SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	**Hearse 36 State #4H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit O**	**Sec 36**	**T19S**	**R25E**		
Lease Number:	**API-30-015-39264**					
County:	**Eddy County**					
GPS:	**32.61030° N**			**104.43493° W**		
Surface Owner:	State					
Mineral Owner:						
Directions:	North of Carlsbad at the intersection of Hwy 285 and Hwy 524, travel north on Hwy 285 for 11.9 miles, turn left (west) onto CR 23 and travel 1.8 miles, turn left (southwest) and travel 0.8 mile, turn left (east) and travel 0.2 mile to the site.					

Release Data:	
Date Released:	5/3/2013
Type Release:	Oil
Source of Contamination:	Casing valve on well head
Fluid Released:	40 bbls
Fluids Recovered:	30 bbls

Official Communication:			
Name:	Pat Ellis		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 25, 2013

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

Re: Closure Report for the COG Operating LLC., Hearse 36 State #4H, Well Site, Unit O, Section 36, Township 19 South, Range 25 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 Hearse 36 State #4H, Well Site located in Unit O, Section 36, Township 19 South, Range 25 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.61030°, W 104.43493°. 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 May 3, 2013, and released approximately forty (40) barrels of oil from the casing valve on the wellhead. To alleviate the problem, COG personnel closed the valve. Thirty (30) barrels of standing fluids were recovered. The spill initiated on the well pad affecting an area approximately 30' X 50', the release then migrated into the pasture affecting an area 40' x 150', 15' x 40', 25' x 140' and 30' x 230'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 36. According to the NMOCD groundwater map, the average depth to groundwater in this area is between 100' and 125' below surface. The groundwater data is shown in Appendix B.

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

Regulatory

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

On May 29, 2013, Tetra Tech personnel inspected and sampled the spill area. Fourteen (14) auger holes (AH-1 through AH-14) and a background auger hole were installed using a stainless steel hand auger to assess the impacted soils. 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, the areas of AH-3, AH-5, AH-7 and AH-8 did not show any significant impact to the soils for TPH, BTEX or chlorides. However, the samples in the areas of AH-10, AH-12, AH-13 and AH-14 either exceeded the TPH or BTEX constituents. Auger holes (AH-12, AH-13 and AH-14) declined below the RRAL's at 1-1.5' below surface. AH-10 was not vertically defined at 1-1.5', with TPH concentrations of 9,080 mg/kg and total BTEX of 276 mg/kg.

Elevated chloride concentrations were detected in auger holes (AH-1, AH-2, AH-4, AH-6, AH-9, AH-10, and AH-11). Auger holes (AH-1, AH-4, AH-6 and AH-10) showed elevated chloride concentrations and were not vertically defined. Auger holes (AH-2, AH-9, AH-11) showed declining chloride concentrations with depth and vertically defined at approximately 1.0' to 2.0' below surface.

Closure Activities

On August 29 - 30, 2013, Tetra Tech removed impacted material as highlighted (green) in Table 1 and shown on Figure 4 using field data, lab analyses and trenching data for the excavation.

The area of AH-2 was excavated to 2.0' below surface, AH-9 was excavated to 2.5' below surface and AH-11 was excavated to 1.0' below surface.

TETRA TECH

Auger Holes (AH-12, AH-13 and AH-14) were excavated to depth of approximately 1.0' below surface to remove the elevated chlorides and soil exceeding the RRAL.

Auger Holes (AH-1, AH-4, AH-6 and AH-10) were trenched for evaluation using a backhoe to define extents of contamination. Based on the data, AH-1, AH-4 and AH-10 were excavated to 2.0' below surface and AH-6 was excavated to 2.5' below surface.

Approximately 1,100 yards were excavated and hauled to disposal and the areas were backfilled with clean material to surface grade.

