TETRA TECH

RECEIVED
APR 23 2012
NMOCD ARTESIA

April 19, 2012

WAGU #13 Proposal to delineate

Mr. Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
1301 West Grand Avenue
Artesia, New Mexico 88210

Re: Assessment Work Plan for the Alamo Permian Resources, LLC., West Artesia Grayburg Unit 13 Injection Line, Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by Alamo Permian Resources, LLC., (Alamo) to assess a spill from the West Artesia Grayburg Unit 13 Injection Line, Unit I, Section 7, Township 18 South, Range 28 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.760350°, W 104.206770°. 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 from a leaking flow line. None of the fluids were recovered. To alleviate the problem, Alamo personnel replaced the damaged flow line. The initial C-141 form is enclosed in Appendix A.

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 and data, the closest wells are located 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

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

elevation of 3622'. Based on the water wells relative elevations (Section 7-3594' and Section 8 – 3599'), the groundwater depth at the site appears 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, ethyl-benzene 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. If the delineation assessment determines the groundwater is less than 50' below surface, the Site will be remediated to the appropriate RRAL.

Assessment Work Plan

Tetra Tech personnel will inspect the spill area and collect soil samples using a stainless steel, bucket type hand auger to evaluate the extent of subsurface impact at this site. If a dense formation is encountered and deeper samples cannot be collected, backhoe trenches will be installed to attempt to define the vertical extents for delineation. If the soil impact cannot be defined, boreholes will be installed using an air rotary rig.

Soil samples will be collected at selected depth intervals for field screening and sampling. A head space gas survey will be performed by collecting discrete soil samples and placing a portion of the sample in a clean plastic sample bag and measuring organic vapors using an Organic Vapor Meter (OVM). If utilized, all down hole equipment (i.e., drill rods, drill bits, etc.) will thoroughly decontaminated between each borehole with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged.

The samples selected for analysis will be determined from field observation and data. All samples will be collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples will be shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples will be analyzed for Total Petroleum Hydrocarbon (TPH) by method 8015 DRO/GRO, Benzene, Toluene,

TETRA TECH

Ethyl benzene, and Xylene (BTEX) by EPA Method 8021B and chloride by method EPA method 300.0.

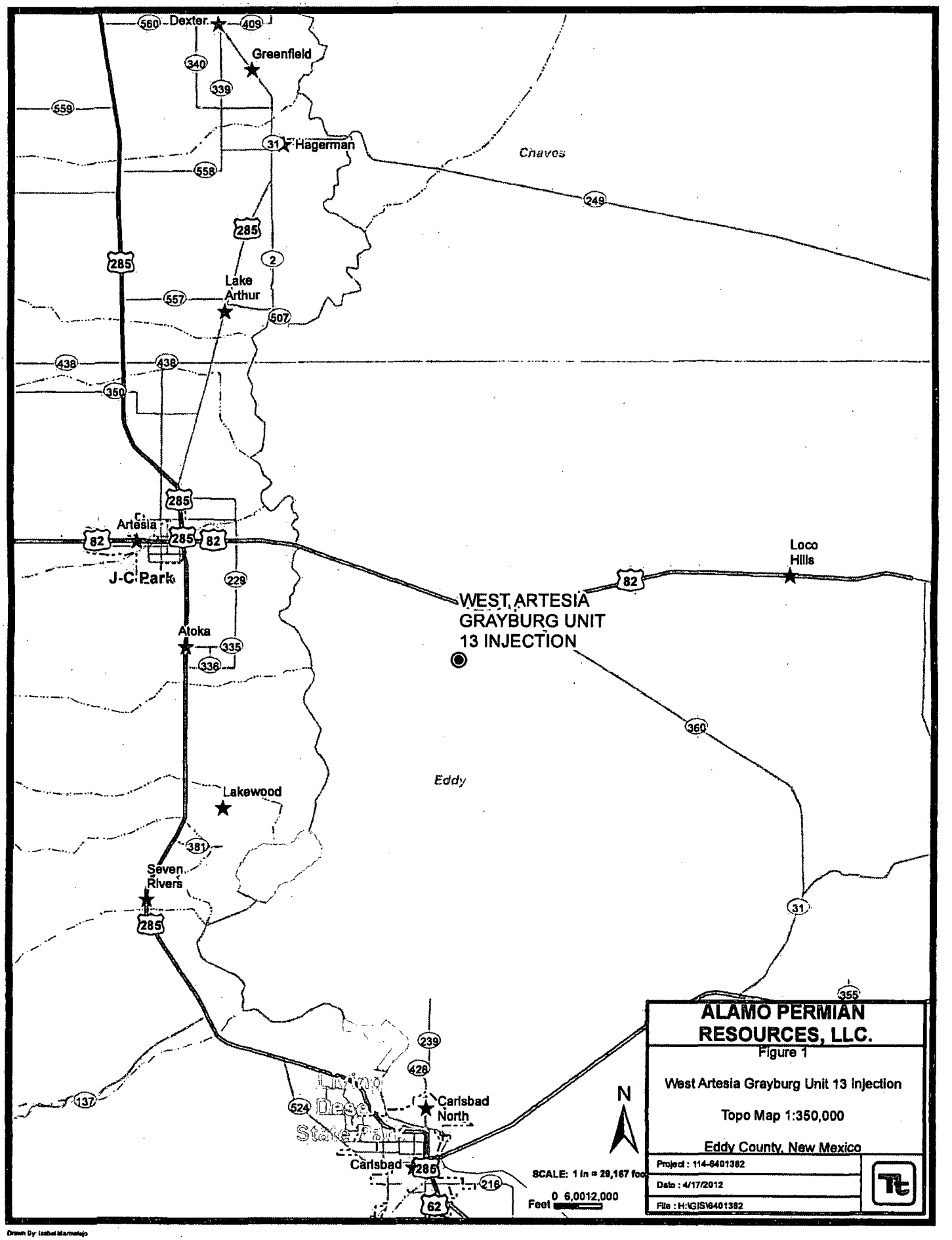
Once the analytical data has been received and reviewed, a remediation work plan will be prepared and submitted to the NMOCD for approval. If you have any questions or comments concerning the proposed work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez , PG
Sr. Project Manager

