TETRA TECH

April 19, 2010

Mike Bratcher
NMOCD District II
1301 W. Grand Ave.
Artesia, New Mexico 88210

Re: Closure Request for the OXY USA, Inc., Lost Tank 33 Federal #10 Well, Unit Letter A, Section 33, Township 21 South, Range 31 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. was contacted by Pogo Producing Company (Now operated by OXY USA, Inc.), to assess a spill at the Lost Tank 33 Federal #10 well site located in Unit Letter A, Section 33, Township 21 South, Range 31 East, Eddy County, New Mexico (Site).

Background

According to the New Mexico Oil Conservation Division (OCD) Form C-141 (Initial) the spill occurred on January 27, 2008, from a flow line leak. An unknown quantity of oil and produced water was released, with 310 barrels of fluid recovered with a vacuum truck. A copy of the State of New Mexico C-141 (Initial) is included in Appendix A. The Site is shown on Figure 1.

Groundwater

According to Ground Water Report 3, "*Geology and Ground-Water Resources of Eddy County, New Mexico*", there are no water wells in Township 21 South, Range 31 East. The closest water well was listed in the New Mexico Office of the State Engineer, WATERS database in Section 16, T-21-S, R-31-E, with a reported depth to water of 630' bgs. The New Mexico Tech WAIDS database lists one well in Section 18 with a reported depth to water of 170'. Copies of the water level data are enclosed in Appendix B.

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,

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

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.

Assessment and Results

Auger Hole Sampling

Prior to Tetra Tech's inspection of the site, visually impacted soils had been worked in place. On January 28, 2008, Highlander personnel were onsite to collect soil samples from the spill area. The spill area measured approximately 180' long at a width varying from 40' to 85'. A total of five (5) auger holes (AH-1, AH-2, AH-3, AH-4 and AH-5) were installed using a stainless steel hand auger to assess the impacted soils. Samples were analyzed for TPH analysis by EPA method 8015 modified and chloride by EPA method 300.0. Selected samples were analyzed for BTEX by EPA Method 8021B. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix B. The auger hole locations are shown on Figure 2. The results of the sampling are summarized in Table 1.

Referring to Table 1, TPH concentrations exceeded the RRAL in AH-1 to a depth of 7.0', AH-4 to a depth of 3.0' and AH-5 to a depth of 7.0' below surface. In addition, benzene and the total BTEX concentrations exceeded the RRAL in AH-4 to a depth of 3.0' and declined below the reporting limit at 4'-5' below surface. AH-5 also showed total BTEX exceeding the RRAL to a depth of 7.0' below surface which declined to below the RRAL at 8'-9' below surface. Chloride concentrations were below 100 mg/kg in all samples except AH-3 (0-1') AH-4 (0-1') and AH-5. The deepest chloride impact was encountered in AH-5 with chloride concentrations decreasing from 11,000 mg/kg at 0-1' to 1,520 mg/kg at 8'-9' below surface.

Initial Excavation and Sampling

Based upon the initial sampling results, the spill area was excavated to depths ranging from 1.0'-7.0' below surface. The excavated soil was transported to proper disposal. On April 29, 2008, the excavation was segregated into 7 areas and soil samples were collected to evaluate the bottom of the excavations. Referring to Table 2, TPH and BTEX concentrations exceeded the RRAL to depths of 1.0' to 4.5' in auger holes AH-1, AH-2, AH-3, AH-4 and AH-6. Additionally, chloride concentrations were not defined in AH-2 and AH-6. The sample locations and excavation depths are shown on Figure 3. The results of the sampling are summarized in Table 2.

Borehole Installation

On May 20, 2008, boreholes (BH-1 and BH-2) were installed in the area of AH-2 and AH-6 to define the vertical extent of chloride impact. BH-1, installed at AH-2, showed increasing chloride concentrations to 30'-31' (15,800 mg/kg), which then declined to 595 mg/kg at 50'-51'. BH-2 was installed in the vicinity of AH-6 and did not

show any elevated chloride concentrations from 15' to the total depth of the borehole. The borehole samples are summarized in Table 2.

As discussed in a meeting with the NMOCD in Artesia, additional boreholes (BH-3, BH-4 and BH-5) were installed in the vicinity of Area 2 (BH-1) in order to define the horizontal north and south extents. The locations of the boreholes are shown on Figure 4. BH-3 showed elevated chloride impact to 30'-31' below excavation bottom. BH-4, further north did not have any chloride concentrations above 200 mg/kg. BH-5 to the south of BH-1 did not have any chloride concentrations above 200 mg/kg with the exception of 15'-16' (458 mg/kg).

Implemented Work Plan

Based upon the results, it appeared the deep impact in the vicinity of BH-1 (AH-2) is confined to the edge of the north excavation and confined to the east (BH-1) and west (AH-4). As discussed with the NMOCD in Artesia, based on the sandy lithology, this area was excavated to a depth of 20.0'. The excavation was backfilled with clean material up to approximately 4.0' below surface and a 40 mil liner was installed to cap the remaining chloride impact in the subsurface soils.

The remainder of the site was excavated to depths ranging from 1' below excavation bottom to 8' below excavation bottom to remove the remaining impacted soil. The excavation depths are shown on Figure 4. The excavated soils were hauled offsite for disposal.

Based upon the remedial activities are performed, closure of this site is requested. If you require any additional information or have any questions or comments concerning the site, please call at (432) 682-4559.