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

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Robert McNeill – COG

Tables

Table 1
COG Operating LLC.
Hearse 36 #4H
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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	5/29/2013	0-1	0		X	<4.00	<50.0	<50.0	-	-	-	-	-	**1,480**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**1,490**
T4	9/4/2013	0	0		X	-	-	-	-	-	-	-	-	**4,390**
	"	2	Bottom hole	X		-	-	-	-	-	-	-	-	181
	"	4	"	X		-	-	-	-	-	-	-	-	303
	"	6	"	X		-	-	-	-	-	-	-	-	24.4
AH-2	5/29/2013	0-1	0		X	113	407	520	-	-	-	-	-	**7,850**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**8,060**
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	339
AH-3	5/29/2013	0-1	0	X		<4.00	<50.0	<50.0	-	-	-	-	-	319
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	648
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
AH-4	5/29/2013	0-1	0		X	7.31	<50.0	7.31	-	-	-	-	-	**2,350**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**1,100**
T3	9/4/2013	0	0		X	-	-	-	-	-	-	-	-	**24,100**
	"	2	Bottom hole	X		-	-	-	-	-	-	-	-	220
	"	4	"	X		-	-	-	-	-	-	-	-	274
AH-5	5/29/2013	0-1	0	X		67.3	654	721	<0.100	<0.100	<0.100	1.37	1.37	429
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	74.7
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	54.8

Table 1
COG Operating LLC.
Hearse 36 #4H
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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-6	5/29/2013	0-1	0		X	7.19	<50.0	7.19	-	-	-	-	-	**4,490**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**5,880**
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	**4,840**
T2	9/4/2013	0	0		X	-	-	-	-	-	-	-	-	**11,700**
	"	2	Bottom hole	X		-	-	-	-	-	-	-	-	**1,420**
AH-7	5/30/2013	0-1	0	X		35.1	<50.0	35.1	-	-	-	-	-	<20.0
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	"	X		-	-	-	-	-	-	-	-	<20.0
AH-8	5/30/2013	0-1	0	X		299	2,770	3,069	<0.400	<0.400	<0.400	2.62	2.62	<20.0
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	3-3.5	"	X		-	-	-	-	-	-	-	-	<20.0
AH-9	5/30/2013	0-1	0		X	691	129	820	<0.200	1.98	10.9	28.0	40.9	**7,510**
	"	1-1.5	"		X	-	-	-	-	-	-	-	-	**2,030**
	"	2-2.5	"		X	-	-	-	-	-	-	-	-	**3,220**
	"	2.5-3	"	X		-	-	-	-	-	-	-	-	396
AH-10	5/30/2013	0-1	0		X	1,880	7,770	**9,650**	**17.3**	74.9	164	386	**642**	**4,550**
	"	1-1.5	"		X	4,430	4,650	**9,080**	3.42	27.4	85.3	160	**276**	**3,530**
T1*	8/30/2013	0	0		X	<100	**14,000**	**14,000**	-	-	-	-	-	**17,000**
	"	2	Bottom hole	X		<10.0	169	169	<0.05	<0.05	<0.05	<0.15	<0.30	384
	"	4	"	X		<10.0	149	149	-	-	-	-	-	176

Table 1
COG Operating LLC.
Hearse 36 #4H
Eddy County, New Mexico

Sample ID	Sample Date	BEB Sample Depth (ft)	Excavation Bottom 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-11	5/30/2013	0-1	0		X	33.2	163	196	-	-	-	-	-	**3,650**
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	147
AH-12	5/30/2013	0-1	0		X	3,860	916	4,776	<0.200	12.9	58.6	116	**188**	832
	"	1-1.5	"	X		-	-	-	<0.0200	<0.0200	0.498	1.46	1.96	65.5
AH-13	5/30/2013	0-1	0		X	4,270	2,770	**7,040**	<0.200	11.2	66.5	139	**217**	<20.0
	"	1-1.5	"	X		39.5	207	247	<0.0200	<0.0200	<0.0200	0.974	0.974	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
AH-14	5/30/2013	0-1	0		X	6,620	3,740	**10,360**	5.23	35.2	119	219	**378**	282
	"	1-1.5	"	X		8.34	<50.0	8.34	<0.0200	<0.0200	<0.0200	0.118	0.118	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0
Background 1	5/30/2013	0-1	0	X		<4.00	<50.0	<50.0	-	-	-	-	-	<20.0
	"	1-1.5	"	X		-	-	-	-	-	-	-	-	<20.0
	"	2-2.5	"	X		-	-	-	-	-	-	-	-	<20.0