cc: Hollie Lamb - HeLM

Figures



ALAMO PERMIAN RESOURCES, LLC.

Figure 1

West Artesia Grayburg Unit 13 Injection

Topo Map 1:350,000

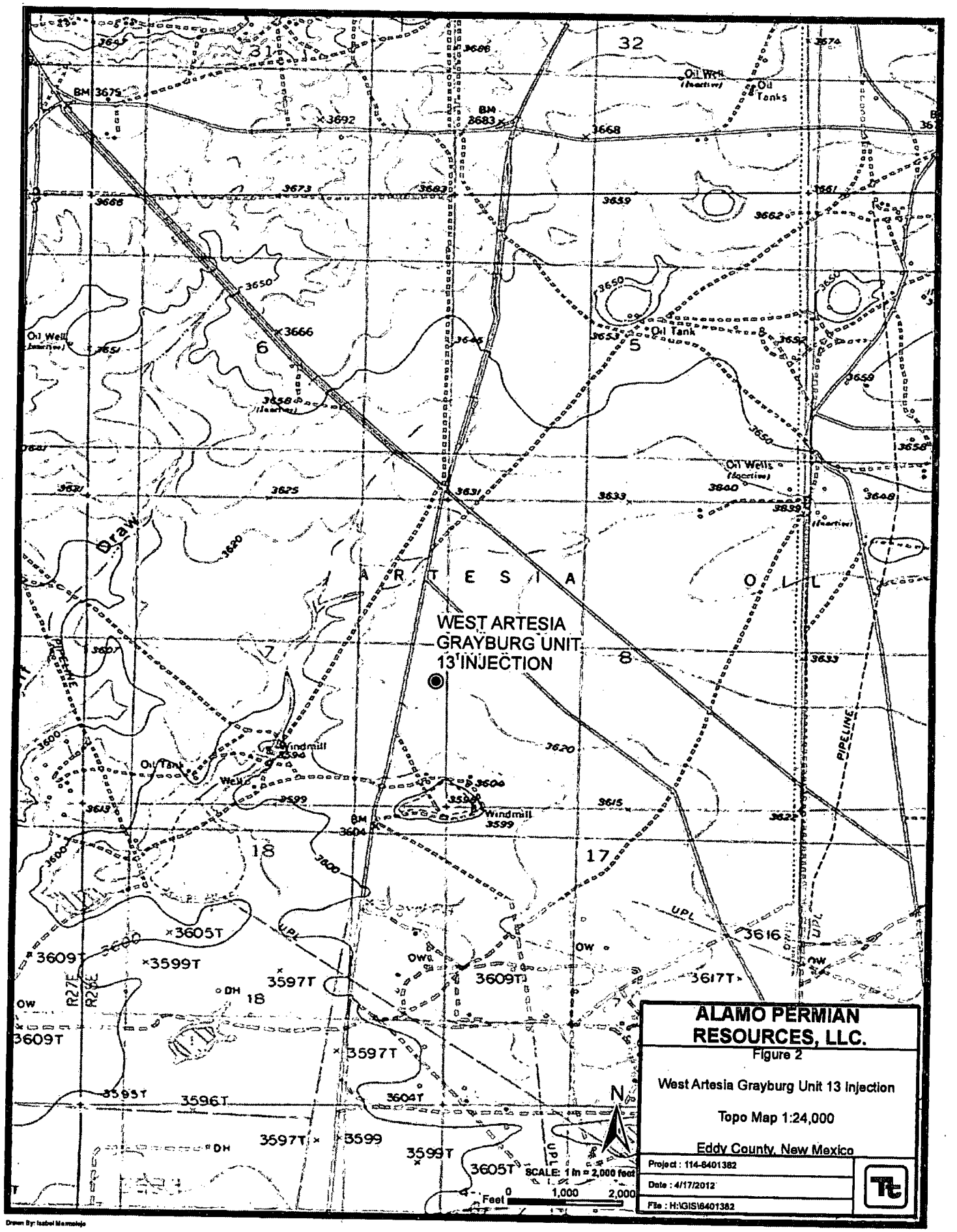
Eddy County, New Mexico

Project : 114-6401382

Date : 4/17/2012

File : H:\GIS\6401382

Drawn By: Izabel Marmolejo



ALAMO PERMIAN RESOURCES, LLC.

Figure 2

West Artesia Grayburg Unit 13 Injection

Topo Map 1:24,000

Eddy County, New Mexico

Project : 114-6401382

Date : 4/17/2012

File : H:\GIS\6401382

Drawn By: Isabel Manriquez

Appendix A

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	Tws	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	Tws	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	28	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 06091			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	Code	POD 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 04561			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	566854	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

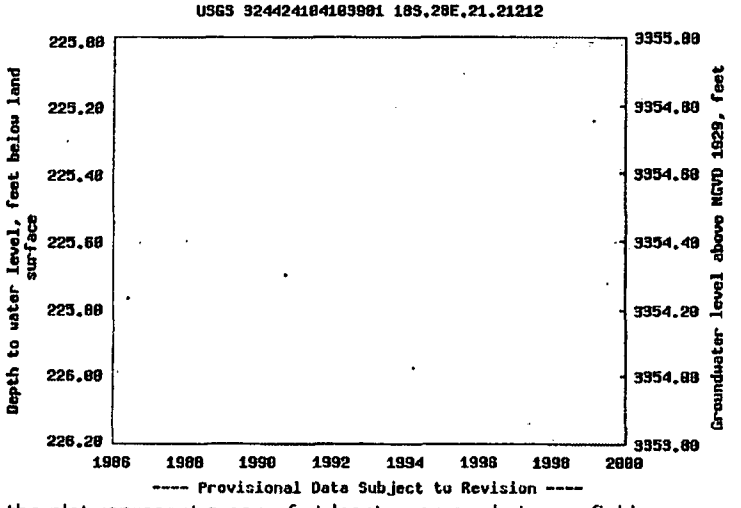
Save file of selected sites to local disk for future upload

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?
Feedback on this web site
Automated retrievals
Help