TETRA TECH, INC.

Tim Reed

Tim Reed, P.G.
Sr. Project Manager

cc: Mark Andersen - OXY
Rick Passmore – Glenn Springs

TABLES

Table 1
OXY USA
Lost Tank 33 Federal #10
Eddy County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			GRO	DRO	Total					
AH-1	1/28/2008	(0-1')	87.7	2360	**2,448**	-	-	-	-	<100
	1/28/2008	(2-3')	155	2680	2,835	-	-	-	-	<100
	1/28/2008	(4-5')	556	4660	**5,216**	-	-	-	-	<100
	1/28/2008	(6-7')	718	7290	**8,008**	<0.100	0.41	1.27	9.50	<100
	1/28/2008	(8-9')	194	1410	1,604	-	-	-	-	<100
AH-2	1/28/2008	(0-1')	<1.00	65.8	65.8	-	-	-	-	<100
	1/28/2008	(2-3')	<1.00	<50.0	<50.0	-	-	-	-	<100
	1/28/2008	(4-5')	<1.00	<50.0	<50.0	-	-	-	-	<100
AH-3	1/28/2008	(0-1')	1.12	<50.0	1.12	-	-	-	-	3,450
	1/28/2008	(2-3')	<1.00	<50.0	<50.0	-	-	-	-	<100
	1/28/2008	(4-5')	<1.00	<50.0	<50.0	-	-	-	-	<100
AH-4	1/28/2008	(0-1')	3800	10300	**14,100**	-	-	-	-	860
	1/28/2008	(2-3')	4500	16300	**20,100**	**8.20**	**78.6**	**39.4**	**167**	<100
	1/28/2008	(4-5')	2.43	<50.0	2.43	<0.0100	<0.0100	<0.0100	<0.0100	<100
AH-5	1/28/2008	(0-1')	831	11000	**11,831**	-	-	-	-	11,000
	1/28/2008	(2-3')	4060	4740	**8,800**	**1.64**	**25.6**	**15.3**	**65.0**	10,700
	1/28/2008	(4-5')	1910	4590	**6,500**	-	-	-	-	8,650
	1/28/2008	(6-7')	1440	8190	**9,630**	**0.552**	**27.1**	**20.6**	**90.5**	3,990
	1/28/2008	(8-9')	<50.0	24.7	24.7	<0.005	0.111	0.0642	0.184	1,520

(-) not analyzed

Table 2
OXY USA
Lost Tank 33 Federal #10
Eddy County, New Mexico

Sample ID	Soils Status		Date Sampled	Excavated Depth (ft)	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
	Insitu	Removed				DRO	GRO	Total					
AH-1	X		4/29/2008	3' to 5'	0-1'	4240	1150	**5,390**	-	-	-	-	6,650
	X				2-2.5'	<50.0	<5.0	<50	-	-	-	-	5,860
	X				4-4.5'	-	-	-	-	-	-	-	9,990
	X				6-6.5'	-	-	-	-	-	-	-	5,660
	X				8-8.5'	-	-	-	-	-	-	-	479
	X				9-9.5'	-	-	-	-	-	-	-	621
AH-2	X		4/29/2008	3' to 5'	0-1'	4,300	4,060	**8,360**	**12.1**	**52.6**	**22.8**	**73.8**	6,400
	X				2-2.5'	151	64.4	215	-	-	-	-	16,500
	X				4-4.5'	-	-	-	-	-	-	-	10,500
	X				6-6.5'	-	-	-	-	-	-	-	9,800
	X				8-8.5'	-	-	-	-	-	-	-	22,600
	X				10'	-	-	-	-	-	-	-	21,800
	X				11'	-	-	-	-	-	-	-	20,000
	X				13'	-	-	-	-	-	-	-	18,500
(BH-1)	X		5/20/2008		15-16	-	-	-	-	-	-	-	8,060
	X				20-21	-	-	-	-	-	-	-	8,950
	X				25-26	-	-	-	-	-	-	-	13,600
	X				30-31	-	-	-	-	-	-	-	15,800
	X				40-41	-	-	-	-	-	-	-	4,940
	X				50-51	-	-	-	-	-	-	-	595
AH-3	X		4/30/2008	3' to 5'	0-1'	7,300	3,500	**10,800**	**1.66**	**20.4**	**24.9**	**87.8**	3,200
	X				2-2.5'	<50.0	2.93	2.93	-	-	-	-	3,930
	X				4-4.5'	-	-	-	-	-	-	-	1,080
	X				6-6.5'	-	-	-	-	-	-	-	<100