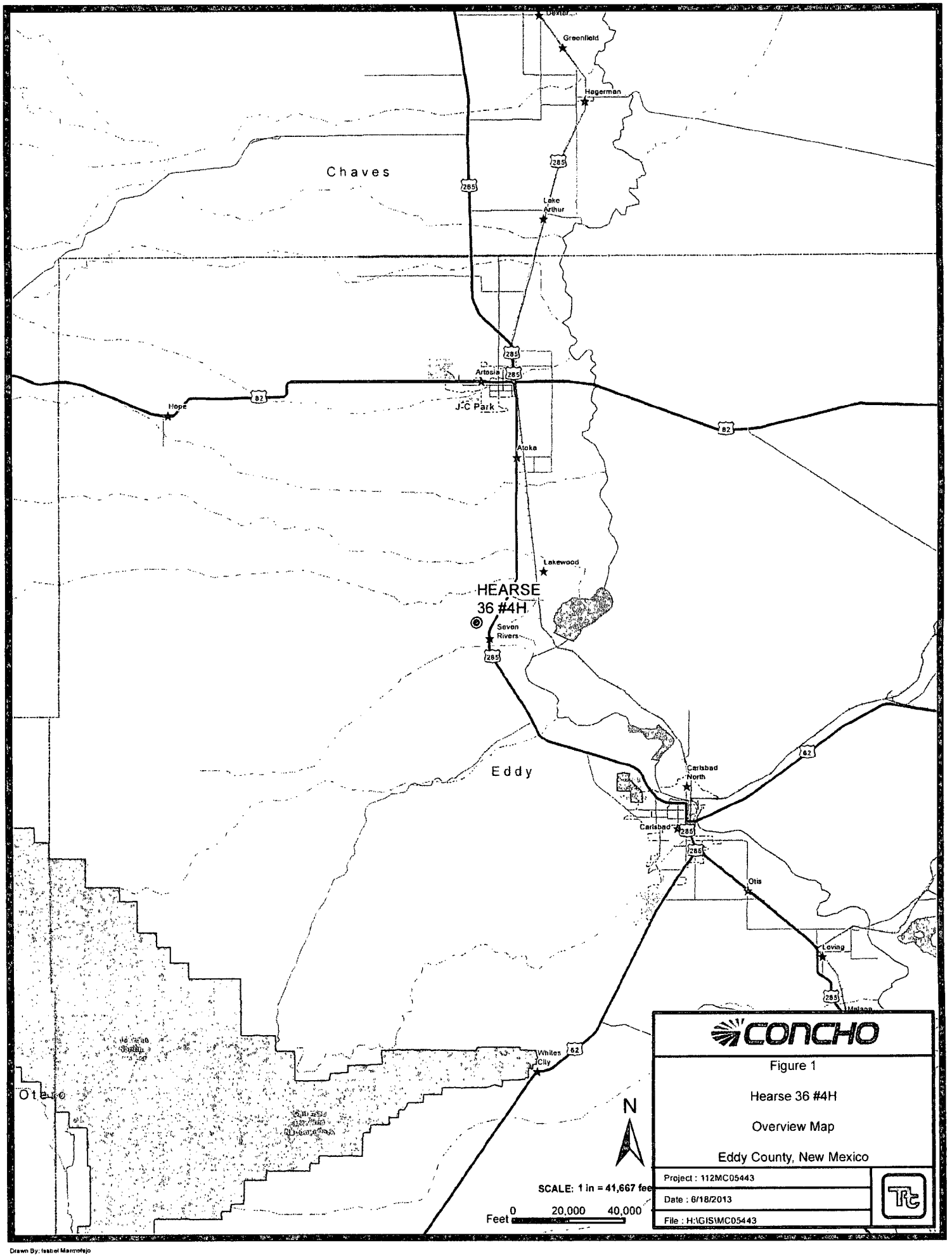
(-) Not Analyzed

(BEB) Below Excavation Bottom

(*) Results analysed by Cardinal Labs, Hobbs, NM.

