Bratcher, Mike, EMNRD

From: Tavarez, Ike <Ike.Tavarez@tetratech.com>
Sent: Thursday, October 17, 2013 1:34 PM
To: Bratcher, Mike, EMNRD
Cc: Robert McNeill; Robert Grubbs; Michelle Mullins (MMullins@concho.com)
Subject: COG Operating - Texaco State and Lakewood AQE State - Work Plan Approval Request
Attachments: COG-Work Plan - TEXACO_STATE_BE.pdf; COG-Work Plan LAKEWOOD_AQE_STATE_SWD_#001.pdf

Mike,

Please find the enclosed Work Plans for the above reference spill sites located in Eddy County, New Mexico. The spills have been assessed and the remedial recommendations are included in the work plans. I will mail you a hard copy of the work plans for your files. Once approved, Tetra Tech will schedule the soil remediation and notify you prior to implementing the work plans. Please let me know if you need additional information or call me if you have any questions

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

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

SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	Texaco State BE Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit B	Sec 16	T17S	R30E		
Lease Number:	(API#) 30-015-04181					
County:	Eddy County					
GPS:	32.83891° N			103.97546° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	In Loco Hills at the intersection of Goat Roper Road and Hwy. 82 travel 1.39 miles to north on Goat Roper Road. Turn right traveling east approximatly 0.10 miles to the location on the right.					

Release Data:	
Date Released:	4/11/2012
Type Release:	Oil and Produced Water
Source of Contamination:	Fire Tube
Fluid Released:	4 bbls Oil / 8 bbls Produced Water
Fluids Recovered:	3 bbls Oil / 7 bbls Produced Water

Official Communication:			
Name:	Robert McNeill		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		1910 N. Big Spring
	600 W. Illinois Ave.		
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 682-4559
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		ike.tavarez@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

September 13, 2013

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

Re: Work Plan for the COG Operating LLC., Texaco State BE Tank Battery, Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Texaco State BE Tank Battery, located in Unit B, Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.83891°, W 104.97546°. 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 April 11, 2012, and released approximately for four (4) barrels of oil and eight (8) barrels of produced water from a damaged fire tube. Three (3) barrels of oil and seven (7) barrels of produced water were recovered. COG has replaced the fire tube to prevent a recurrence. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 3. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 300' below surface. The groundwater data is shown in Appendix A.

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

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(RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

Auger Holes

On June 6, 2012, Tetra Tech personnel inspected and sampled the spill area. Two (2) auger holes (AH-1 and AH-2) were installed using a stainless steel hand auger to assess the impacted soils. The auger holes were installed within the berm of the tank battery. The spill area measured approximately 10' x 45' located behind the heater treater and separator. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, AH-2 exceeded the RRAL for TPH and BTEX. AH-2 had a maximum TPH concentration of 12,520 mg/kg and a total BTEX of 163 mg/kg at 1-1.5' and declined below the RRAL at 2-2.5' to 4,070 mg/kg and 38.2 mg/kg, respectively.

A chloride impact was detected in both auger holes with maximum chloride concentration detected in the area of AH-1 of 9,180 mg/kg at 0-1.0'. At AH-1, the chloride concentrations declined with depth, but spiked at 5-5.5' below surface showing a bottom auger hole of 5,660 mg/kg at 8-8.5' below surface. Auger hole (AH-2) showed elevated chlorides throughout the auger hole. The chloride concentrations in both auger holes were not vertically defined in both auger holes.

Boreholes

On September 12, 2012, Tetra Tech supervised the installation of a bore hole (BH-1) between the two the two auger points previously installed (AH-1 and AH-2) using an air rotary drilling rig to attempt to define the chloride impacted soils. The borehole was installed to a maximum depth of 70.0' below surface. At approximately 70.0' below surface the subsurface soils (flowing sands) began to collapse the borehole and drilling with air rotary could not be continued. Referring to the Table 1, the chloride concentrations were not vertically defined and showed a bottom boreholes of 3,840 mg/kg at 69-70' below surface and appears to be a historical impact.