(-) not analyzed

Excavation Depths

40 mil liner installed

Table 2
OXY USA
Lost Tank 33 Federal #10
Eddy County, New Mexico

Sample ID	Soils Status		Date Sampled	Excavated Depth (ft)	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
	Insitu	Removed				DRO	GRO	Total					
AH-4	X		4/30/2008	3' to 5'	0-1'	5,630	2,440	**8,070**	-	-	-	-	<100
	X				2-2.5'	9100	3,600	**12,700**	-	-	-	-	<100
	X				4-4.5'	<50.0	5.61	5.61	-	-	-	-	<100
	X				6-6.5'	-	-	-	-	-	-	-	<100
AH-5	X		4/30/2008	1.0'	0-1'	2,010	359	2,369	-	-	-	-	3,390
	X				2-2.5'	-	-	-	-	-	-	-	<100
	X				4-4.5'	-	-	-	-	-	-	-	<100
AH-6	X		4/30/2008	3' to 4'	0-1'	5,270	1,600	**6,870**					6,820
	X				2-2.5'	11,800	5,330	**17,130**	**3.24**	**6.15**	**33.6**	**113**	11,100
	X				4-4.5'	15,400	1,680	**17,080**	-	-	-	-	7,180
	X				6-6.5'	<50	1.61	1.61	-	-	-	-	7,240
	X				8-8.5'	-	-	-	-	-	-	-	8,630
	X				10-10.5'	-	-	-	-	-	-	-	16,600
(BH-2)	X		5/20/2008		15-16	-	-	-	-	-	-	-	<100
	X				20-21	-	-	-	-	-	-	-	<100
	X				25-26	-	-	-	-	-	-	-	113
AH-7	X		5/1/2008	bottom	6 to 7'	80.2	5.34	86	-	-	-	-	<100

(-) not analyzed

Excavation Depths

Table 3
OXY USA
Lost Tank 33 Federal #10
Eddy County, New Mexico

Sample ID	Soils Status		Date Sampled	Excavated Depth (ft)	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
	Insitu	Removed				DRO	GRO	Total					
BH-3	X		3/16/2009	3' to 5'	5-6	-	-	-	-	-	-	-	785
	X				10-11	-	-	-	-	-	-	-	16400
	X				15-16	-	-	-	-	-	-	-	6880
	X				20-21	-	-	-	-	-	-	-	6480
	X				30-31	-	-	-	-	-	-	-	2080
	X				30-35	-	-	-	-	-	-	-	553
BH-4	X		3/16/2009	surface	5-6	-	-	-	-	-	-	-	<200
	X				10-11	-	-	-	-	-	-	-	<200
	X				15-16	-	-	-	-	-	-	-	<200
	X				20-21	-	-	-	-	-	-	-	<200
	X				30-31	-	-	-	-	-	-	-	<200
BH-5	X		3/16/2009	surface	5-6	-	-	-	-	-	-	-	<200
	X				10-11	-	-	-	-	-	-	-	<200
	X				15-16	-	-	-	-	-	-	-	458
	X				20-21	-	-	-	-	-	-	-	<200