Date Modified: 09-25-2013 112MC05443

Figures



CONCHO

Figure 1

Hearse 36 #4H

Overview Map

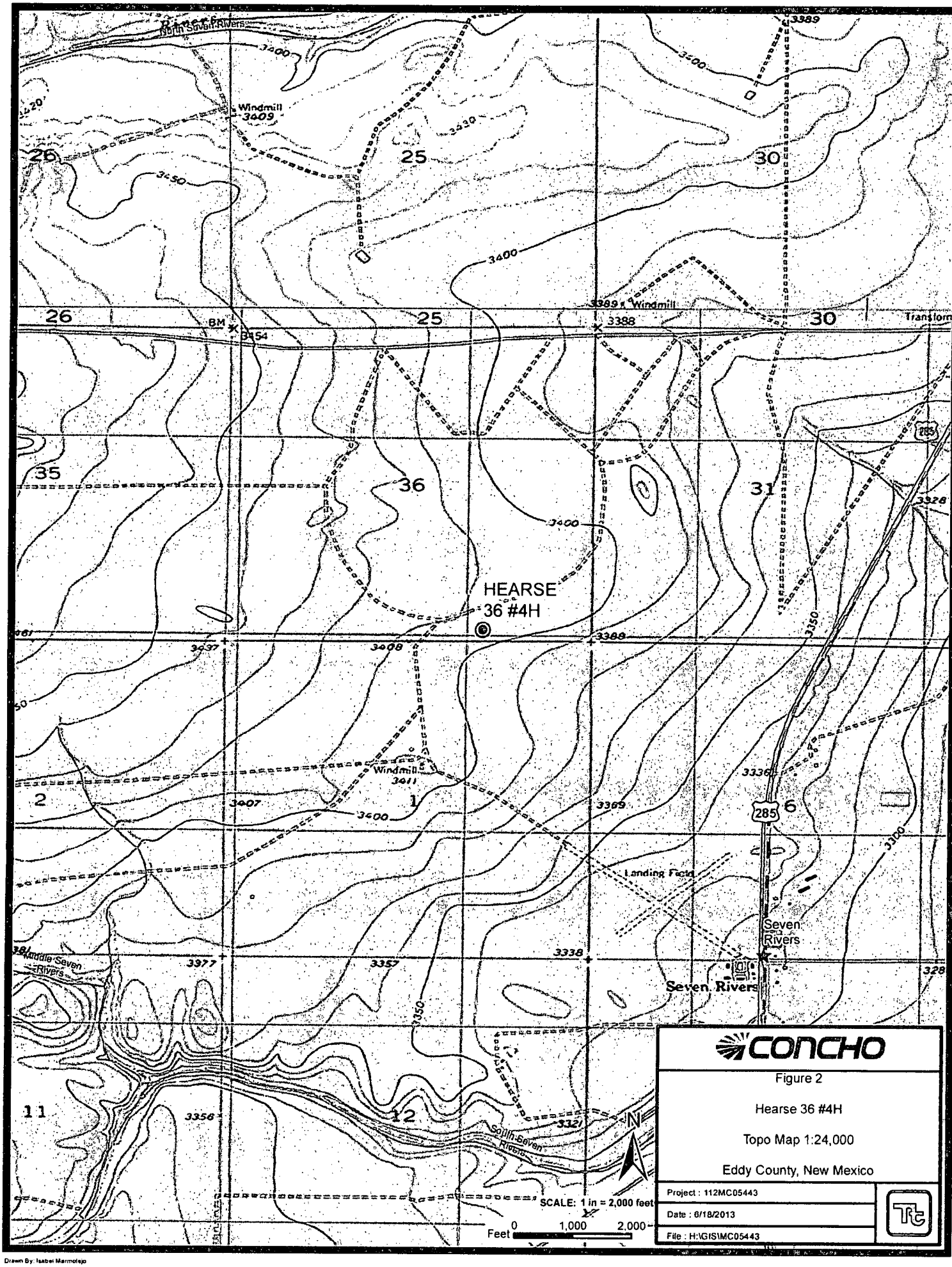
Eddy County, New Mexico

Project : 112MC05443

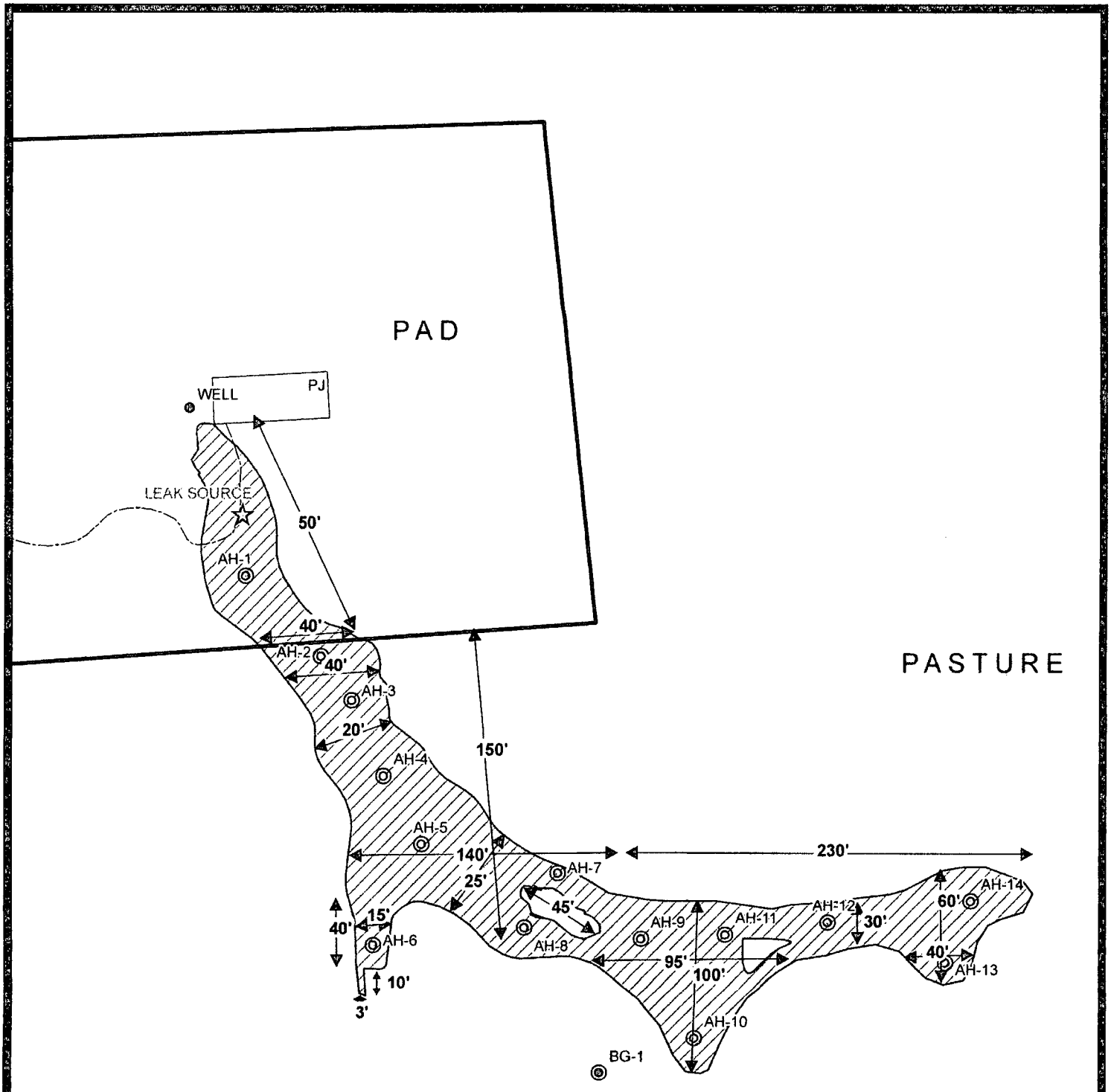
Date : 6/18/2013

File : H:\GIS\MC05443

Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- SPILL AREA

N

SCALE: 1 IN = 83 FEET

Feet 0 20 40

CONCHO

Figure 3

Hearse 36 #4H

Spill Assessment Map

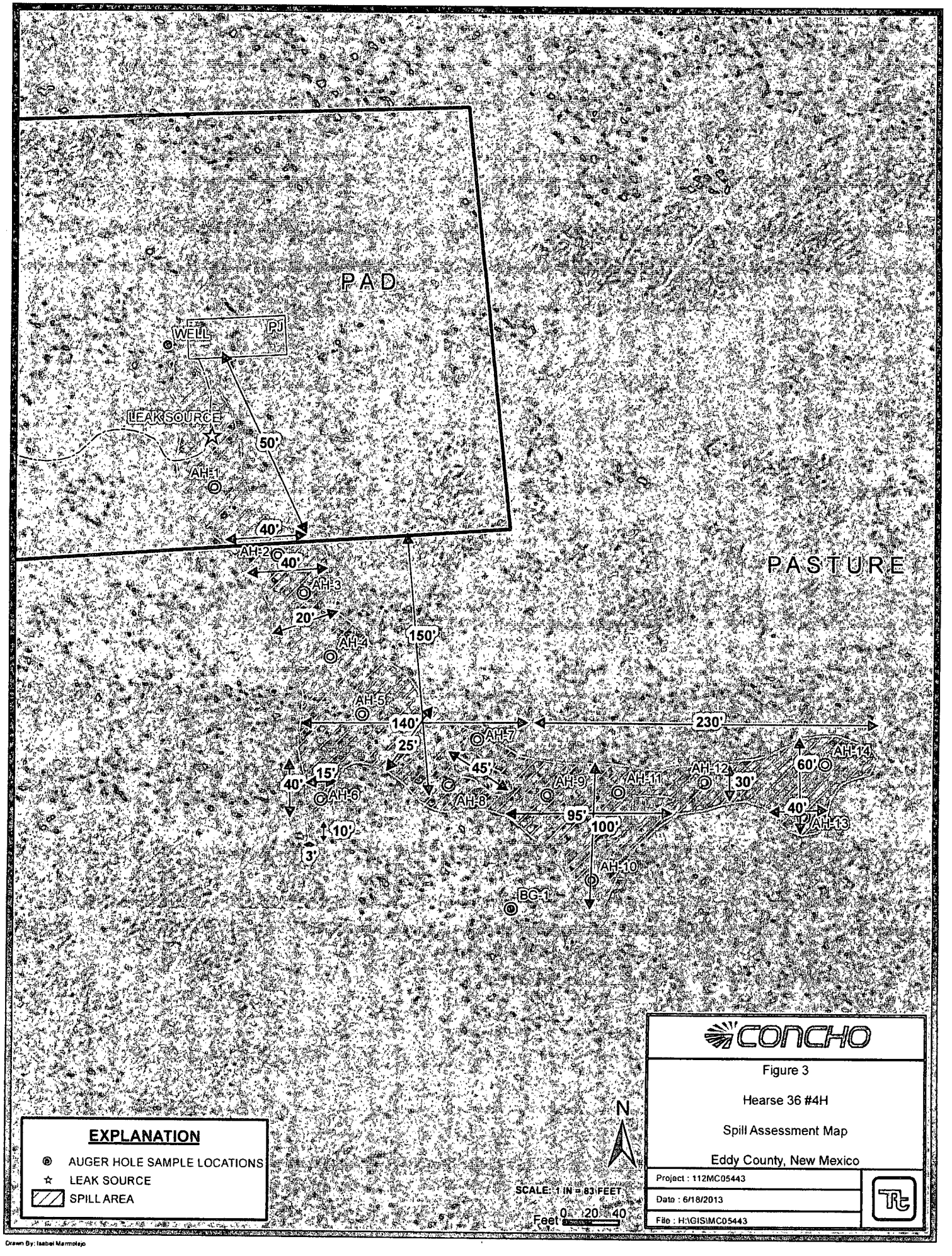
Eddy County, New Mexico

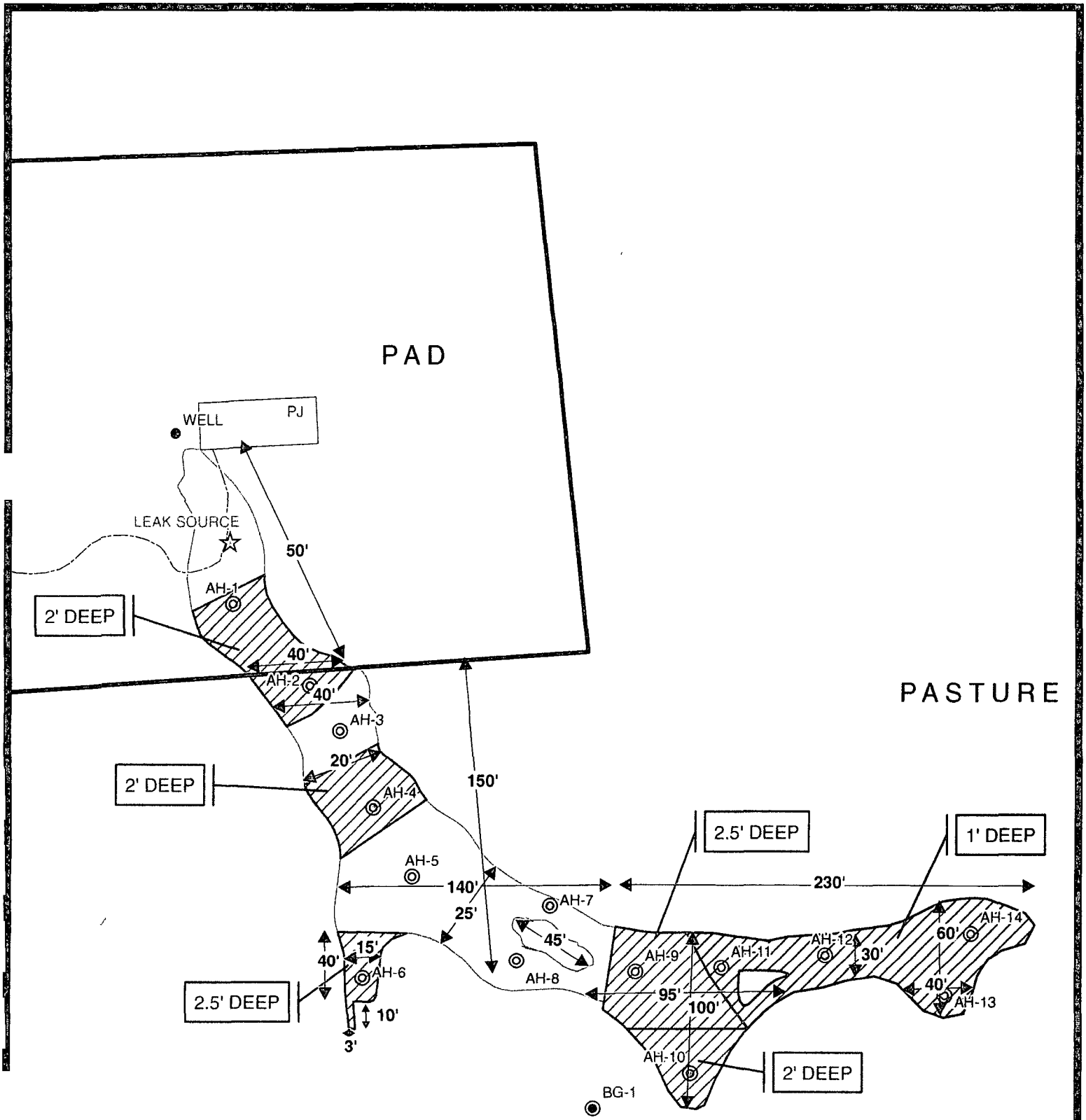
Project : 112MC05443

Date : 6/18/2013

File : H:\GIS\MC05443

Drawn By: Isabel Marmolejo


PAD
PASTURE
WELL
PJ
LEAK SOURCE
50'
AH-1
40'
AH-2
40'
AH-3
20'
AH-4
150'
AH-5
140'
230'
AH-7
25'
45'
AH-14
60'
AH-12
30'
AH-9
AH-11
15'
40'
AH-6
AH-8
95'
100'
40'
AH-13
10'
3'
AH-10
BC-1
N
SCALE: 1 IN = 83 FEET
Feet 0 20 40