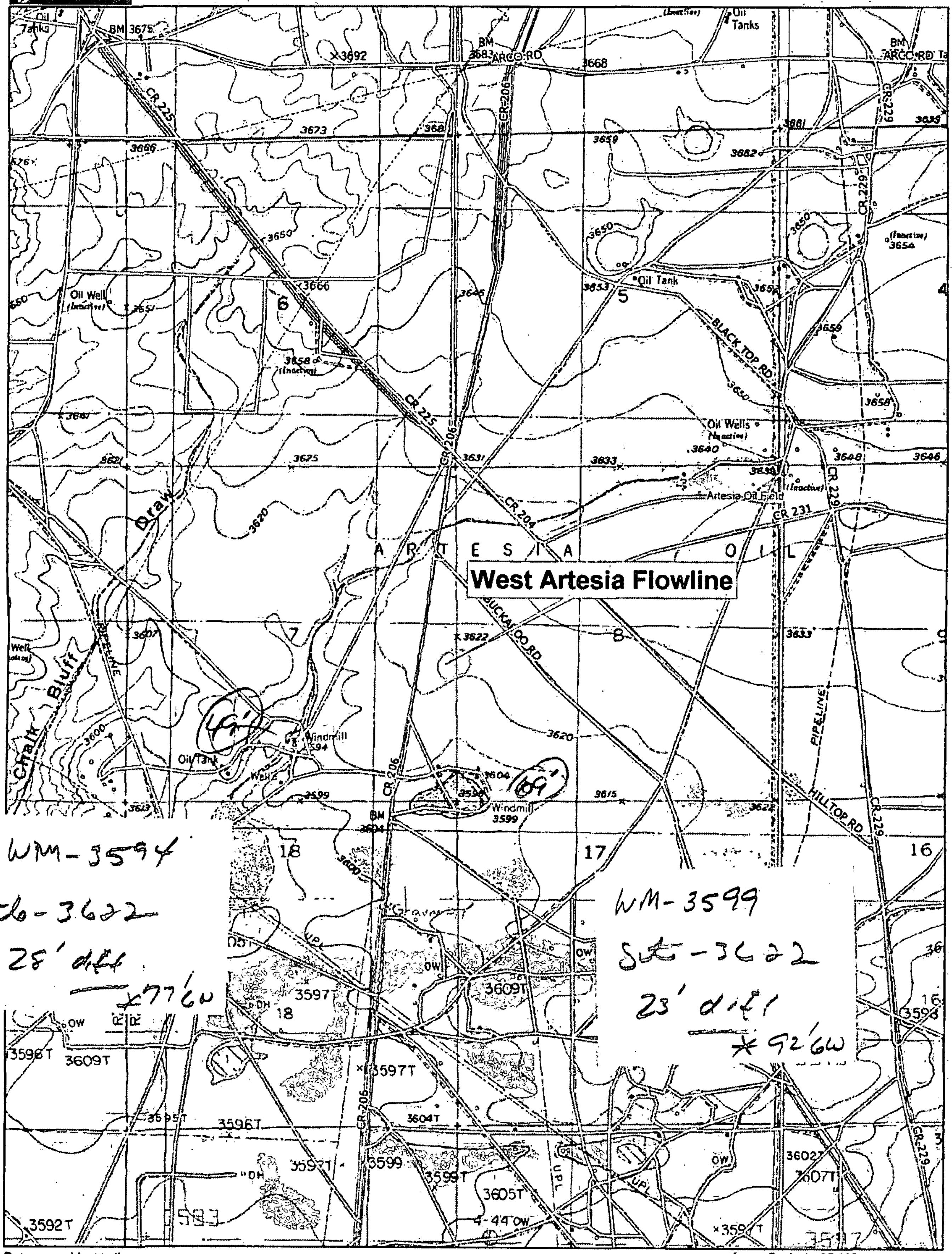
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

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

Topo USA® 8



Scale 1 : 25,000

1" = 2,083.3 ft

Data Zoom 13-0

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 original 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

Printed Name: CARIE STOKER

Title: REGULATORY COORDINATOR

E-mail Address: cstoker@alamoresources.com

Date: 03/16/2012 Phone: 432 664 7659

OIL CONSERVATION DIVISION

Signed By Mike Bratcher

Approved by Environmental Specialist:

Approval Date: MAR 26 2012 Expiration Date:

Conditions of Approval: Attached ☐

Remediation per OCD Rules & Guidelines. SUBMIT REMEDIATION PROPOSAL NOT LATER THAN: 4/26/2012

JRP-1070

* Attach Additional Sheets If Necessary

SITE INFORMATION

Report Type: Initial Work Plan

General Site Information:						
Site:	West Artesia Grayburg Unit 13 Injection					
Company:	Alamo Permian Resources, LLC.					
Section, Township and Range	Section 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:	Pending assessment					

Release Data:	
Date Released:	3/15/2012
Type Release:	Produced Water
Source of Contamination:	flow line
Fluid Released:	40 barrels
Fluids Recovered:	0 barrels

Official Communication:			
Name:	Steven Mastin		Ike Tavarez
Company:	Alamo Permian Resources, LLC.		Tetra Tech
Address:	415 W. Wall St. Suite 500		1910 N. Big Spring
P.O. Box			
City:	Midland Texas		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**	75-90'
>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

To: Bratcher, Mike, EMNRD; Dade, Randy, EMNRD
Cc: hlamb@helmsoil.com; CARL; TONY; mstewart@helmsoil.com; smastin@alamoresources.com; pseale@alamoresources.com
Subject: ALAMO PERMIAN RESOURCES RELEASE NOTIFICATIONS

Mr. Bratcher,

Attached are the C 141 release notifications for the WAGU 13 and State 32. A hard copy of each has been mailed.