(-) not analyzed

Excavation Depths

FIGURES

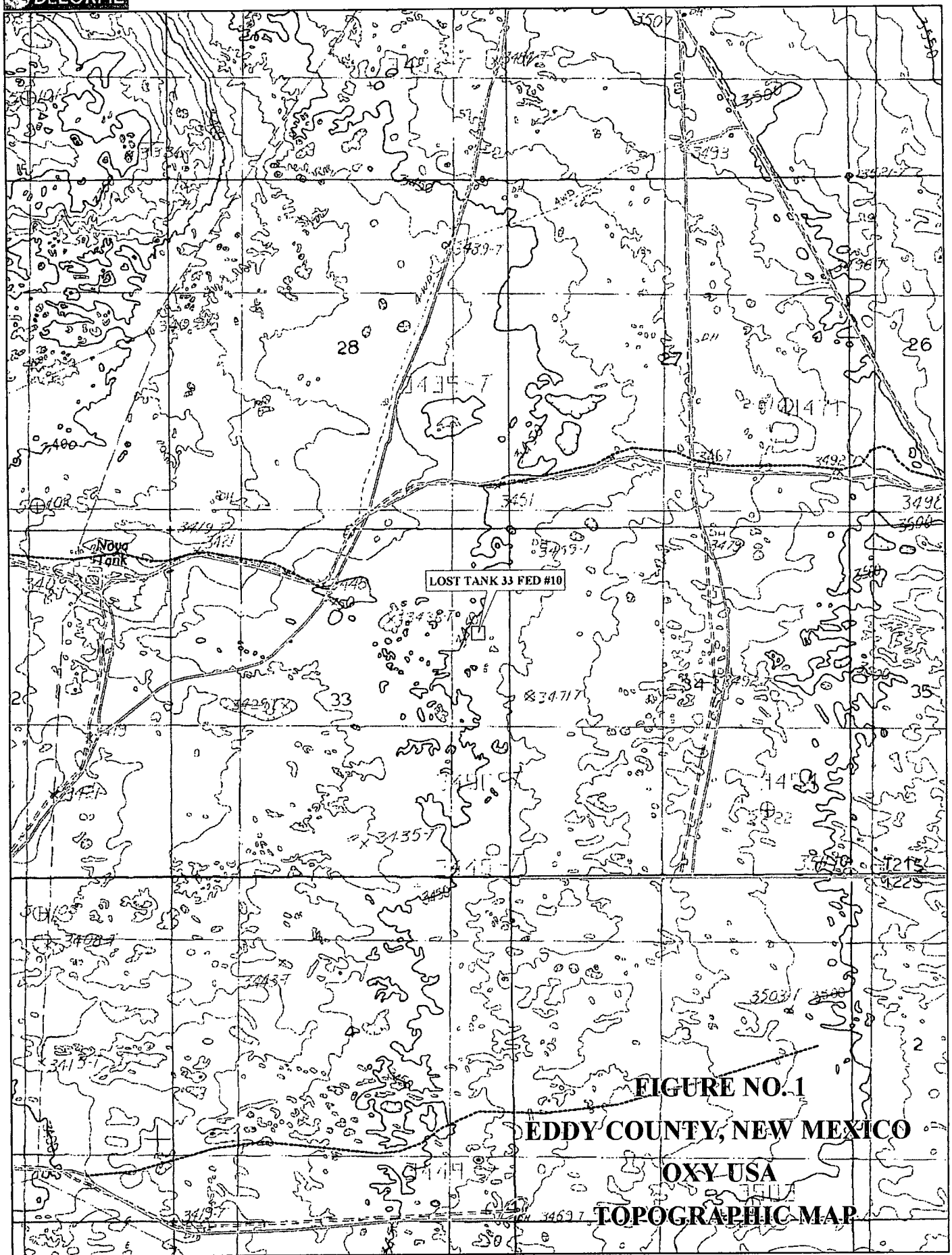


FIGURE NO. 1

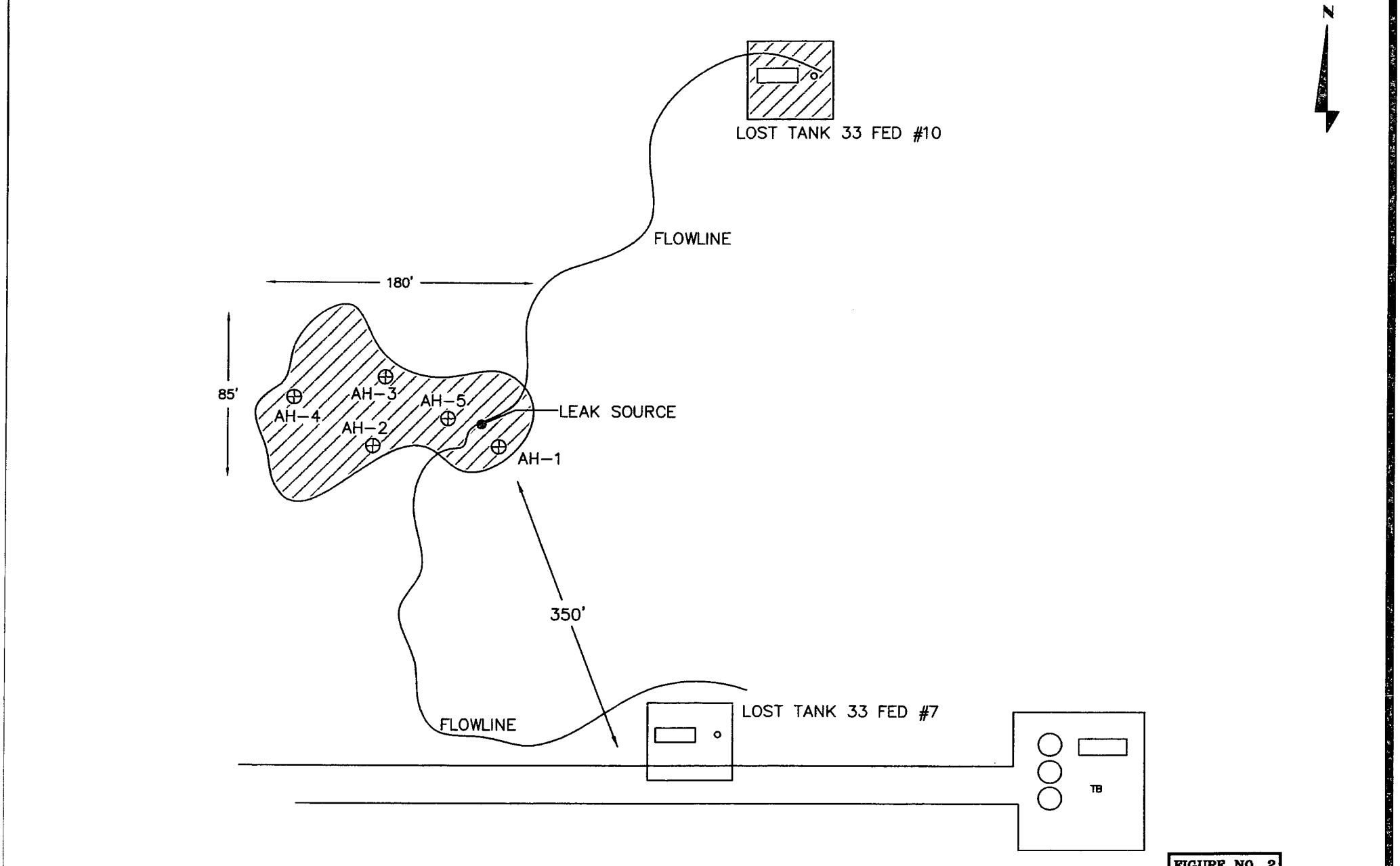
EDDY COUNTY, NEW MEXICO

OXY USA

TOPOGRAPHIC MAP

TN
MN (7.8°E)