As discussed with Mike Bratcher with the NMOCD, the deeper impacted soil appears to be historical and drilling with a rotary rig could not complete the delineation. To properly close site, Mr. Bratcher recommended delineation of the site. Due the sandy formation, a hollow stem auger was proposed to define the extents.

On June 6, 2013, Tetra Tech supervised the installation of a soil boring (SB-1) near the location on the previously installed borehole (BH-1) using a hollow stem auger drilling rig. The soil boring was installed to a maximum depth of 110.0' below surface. At approximately 110.0' below surface, the subsurface soils (flowing sands) began to collapse in the borehole and drilling with a hollow stem auger could not be continued. The soil boring results are summarized in Table 1 and the location is shown on Figure 3. Copies of laboratory analysis chain-of-custody documentation are included in Appendix C.

Referring to Table 1, chloride concentrations did show declining chlorides with depth, but spiked at 69-70' of 2,920 mg/kg and at 89-90' of 3,560 mg/kg. The bottom hole sample at 109-110' showed a chloride of 6,140 mg/kg, which may be cross-contaminated from the upper soils.

Based on the results, the area remains vertically undefined at a depth of 110' below surface due to the flowing sand formation. Other drilling techniques to collect discrete samples at deeper depths does not appear to be available or not available to this area.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. Due to the location of the spill area and the limited impacted, the areas of AH-1 and AH-2 will be excavated to a depth of approximately 3.0' to 4.0' below surface and installed approximately 6" to 1.0' of clay material to cap the remaining impacted soils. The excavated areas will be backfilled with clean backfilled material to grade. The excavated material will be transported to proper disposal.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, Tetra Tech will excavate the impacted soils to the maximum extent practicable. The remaining impact will be deferred until the abandonment of the facility.