Thanks,

Carie Stoker

Alamo Permian Resources, LLC
415 West Wall St., Suite 500
Midland, TX 79701

Office (432) 897-0673
Cell (432) 664-7659

Bratcher, Mike, EMNRD

From: pgpuniversal-admin@nmes.lcl
To: Carl@alamoresources.com; Tony@alamoresources.com; cstoker@alamoresources.com; pseale@alamoresources.com; smastin@alamoresources.com; hlamb@helmsoil.com; mstewart@helmsoil.com
Sent: Wednesday, July 18, 2012 9:33 AM
Subject: Relayed: ALAMO PERMIAN RESOURCES RELEASE NOTIFICATIONS

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Carl@alamoresources.com

Tony@alamoresources.com

cstoker@alamoresources.com

pseale@alamoresources.com

smastin@alamoresources.com

hlamb@helmsoil.com

mstewart@helmsoil.com

Subject: RE: ALAMO PERMIAN RESOURCES RELEASE NOTIFICATIONS

Bratcher, Mike, EMNRD

From: Microsoft Outlook
To: Dade, Randy, EMNRD
Sent: Wednesday, July 18, 2012 9:33 AM
Subject: Delivered: RE: ALAMO PERMIAN RESOURCES RELEASE NOTIFICATIONS

Your message has been delivered to the following recipients:

Dade, Randy, EMNRD (Randy.Dade@state.nm.us)

Subject: RE: ALAMO PERMIAN RESOURCES RELEASE NOTIFICATIONS

Bratcher, Mike, EMNRD

From: Bratcher, Mike, EMNRD
Sent: Monday, August 26, 2013 8:13 AM
To: 'Tavarez, Ike'
Cc: 'hlamb@helmsoil.com'
Subject: RE: Alamo - West Artesia Grayburg Tank Battery and West Artesia Grayburg #4 - Proposed Evaluation and Remedation

Ike,

I have a C-141 for the WAGU Tank Battery – it is the same one you copied me on and was assigned OCD tracking number, 2RP-1070. There are three C-141s for the WAGU #4. They should have been assigned separate 2RP numbers, but it looks like only one number was assigned for all three, and it is 2RP-444. Currently, there are no documents scanned to that RP number. I will see if I can get the data entry and scanning updated. Meanwhile, your proposal is approved. Please proceed on your schedule, but let me know when you begin moving equipment in.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

Mike Bratcher
NMOCD District 2
811 S. First Street
Artesia, NM 88210
O: 575-748-1283 X108
C: 575-626-0857
F: 575-748-9720

From: Tavarez, Ike [mailto:Ike.Tavarez@tetratech.com]
Sent: Wednesday, August 21, 2013 12:02 PM
To: Bratcher, Mike, EMNRD
Cc: 'hlamb@helmsoil.com'
Subject: Alamo - West Artesia Grayburg Tank Battery and West Artesia Grayburg #4 - Proposed Evaluation and Remedation

Mike,

West Artesia Grayburg Tank Battery

We appreciate you meeting us onsite at the Alamo - West Artesia Tank Battery on August 15, 2013. As discussed, Alamo is concern about the open excavation located near the tank battery and would like to close the issue. I have attached a C-141 which we believe may be related to the tank battery release. We also found some lab data from the open excavation collected by Larson. The lab data is attached. Based on the data, the east excavation area (trench locations) were not vertically defined and requested delineation, which would involve drilling this area. As approved, the open excavation will be backfilled to a depth of approximately 3.0' to 4.0' below surface to prepare the area for access to install a borehole (between the two trench locations) to define the vertical extents. In addition, some of the

sidewalls will be scraped to remove the elevated chlorides and all of the stockpiles related to the excavation will be hauled to proper disposal. Once completed and approved, the excavation will be capped with a 40 mil liner and backfilled to grade. Once all the activities are performed, Tetra Tech will prepared a closure report for the site.