Scale 1 : 24,000
1" = 2,000.0 ft
Data Zoom 13-0



SPILL AREA
AUGER HOLE

NOT TO SCALE

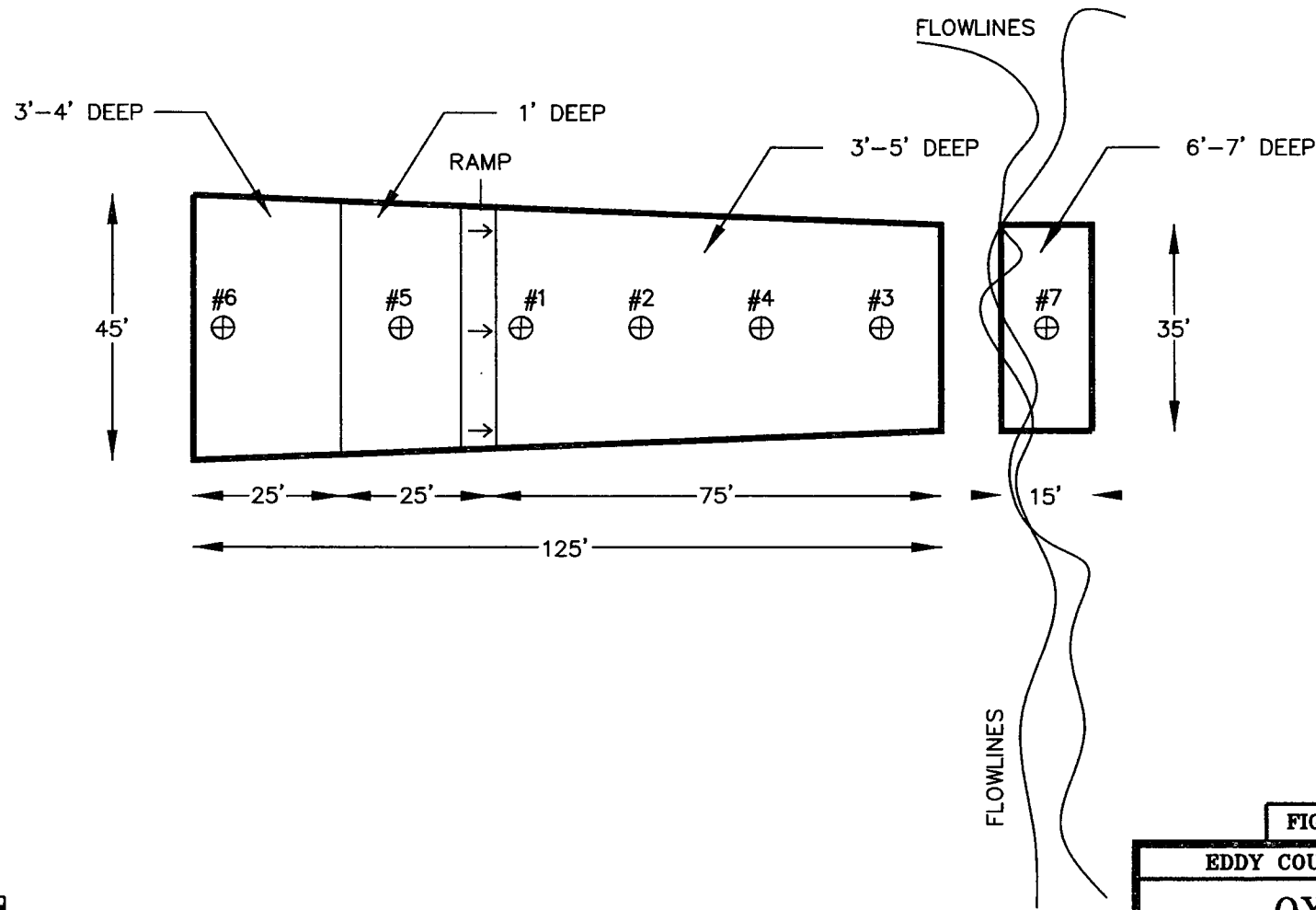
FIGURE NO. 2

EDDY COUNTY, NEW MEXICO

OXY USA
LOST TANK 33 FED #10

DATE: 2/14/08
DWN. BY: RC
FILE: C:\POGO\3381\LOST TANK 33

TETRA TECH, INC.
MIDLAND, TEXAS



0 5' 30'

