW

Param	Flag	Result	Units	RL
Chloride		**793**	mg/Kg	4

Sample: 342931 - AH-1 West Sidewall

Param	Flag	Result	Units	RL
Chloride		**44.4**	mg/Kg	4

Sample: 342932 - AH-2 West Sidewall

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