In addition, a second open excavation was located immediately northwest of the excavation. As requested, Tetra Tech will collected soil samples from the excavation bottoms and sidewalls for evaluation. The sampling results will be forward for your review. Based on the results, the excavation will be addressed appropriately.

West Artesia Grayburg Unit #4

Here is another location with open excavation with no C-141 for the site. To evaluate, Tetra Tech collected soil samples from the open excavation and stockpiles. The sampling results are attached for your review. As we discussed and approved, the area of AH-1 will be excavated to approximately 2.0' below surface to remove the elevated chlorides. In area of AH-10, we will make an attempt to remove the elevated chloride. However, the dense limestone rock in the excavation bottom may hinder the excavation. In addition, you requested additional impacted soil to be removal (0.5' deep) from an area located along the lease road, which migrated approximately 300' northwest from the excavation site. Once the excavated, the open excavations will be backfilled with clean soil to surface grade. All of the soil stockpiles onsite will be hauled to proper disposal. Once all the activities are performed, Tetra Tech will prepared a closure report for the site.

If you additional information please let me know thanks

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | www.tetratech.com

Bratcher, Mike, EMNRD

From:	Microsoft Outlook
To:	Tavarez, Ike; 'hlamb@helmsoil.com'
Sent:	Monday, August 26, 2013 8:13 AM
Subject:	Relayed: RE: Alamo - West Artesia Grayburg Tank Battery and West Artesia Grayburg #4 - Proposed Evaluation and Remedation

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

Tavarez, Ike (Ike.Tavarez@tetratech.com)

'hlamb@helmsoil.com' (hlamb@helmsoil.com)

Subject: RE: Alamo - West Artesia Grayburg Tank Battery and West Artesia Grayburg #4 - Proposed Evaluation and Remedation

Bratcher, Mike, EMNRD

From: Tavarez, Ike <Ike.Tavarez@tetratech.com>
Sent: Wednesday, August 21, 2013 12:02 PM
To: Bratcher, Mike, EMNRD
Cc: 'hlamb@helmsoil.com'
Subject: Alamo - West Artesia Grayburg Tank Battery and West Artesia Grayburg #4 - Proposed Evaluation and Remedation
Attachments: Alamo WAG 4 Spill Site Data and Plats .pdf; WAG - Tank Battery C-141.pdf; Alamo WAG - Larson Sampling Data Tank Battery.pdf

Mike,

West Artesia Grayburg Tank Battery

We appreciate you meeting us onsite at the Alamo - West Artesia Tank Battery on August 15, 2013. As discussed, Alamo is concern about the open excavation located near the tank battery and would like to close the issue. I have attached a C-141 which we believe may be related to the tank battery release. We also found some lab data from the open excavation collected by Larson. The lab data is attached. Based on the data, the east excavation area (trench locations) were not vertically defined and requested delineation, which would involve drilling this area. As approved, the open excavation will be backfilled to a depth of approximately 3.0' to 4.0' below surface to prepare the area for access to install a borehole (between the two trench locations) to define the vertical extents. In addition, some of the sidewalls will be scraped to remove the elevated chlorides and all of the stockpiles related to the excavation will be hauled to proper disposal. Once completed and approved, the excavation will be capped with a 40 mil liner and backfilled to grade. Once all the activities are performed, Tetra Tech will prepared a closure report for the site.

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Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | www.tetratech.com

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? NMOCD NOTIFIED 3/15/12 @ 2:19 PM STEVEN MASTIN	
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

Printed Name: CARIE STOKER

Title: REGULATORY COORDINATOR

E-mail Address: cstoker@alamoresources.com

Date: 03/16/2012 Phone: 432 664 7659

OIL CONSERVATION DIVISION

Signed By Mike Bratcher

Approved by Environmental Specialist:

Approval Date: MAR 26 2012 Expiration Date:

Conditions of Approval: Attached ☐

Remediation per OCD Rules & Guidelines. SUBMIT REMEDIATION PROPOSAL NOT LATER THAN: 4/26/2012