⊕ SAMPLE LOCATIONS 4/29/08

FIGURE NO. 3

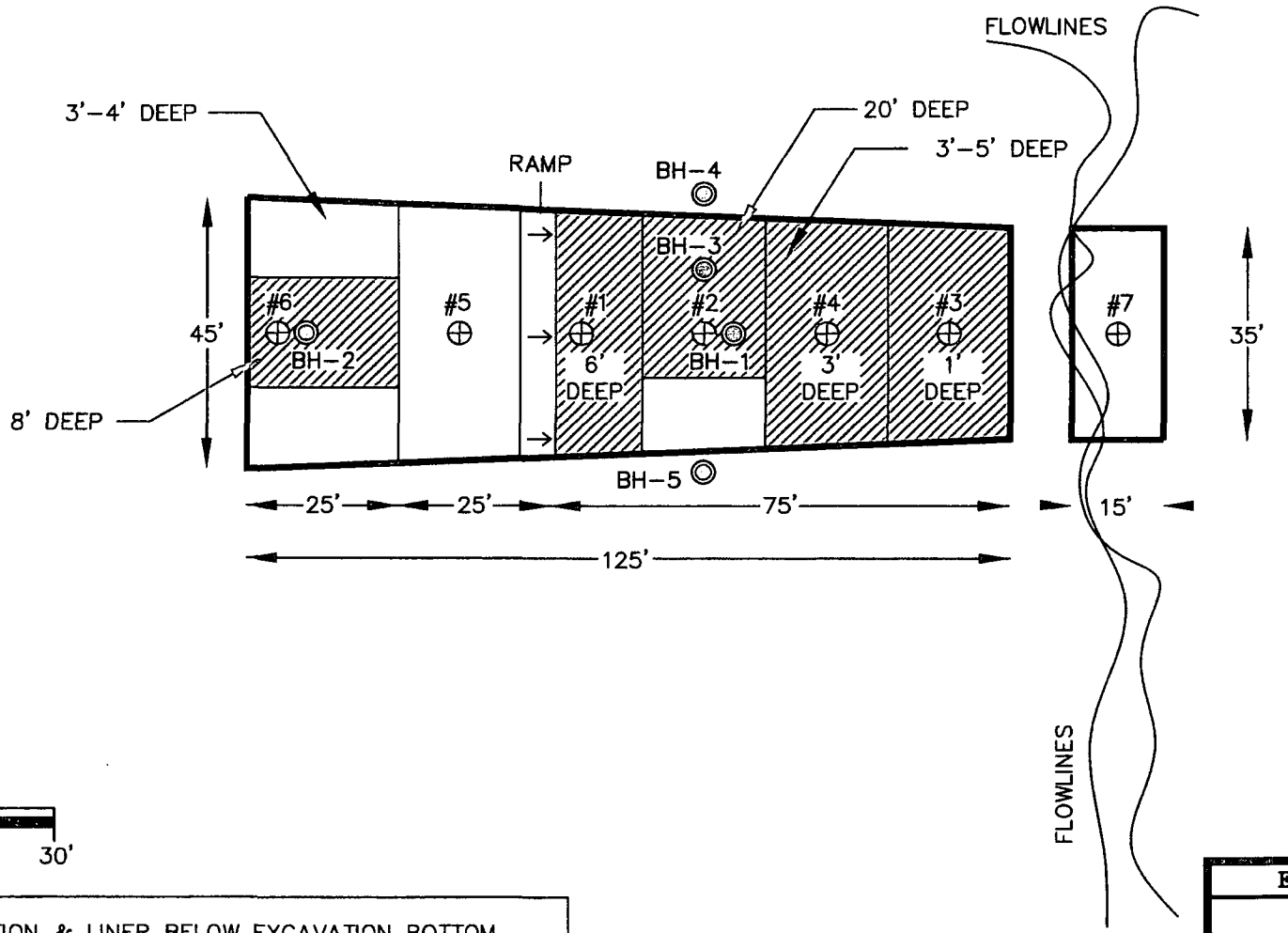
EDDY COUNTY, NEW MEXICO

OXY USA

LOST TANK 33 FED #10
SITE MAP

TETRA TECH, INC.
MIDLAND, TEXAS

DATE: 6/12/08
DWG. BY: RC
FILE: C:\OXY\3381 LOST TANK 33 FED10



0 5' 30'

- EXCAVATION & LINER BELOW EXCAVATION BOTTOM
- EXCAVATION DEPTHS BELOW EXCAVATION BOTTOM
- ⊕ SAMPLE LOCATIONS 4/29/08
- ◎ BORE HOLES 5/20/08

FIGURE NO. 4

EDDY COUNTY, NEW MEXICO

OXY USA

LOST TANK 33 FED #10
SITE MAP

TETRA TECH, INC.
MIDLAND, TEXAS

DATE: 4/15/10
DWG. BY: JJ
FILE: C:\OXY\3381 LOST TANK 33 FED10

APPENDIX A

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

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: OXY USA, INC	Contact: Mark Andersen
Address: OXY USA, INC 6 Desta Dr. Midland TX, 79705	Telephone No.: 432-685-5824
Facility Name: Lost Tank 33 Federal #10	Facility Type: Well Site

Surface Owner: BLM	Mineral Owner: BLM	Lease No. NM-96231

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	33	21S	31E	660'	North	330'	East	Eddy

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release: Oil/Water	Volume of Release unkown	Volume Recovered: 310bbls
Source of Release: Flowline leak	Date and Hour of Occurrence 01-26-08	Date and Hour of Discovery 01-27-08
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher (Voice Mail), OCD and Jim Amos of BLM	
By Whom? Jody Bennett	Date and Hour 01-27-08	
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.*
Flowline leaked oil and water with an unknown volume released. Of the unknown amount, 310 barrels of oil and water were recovered on January 27, 2008.

Describe Area Affected and Cleanup Action Taken.*
Flowline leaked to pasture land. A vacuum truck was utilized to remove 310 barrels of oil and water. The work plan as approved by the NMOCD was implemented. Impacted soils were excavated and hauled to disposal. The site was backfilled with clean material.

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: Tim Reed	OIL CONSERVATION DIVISION	
Printed Name: Tim Reed, P.G	Approved by District Supervisor:	
Title: Senior Project Manager	Approval Date:	Expiration Date:
E-mail Address: tim.reed@tetratech.com	Conditions of Approval:	Attached ☐
Date: 4-14-10 Phone: 432-557-4680		

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
OXY - Lost Tank 33 #10, Eddy County, New Mexico

20 South 31 East

6	5	4	3	2	1
7	8	9	10 **130**	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 **80**

20 South 32 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

20 South 33 East

6	5 **325**	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

21 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

21 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 **630**	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33 **SITE**	34	35	36

21 South 32 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

22 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 **256**	23	24
30	29	28	27	26	25
31	32	33 **155**	34	35	36

22 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 **448**	15	14	13
19	20 **47**	21	22	23	24
30	29 **413**	28 **444**	27	26	25
31	32	33	34	35	36

22 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 **350**	13
19 (S) **280**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 21S Range: 31E Sections:

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ◎ Non-Domestic ◎ Domestic
◎ All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