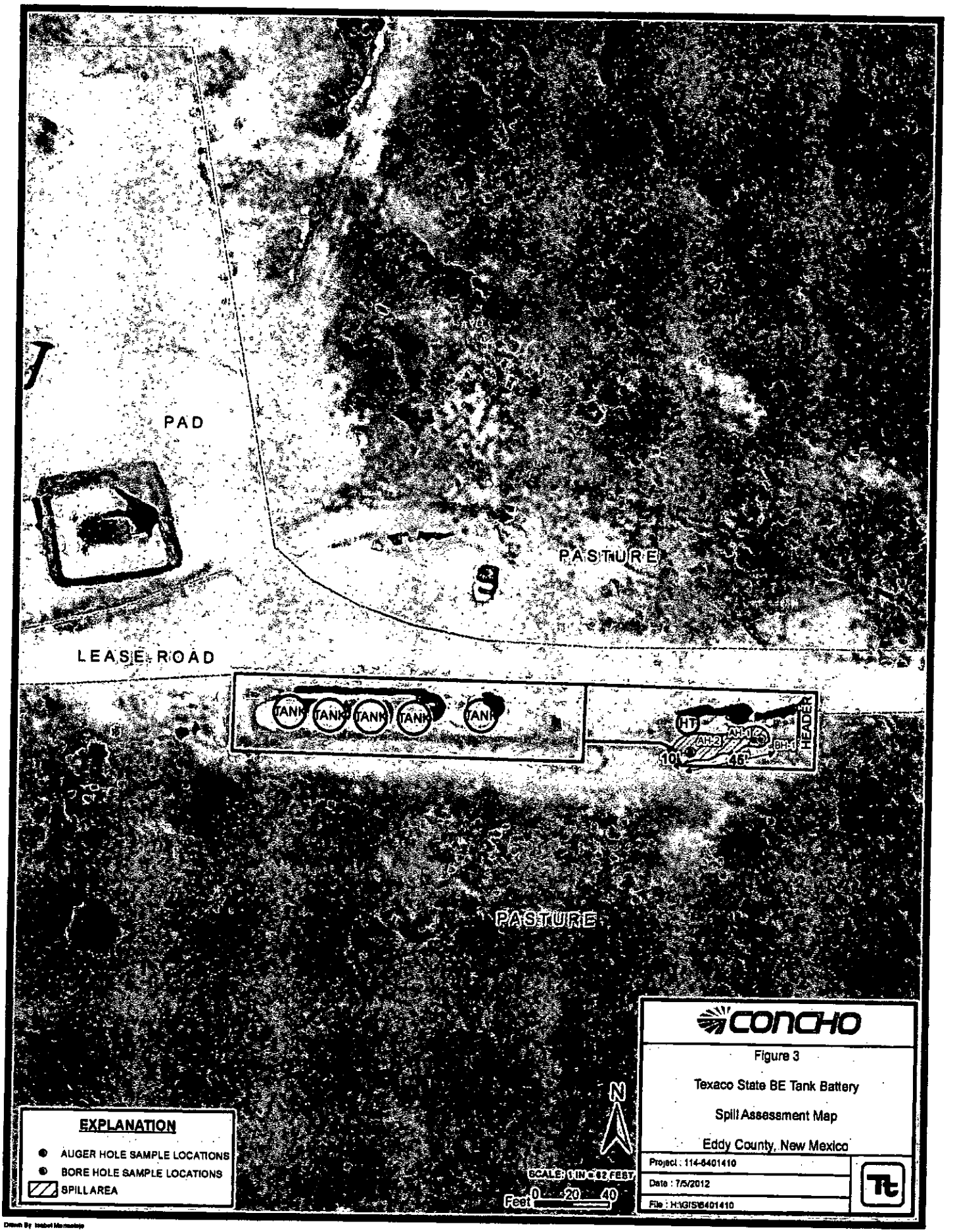
TETRA TECH

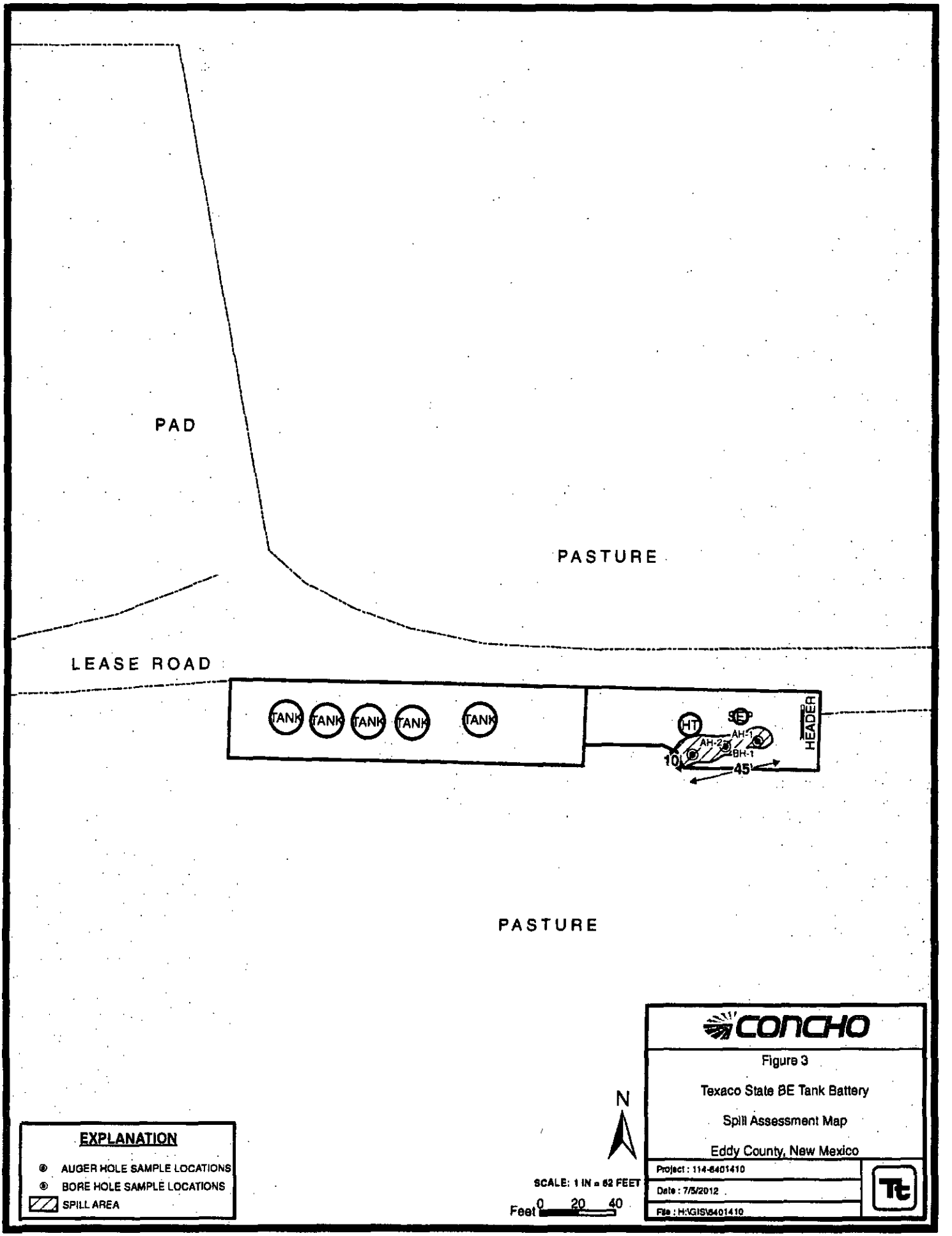
Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Robert McNeill – COG