2RP-1070

* Attach Additional Sheets If Necessary

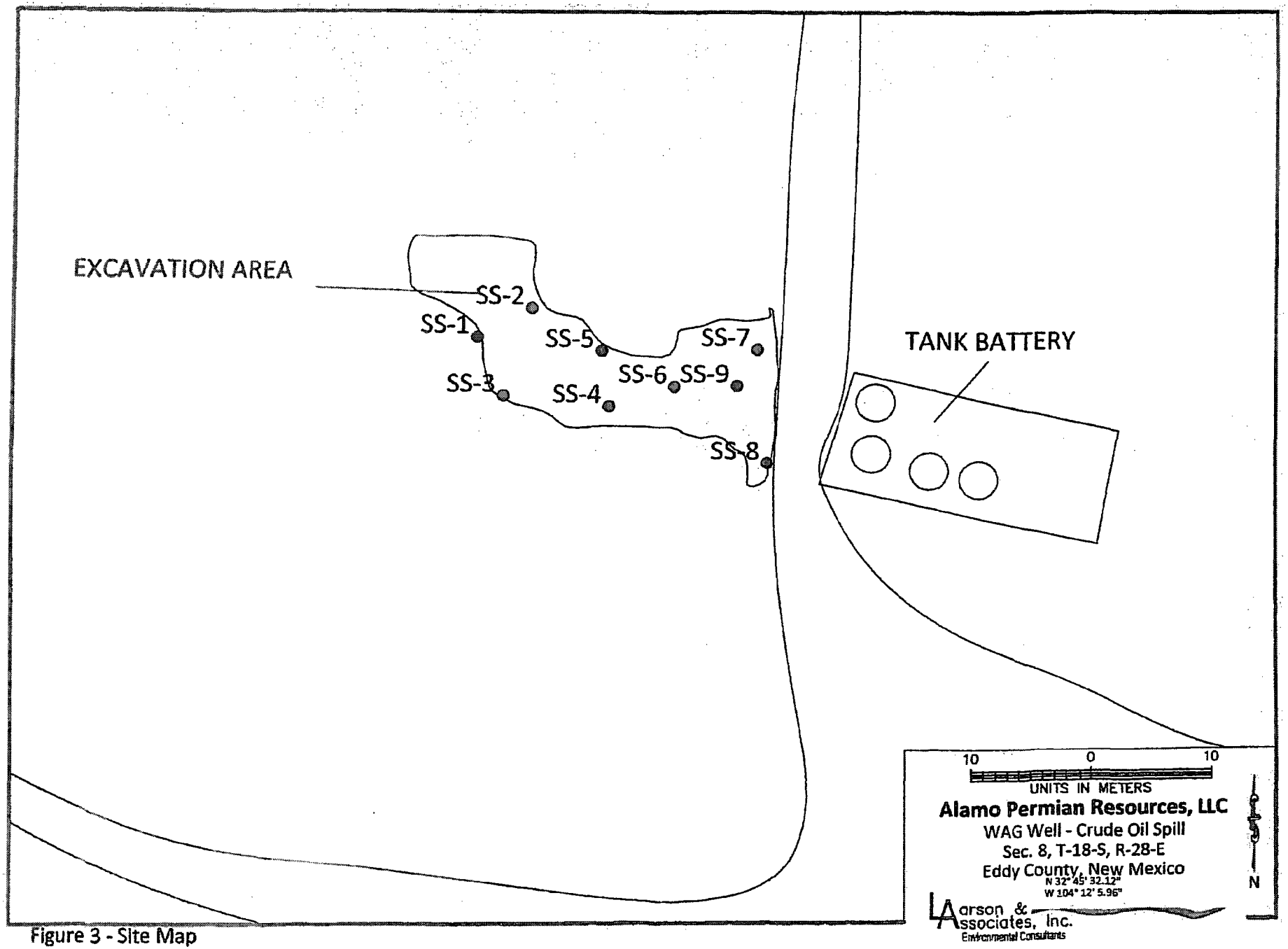


Figure 3 - Site Map

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.

Bratcher, Mike, EMNRD

From: Elliott, Tom <Tom.Elliott@tetratech.com>
Sent: Tuesday, September 24, 2013 8:41 AM
To: Bratcher, Mike, EMNRD
Cc: Tavarez, Ike
Subject: Alamo - West Artesia Grayburg Unit Tank Battery and North Spill Analytical Data
Attachments: WAGU TB Analysis Table 1.xls; WAGU North Spill Analytical 1.xls; FIG 3.pdf; WABU TB Analysis Table 1.pdf