AVERAGE DEPTH OF WATER REPORT 03/17/2008

								(Depth Water in Feet)		
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
C	21S	31E	16				1	630	630	630

Record Count: 1

NM WAIDS

DATA MAPS HOME SCALE CORROSION

General Information About: Sample 27850			
Section/ Township/Range	18 / 21 S / 31 E	Lat/Long	32.4797 / -103.8174
Elevation	3303	Depth	170
Date Collected	3/28/1985	Chlorides	1486
Collector / Point of Collection	SEO / DP	Use	Stock
Formation	RSLR	TDS	0

New Mexico Tech PRRC

APPENDIX C

Summary Report

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

Report Date: March 25, 2009

Work Order: 9032008

Project Location: Eddy Co., NM
Project Name: Oxy/Lost Tank 33 Fed. #10
Project Number: 3381

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
190774	BH-3 (5-6)	soil	2009-03-16	00:00	2009-03-20
190775	BH-3 (10-11)	soil	2009-03-16	00:00	2009-03-20
190776	BH-3 (15-16)	soil	2009-03-16	00:00	2009-03-20
190777	BH-3 (20-21)	soil	2009-03-16	00:00	2009-03-20
190778	BH-3 (30-31)	soil	2009-03-16	00:00	2009-03-20
190779	BH-3 (35-36)	soil	2009-03-16	00:00	2009-03-20
190780	BH-4 (5-6)	soil	2009-03-16	00:00	2009-03-20
190781	BH-4 (10-11)	soil	2009-03-16	00:00	2009-03-20
190782	BH-4 (15-16)	soil	2009-03-16	00:00	2009-03-20
190783	BH-4 (20-21)	soil	2009-03-16	00:00	2009-03-20
190784	BH-5 (5-6)	soil	2009-03-16	00:00	2009-03-20
190785	BH-5 (10-11)	soil	2009-03-16	00:00	2009-03-20
190786	BH-5 (15-16)	soil	2009-03-16	00:00	2009-03-20
190787	BH-5 (20-21)	soil	2009-03-16	00:00	2009-03-20

Sample: 190774 - BH-3 (5-6)

Param	Flag	Result	Units	RL
Chloride		**785**	mg/Kg	4.00

Sample: 190775 - BH-3 (10-11)

Param	Flag	Result	Units	RL
Chloride		**16400**	mg/Kg	4.00

Sample: 190776 - BH-3 (15-16)

Param	Flag	Result	Units	RL
Chloride		**6880**	mg/Kg	4.00

Sample: 190777 - BH-3 (20-21)

Param	Flag	Result	Units	RL
Chloride		**6480**	mg/Kg	4.00

Sample: 190778 - BH-3 (30-31)

Param	Flag	Result	Units	RL
Chloride		**2080**	mg/Kg	4.00

Sample: 190779 - BH-3 (35-36)

Param	Flag	Result	Units	RL
Chloride		**553**	mg/Kg	4.00

Sample: 190780 - BH-4 (5-6)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190781 - BH-4 (10-11)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190782 - BH-4 (15-16)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190783 - BH-4 (20-21)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190784 - BH-5 (5-6)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190785 - BH-5 (10-11)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 190786 - BH-5 (15-16)

Param	Flag	Result	Units	RL
Chloride		**458**	mg/Kg	4.00

Sample: 190787 - BH-5 (20-21)

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: March 23, 2009

Work Order: 9032008

Project Location: Eddy Co., NM
Project Name: Oxy/Lost Tank 33 Fed. #10
Project Number: 3381

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
190774	BH-3 (5-6)	soil	2009-03-16	00:00	2009-03-20
190775	BH-3 (10-11)	soil	2009-03-16	00:00	2009-03-20
190776	BH-3 (15-16)	soil	2009-03-16	00:00	2009-03-20
190777	BH-3 (20-21)	soil	2009-03-16	00:00	2009-03-20
190778	BH-3 (30-31)	soil	2009-03-16	00:00	2009-03-20
190779	BH-3 (35-36)	soil	2009-03-16	00:00	2009-03-20
190780	BH-4 (5-6)	soil	2009-03-16	00:00	2009-03-20
190781	BH-4 (10-11)	soil	2009-03-16	00:00	2009-03-20
190782	BH-4 (15-16)	soil	2009-03-16	00:00	2009-03-20
190783	BH-4 (20-21)	soil	2009-03-16	00:00	2009-03-20

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
190784	BH-5 (5-6)	soil	2009-03-16	00:00	2009-03-20
190785	BH-5 (10-11)	soil	2009-03-16	00:00	2009-03-20
190786	BH-5 (15-16)	soil	2009-03-16	00:00	2009-03-20
190787	BH-5 (20-21)	soil	2009-03-16	00:00	2009-03-20

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

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project Oxy/Lost Tank 33 Fed. #10 were received by TraceAnalysis, Inc. on 2009-03-20 and assigned to work order 9032008. Samples for work order 9032008 were received intact at a temperature of 3.6 deg. C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	49440	2009-03-23 at 10:16	57879	2009-03-23 at 14:17
Chloride (Titration)	SM 4500-Cl B	49441	2009-03-23 at 10:17	57880	2009-03-23 at 14:18

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9032008 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 190774 - BH-3 (5-6)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**785**	mg/Kg	50	4.00

Sample: 190775 - BH-3 (10-11)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**16400**	mg/Kg	50	4.00