PAD
PASTURE
LEASE ROAD
TANK
TANK
TANK
TANK
TANK
HT
AH-1
AH-2
BH-1
HEADER
10'
45'
PASTURE
N
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BORE HOLE SAMPLE LOCATIONS
SPILL AREA
SCALE: 1 IN = 82 FEET
Feet 0 20 40
CONCHO
Figure 3
Texaco State BE Tank Battery
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401410
Date : 7/5/2012
File : H:\GIS\6401410



CONCHO

Figure 3

Texaco State BE Tank Battery

Spill Assessment Map

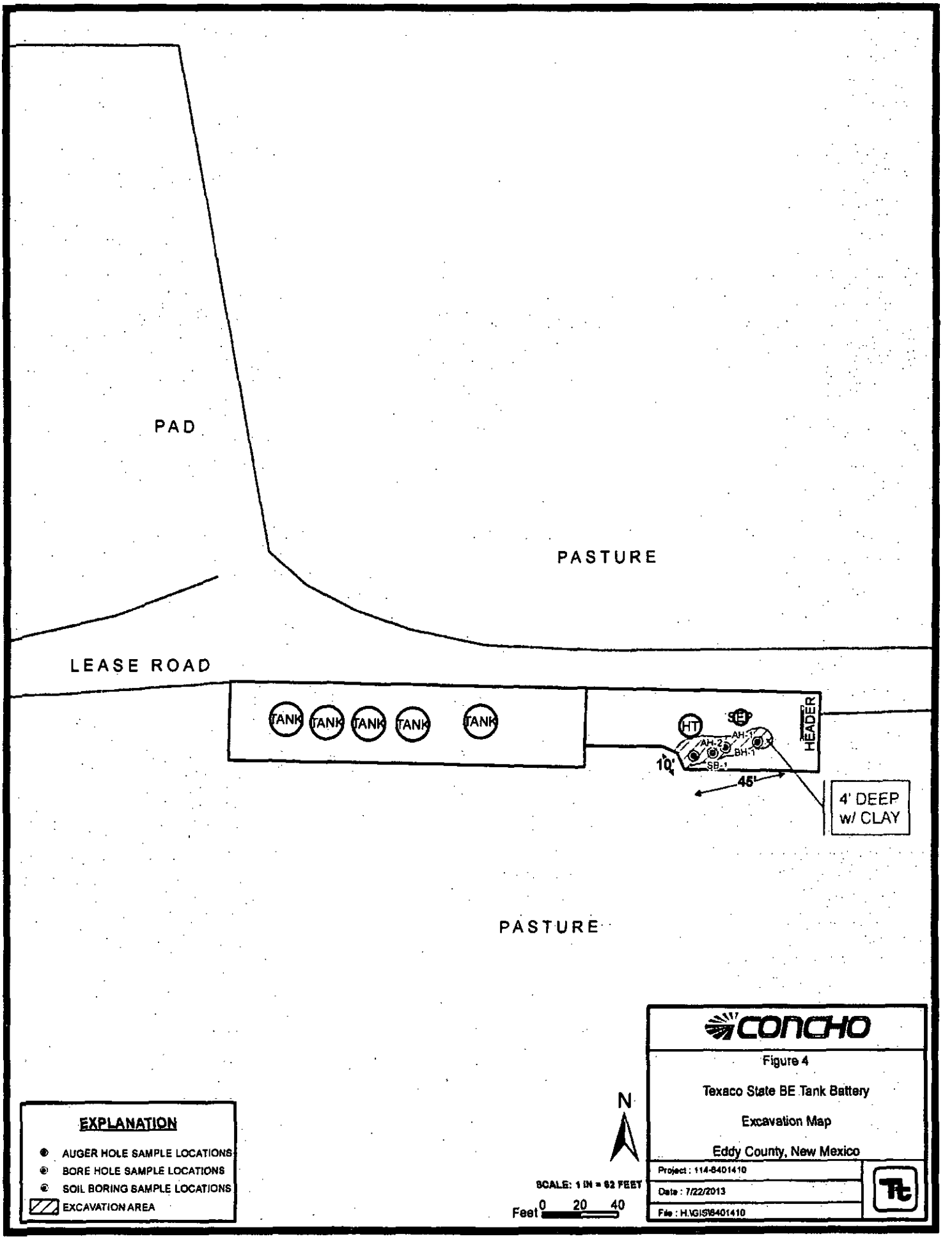
Eddy County, New Mexico

Project : 114-6401410

Date : 7/5/2012

File : H:\GIS\6401410

Drawn By: Isabel Marmolejo


PAD
PASTURE
LEASE ROAD
TANK
TANK
TANK
TANK
TANK
HT
SEP
AH-1
AH-2
BH-1
SB-1
10'
45'
HEADER
4' DEEP
w/ CLAY
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
BORE HOLE SAMPLE LOCATIONS
SOIL BORING SAMPLE LOCATIONS
EXCAVATION AREA
N
SCALE: 1 IN = 62 FEET
Feet 0 20 40
CONCHO
Figure 4
Texaco State BE Tank Battery
Excavation Map
Eddy County, New Mexico
Project : 114-8401410
Date : 7/22/2013
File : H:\GIS\8401410

Water Well Data
Average Depth to Groundwater (ft)
Texaco State BE Tank Battery
Eddy County, New Mexico

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 220 dry	13
19 110	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

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

16 South 31 East

6	5	4	3	2 290	1
7	8	9	10	11	12 288
18	17	16	15	14 113 314	13299
19	20	21	22	23	24
30	29	28	27	26	25
31 290	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 76 80	23	24
30	29 210 208	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

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

17 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 SITE	23	24
30	29	28	27	26	25
31	32	33	34 271	35	36 SITE

18 South 29 East

6	5	4	3	2	1
7	8	9	10 95	11	12
18	17	16	15	14	13
19	20	21	22	23	24 158
30	29	28	27	26	25
31	32	33	34	35	36