Mike,

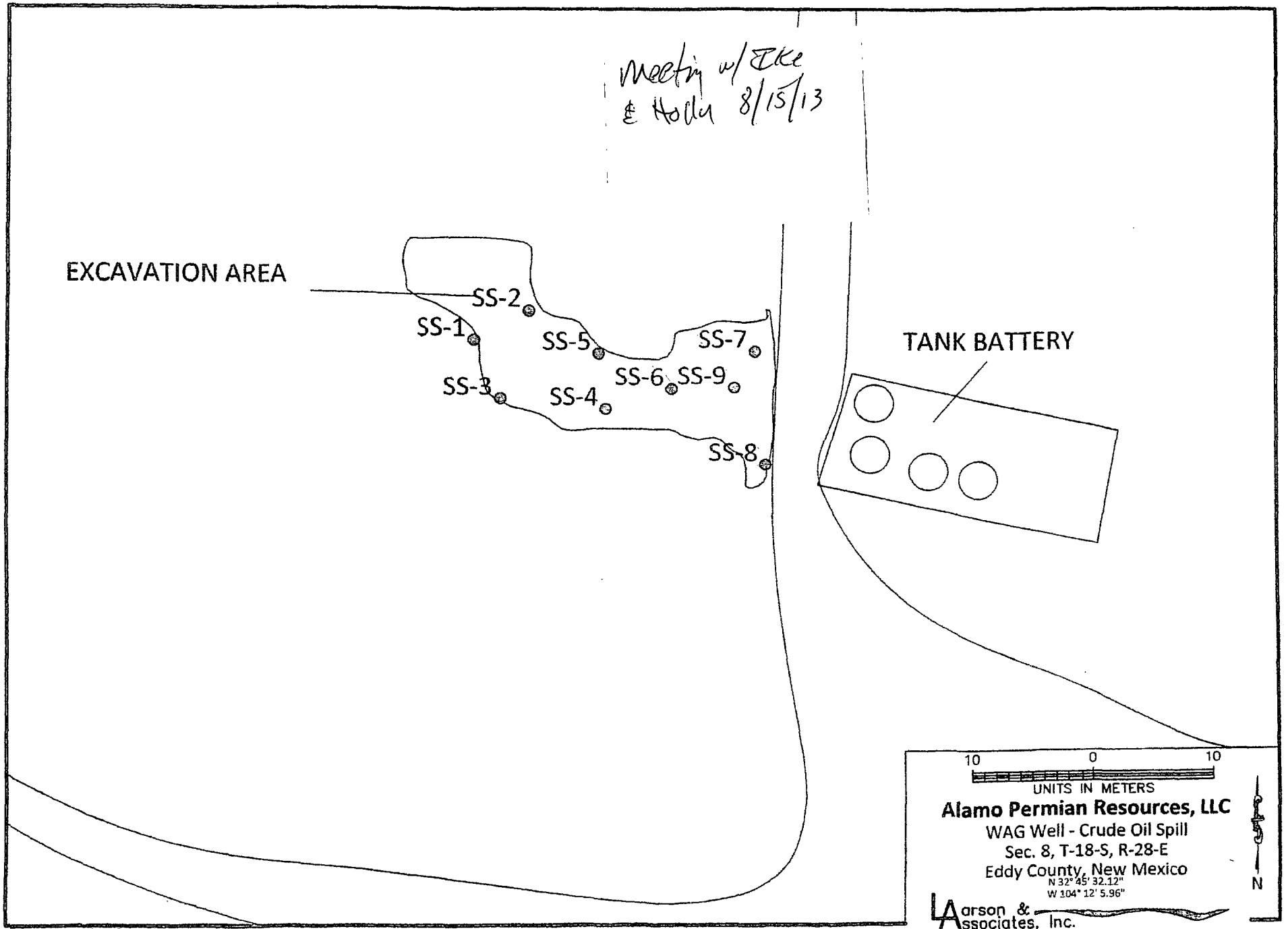
We have completed the bores at the location listed below and have some analytical to review with you. We achieved vertical delineation in both areas, but have some additional sidewall work to do. We plan to call you this morning to discuss.

Alamo Permian Resources, LLC
West Artesia Grayburg Unit Tank Battery
Sec 8, Twn 18S, Range 28E
32.75891350, -104.20152100

Thanks,

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

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



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Alamo Permian Resources LLC
West Artesia Grayburg Tank Battery Spill
11-0117-05

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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.
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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 1
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

(-) Not Analyzed

(BEB) Below Excavation Bottom

Date Modified: 09/23/2013

112MC055397

Table 1
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	X		<50.0	<4.00	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	389
	"	1-1.5 BEB	X		---	---	---	---	---	---	---	---	**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**
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**
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 1
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

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

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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.
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