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
CONCHO
Figure 3
Hearse 36 #4H
Spill Assessment Map
Eddy County, New Mexico
Project : 112MC05443
Date : 6/18/2013
File : H:\GIS\MC05443
Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- LEAK SOURCE
- EXCAVATED AREAS

N

SCALE: 1 IN = 80 FEET

Feet 0 20 40

CONCHO

Figure 4

Hearse 36 #4H

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 112MC05443

Date : 9/26/2013

File : H:\GIS\MC05443

Drawn By: Isabel Marmolejo

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	**COG Operating LLC**	Contact	**Pat Ellis**
Address	**600 W. Illinois Avenue, Midland, TX 79701**	Telephone No.	**(432) 230-0077**
Facility Name	**HEARSE 36 STATE #004H**	Facility Type	**WELL PAD**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-39264

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	36	19S	25E					Eddy

Latitude N 32.61068° **Longitude** W 104.43531°

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 40 bbls	Volume Recovered 30 bbls
Source of Release: Casing valve on well head	Date and Hour of Occurrence 05-03-2013	Date and Hour of Discovery 05-03-2013 7:00 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Mike Bratcher—OCD**	
By Whom? Michelle Mullins	Date and Hour 05-03-2013 1:23 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The casing valve was left open on the well head. Closed the valve to prevent any further release

RECEIVED
JAN 24 2014
NMOCD ARTESIA

Describe Area Affected and Cleanup Action Taken.*

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

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 5-26-13 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
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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	COG OPERATING LLC	Contact	Pat Ellis
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	HEARSE 36 STATE #004H	Facility Type	WELL PAD

Surface Owner STATE	Mineral Owner	Lease No. (API#) 30-015-39264

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	36	19S	25E					EDDY

Latitude 32.61068 **Longitude** 104.43531

NATURE OF RELEASE

Type of Release Oil	Volume of Release 40bbls	Volume Recovered 30bbls
Source of Release Casing valve on well head	Date and Hour of Occurrence 05-03-2013	Date and Hour of Discovery 05-03-2013 7:00am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher - NMOCD	
By Whom? Michelle Mullins	Date and Hour 05-03-2013 1:23pm	
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.*

The casing valve was left open on the well head. Closed the valve to prevent any further release.