18 South 30 East

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

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

- New Mexico State Engineers Well Reports
- USGS Well Reports
- Geology and Groundwater Conditions in Southern Eddy, County, NM
- NMOCD - Groundwater Data
- Field water level
- New Mexico Water and Infrastructure Data System

Summary Report

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

Report Date: September 24, 2012

Work Order: 12091432

Project Location: Eddy Co., NM
Project Name: COG/Texaco State BE Tank Battery
Project Number: 114-6401410

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
309391	Bore Hole 1 0-1'	soil	2012-09-12	00:00	2012-09-14
309392	Bore Hole 1 2-3'	soil	2012-09-12	00:00	2012-09-14
309393	Bore Hole 1 4-5'	soil	2012-09-12	00:00	2012-09-14
309394	Bore Hole 1 6-7'	soil	2012-09-12	00:00	2012-09-14
309395	Bore Hole 1 9-10'	soil	2012-09-12	00:00	2012-09-14
309396	Bore Hole 1 14-15'	soil	2012-09-12	00:00	2012-09-14
309397	Bore Hole 1 19-20'	soil	2012-09-12	00:00	2012-09-14
309398	Bore Hole 1 24-25'	soil	2012-09-12	00:00	2012-09-14
309399	Bore Hole 1 29-30'	soil	2012-09-12	00:00	2012-09-14
309400	Bore Hole 1 39-40'	soil	2012-09-12	00:00	2012-09-14
309401	Bore Hole 1 49-50'	soil	2012-09-12	00:00	2012-09-14
309402	Bore Hole 1 59-60'	soil	2012-09-12	00:00	2012-09-14
309403	Bore Hole 1 69-70'	soil	2012-09-12	00:00	2012-09-14

Sample: 309391 - Bore Hole 1 0-1'

Param	Flag	Result	Units	RL
Chloride		**35500**	mg/Kg	4

Sample: 309392 - Bore Hole 1 2-3'

Param	Flag	Result	Units	RL
Chloride		**11200**	mg/Kg	4

Sample: 309393 - Bore Hole 1 4-5'

Param	Flag	Result	Units	RL
Chloride		**555**	mg/Kg	4

Sample: 309394 - Bore Hole 1 6-7'

Param	Flag	Result	Units	RL
Chloride		**1660**	mg/Kg	4

Sample: 309395 - Bore Hole 1 9-10'

Param	Flag	Result	Units	RL
Chloride		**3910**	mg/Kg	4

Sample: 309396 - Bore Hole 1 14-15'

Param	Flag	Result	Units	RL
Chloride		**3590**	mg/Kg	4

Sample: 309397 - Bore Hole 1 19-20'

Param	Flag	Result	Units	RL
Chloride		**4520**	mg/Kg	4

Sample: 309398 - Bore Hole 1 24-25'

Param	Flag	Result	Units	RL
Chloride		**6800**	mg/Kg	4

Sample: 309399 - Bore Hole 1 29-30'

Param	Flag	Result	Units	RL
Chloride		**7540**	mg/Kg	4

Sample: 309400 - Bore Hole 1 39-40'

Param	Flag	Result	Units	RL
Chloride		**12200**	mg/Kg	4

Sample: 309401 - Bore Hole 1 49-50'

Param	Flag	Result	Units	RL
Chloride		**4620**	mg/Kg	4

Sample: 309402 - Bore Hole 1 59-60'

Param	Flag	Result	Units	RL
Chloride		**3990**	mg/Kg	4

Sample: 309403 - Bore Hole 1 69-70'

Param	Flag	Result	Units	RL
Chloride		**3840**	mg/Kg	4

Summary Report

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

Report Date: June 25, 2013

Work Order: 13061820

Project Location: Eddy Co., NM
Project Name: COG/Texaco State BE Tank Battery
Project Number: 114-6401410