Sample: 190776 - BH-3 (15-16)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**6880**	mg/Kg	50	4.00

Sample: 190777 - BH-3 (20-21)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**6480**	mg/Kg	50	4.00

Sample: 190778 - BH-3 (30-31)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2080**	mg/Kg	50	4.00

Sample: 190779 - BH-3 (35-36)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**553**	mg/Kg	50	4.00

Sample: 190780 - BH-4 (5-6)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190781 - BH-4 (10-11)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190782 - BH-4 (15-16)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190783 - BH-4 (20-21)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190784 - BH-5 (5-6)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57880	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49441	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190785 - BH-5 (10-11)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57880	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49441	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 190786 - BH-5 (15-16)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57880	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49441	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**458**	mg/Kg	50	4.00

Sample: 190787 - BH-5 (20-21)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	57880	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49441	Sample Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Method Blank (1) QC Batch: 57879

QC Batch:	57879	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49440	QC Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 57880

QC Batch:	57880	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49441	QC Preparation:	2009-03-23	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 57879 | Date Analyzed: 2009-03-23 | Analyzed By: AR
Prep Batch: 49440 | QC Preparation: 2009-03-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.1	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.4	mg/Kg	1	100	<2.18	99	85 - 115	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 57880 | Date Analyzed: 2009-03-23 | Analyzed By: AR
Prep Batch: 49441 | QC Preparation: 2009-03-23 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	102	85 - 115	1	20

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

Matrix Spike (MS-1) Spiked Sample: 190783

QC Batch: 57879 | Date Analyzed: 2009-03-23 | Analyzed By: AR
Prep Batch: 49440 | QC Preparation: 2009-03-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	4740	mg/Kg	50	5000	<109	95	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	4770	mg/Kg	50	5000	<109	95	85 - 115	1	20

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

Matrix Spike (MS-1) Spiked Sample: 190787

QC Batch: 57880 | Date Analyzed: 2009-03-23 | Analyzed By: AR
Prep Batch: 49441 | QC Preparation: 2009-03-23 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	5050	mg/Kg	50	5000	<109	101	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	5130	mg/Kg	50	5000	<109	103	85 - 115	1	20

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

Standard (ICV-1)

QC Batch: 57879 | Date Analyzed: 2009-03-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	105	105	85 - 115	2009-03-23

Standard (CCV-1)

QC Batch: 57879 | Date Analyzed: 2009-03-23 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	94.8	95	85 - 115	2009-03-23

Standard (ICV-1)

QC Batch: 57880 | Date Analyzed: 2009-03-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-03-23

Standard (CCV-1)

QC Batch: 57880 Date Analyzed: 2009-03-23 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2009-03-23

9032000

PAGE: 1 OF: 2

Analysis Request of Chain of Custody Record

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: Oxy
SITE MANAGER: Ike Tavarez
PROJECT NO.: 3381
PROJECT NAME: Oxy / Lost Tank Fed. 33 #10 Eddy Co. NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
10774	3-16-09		S		✓	BH-3 (5-6)	1				✓	✓													X				
775	↓		S		✓	BH-3 (10-11)	1				✓	✓													X				
776			S		✓	BH-3 (15-16)	1				✓	✓													X				
777			S		✓	BH-3 (20-21)	1				✓	✓													X				
778			S		✓	BH-3 (30-31)	1				✓	✓													X				
779			S		✓	BH-3 (35-36)	1				✓	✓													X				
780			S		✓	BH-4 (5-6)	1				✓	✓													X				
781			S		✓	BH-4 (10-11)	1				✓	✓													X				
782			S		✓	BH-4 (15-16)	1				✓	✓													X				
783	↓		S		✓	BH-4 (20-21)	1				✓	✓													X				

RELINQUISHED BY: (Signature) [signature] Date: 3/20/09 Time: 9:05
RECEIVED BY: (Signature) Lindsey Nelo Date: 3/20/09 Time: 9:05
SAMPLED BY: (Print & Initial) [signature] Date: ______ Time: ______

RELINQUISHED BY: (Signature) Date: ______ Time: ______
RECEIVED BY: (Signature) Date: ______ Time: ______
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS
AIRBILL #: ______
OTHER: ______

RELINQUISHED BY: (Signature) Date: ______ Time: ______
RECEIVED BY: (Signature) Date: ______ Time: ______

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

TETRA TECH CONTACT PERSON: [signature]
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.6
REMARKS: All tests Midland

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

4002600

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

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

CLIENT NAME: Oxy

SITE MANAGER: Ike Tavarez

PROJECT NO.: 53381

PROJECT NAME: Oxy/Hoss Tank Fed 33 #10 Eddy Co. NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
10784	3-16-09		S		✓	BH-5 (5-6')	1				✓														X				
785	3-16-09		S		✓	BH-5 (10-11)	1				✓														X				
786	3-16-09		S		✓	BH-5 (15-16)	1				✓														X				
787	3-16-09		S		✓	BH-5 (20-21)	1				✓														X				

RELINQUISHED BY: (Signature)	Date: 3/20/09 Time: 9:05	RECEIVED BY: (Signature) Lindsey Wilson	Date: 3/20/09 Time: 9:05
SAMPLED BY: (Print & Initial)	Date: Time:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:		
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
TETRA TECH CONTACT PERSON:	Results by:		
RECEIVING LABORATORY: Xenco ADDRESS: CITY: STATE: ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE: TIME:		RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.C

REMARKS: All tests Midland

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