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
332526	SB-1 59-60'	soil	2013-06-06	00:00	2013-06-18
332527	SB-1 69-70'	soil	2013-06-06	00:00	2013-06-18
332528	SB-1 79-80'	soil	2013-06-06	00:00	2013-06-18
332529	SB-1 89-90'	soil	2013-06-06	00:00	2013-06-18
332530	SB-1 99-100'	soil	2013-06-06	00:00	2013-06-18
332531	SB-1 109-110'	soil	2013-06-06	00:00	2013-06-18

Sample: 332526 - SB-1 59-60'

Param	Flag	Result	Units	RL
Chloride		**1640**	mg/Kg	4

Sample: 332527 - SB-1 69-70'

Param	Flag	Result	Units	RL
Chloride		**2920**	mg/Kg	4

Sample: 332528 - SB-1 79-80'

Param	Flag	Result	Units	RL
Chloride		**1260**	mg/Kg	4

Sample: 332529 - SB-1 89-90'

Param	Flag	Result	Units	RL
Chloride		**3560**	mg/Kg	4

Sample: 332530 - SB-1 99-100'

Param	Flag	Result	Units	RL
Chloride		**1060**	mg/Kg	4

Sample: 332531 - SB-1 109-110'

Param	Flag	Result	Units	RL
Chloride		**6140**	mg/Kg	4

Summary Report

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

Report Date: June 12, 2012

Work Order: 12060502

Project Location: Eddy Co., NM
Project Name: COG/Texaco State BE Tank Battery
Project Number: 114-6401410

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299912	AH-1 0-1'	soil	2012-06-01	00:00	2012-06-04
299913	AH-1 1-1.5'	soil	2012-06-01	00:00	2012-06-04
299914	AH-1 2-2.5'	soil	2012-06-01	00:00	2012-06-04
299915	AH-1 3-3.5'	soil	2012-06-01	00:00	2012-06-04
299916	AH-1 4-4.5'	soil	2012-06-01	00:00	2012-06-04
299917	AH-1 5-5.5'	soil	2012-06-01	00:00	2012-06-04
299918	AH-1 6-6.5'	soil	2012-06-01	00:00	2012-06-04
299919	AH-1 7-7.5'	soil	2012-06-01	00:00	2012-06-04
299920	AH-1 8-8.5'	soil	2012-06-01	00:00	2012-06-04
299921	AH-2 0-1'	soil	2012-06-01	00:00	2012-06-04
299922	AH-2 1-1.5'	soil	2012-06-01	00:00	2012-06-04
299923	AH-2 2-2.5'	soil	2012-06-01	00:00	2012-06-04
299924	AH-2 3-3.5'	soil	2012-06-01	00:00	2012-06-04
299925	AH-2 4-4.5'	soil	2012-06-01	00:00	2012-06-04
299926	AH-2 5-5.5'	soil	2012-06-01	00:00	2012-06-04
299927	AH-2 6-6.5'	soil	2012-06-01	00:00	2012-06-04
299928	AH-2 7-7.5'	soil	2012-06-01	00:00	2012-06-04
299929	AH-2 8-8.5'	soil	2012-06-01	00:00	2012-06-04

	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)
299912 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 Qs
299921 - AH-2 0-1'	<1.00	**6.35**	**3.51**	**28.2**	**5750**	**2730** Qs
299922 - AH-2 1-1.5'	**4.05**	**53.9**	**28.6**	**76.9**	**10000**	**2520**
299923 - AH-2 2-2.5'	<1.00	**12.7**	1.19	**24.3**	**3030**	**1040**

Sample: 299912 - AH-1 0-1'

Sample: 299918 - AH-1 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**2770**	mg/Kg	4

Sample: 299919 - AH-1 7-7.5'

Param	Flag	Result	Units	RL
Chloride		**4590**	mg/Kg	4

Sample: 299928 - AH-2 7-7.5'

Param	Flag	Result	Units	RL
Chloride		**917**	mg/Kg	4

Sample: 299929 - AH-2 8-8.5'

Param	Flag	Result	Units	RL
Chloride		**4690**	mg/Kg	4