Describe Area Affected and Cleanup Action Taken.*

Initially 40bbls of oil were released from an open casing valve on the well head. We were able to recover 30bbls of oil with a vacuum truck. The spill occurred on the location and traveled to the adjacent pasture. All free fluids have been removed from the location and the pasture. A work plan will be presented to the NMOCD for approval prior to any significant remediation work.

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: Robert Grubbs Jr.	OIL CONSERVATION DIVISION	
Printed Name: Robert Grubbs Jr.	Approved by District Supervisor:	
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: rgrubbs@concho.com	Conditions of Approval:	Attached ☐
Date: 05-14-2013 Phone: 432-661-6601		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG-Hearse 36 State #4H
Eddy County, New Mexico

18 South 24 East

6	5	4	3	2	1
7	8	9	10	11 **350**	12
18 **475**	17	16 **516**	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 **364**	36

18 South 25 East

6	5	4 **155**	3 **184**	2 **175**	1 **187**
7	8	9	10 **168**	11	12
18 **230**	17	16	15	14	13
19	20	21	22	23 **117**	24 **158**
30	29	28	27	26 **200**	25
31	32	33	34	35	36 **270**

18 South 26 East

6 **200**	5 **95**	4 **24**	3 **65**	2 **50** **14**	1
7	8	9 **70**	10 **8** **40**	11	12
18 **56**	17	16 **61**	15	14	13
19	20	21	22 **98**	23	24 **19**
30	29	28 **85**	27	26	25
31	32	33	34	35	36

19 South 24 East

6	5	4	3	2	1
7	8	9	10 **335**	11	12 **265**
18	17 **295**	16	15	14	13
19	20	21 **300**	22	23	24
30	29	28 **558**	27	26 **322**	25
31	32	33	34 **270**	35	36

19 South 25 East

6	5 **305**	4	3	2 **100**	1 **172**
7	8	9 **260**	10	11	12
18	17 **83**	16	15 **59**	14	13
19 **310**	20	21	22 **130**	23	24
30 **222**	29	28	27 **60**	26	25 **60**
31 **140**	32	33	34	35	36 SITE

19 South 26 East

6	5	4 **70**	3	2	1 **70**
7	8	9	10 **60**	11	12 **24**
18 **69**	17	16	15	14 **67**	13
19	20 **52**	21	22	23 **80**	24
30 **105**	29	28	27 **49**	26	25
31 **95**	32 **95**	33	34	35	36

20 South 24 East

6	5	4	3 **268**	2	1 **131**
7	8 **500**	9	10	11	12
18	17	16	15	14 **80**	13
19	20	21	22 **300**	23	24
30	29	28	27	26	25 **268**
31	32 **350**	33	34	35	36

20 South 25 East

6	5	4	3	2	1 **121**
7	8 **249**	9	10 **130**	11 **70**	12 **102**
18	17 **170**	16 **129**	15 **67**	14	13
19	20 **228**	21 **80**	22	23	24
30	29	28	27	26	25
31 **312**	32 **100**	33	34	35	36

20 South 26 East

6 **65**	5 **20**	4	3	2	1
7 **5** **60**	8	9	10	11 **49**	12
18	17 **51**	16	15	14	13
19	20	21	22	23 **105**	24
30 **190**	29	28	27	26	25
31	32 **51**	33	34 **135**	35 **52**	36 **120**

- 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

Appendix C

Summary Report

(Corrected Report)

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

Report Date: June 19, 2013

Work Order: 13060319

Project Location: Eddy Co., NM
Project Name: COG/Hearse 36 #4H
Project Number: 112MC05443

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
330784	AH-1 0-1'	soil	2013-05-29	00:00	2013-05-31
330785	AH-1 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330786	AH-2 0-1'	soil	2013-05-29	00:00	2013-05-31
330787	AH-2 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330788	AH-2 2-2.5'	soil	2013-05-29	00:00	2013-05-31
330789	AH-3 0-1'	soil	2013-05-29	00:00	2013-05-31
330790	AH-3 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330791	AH-3 2-2.5'	soil	2013-05-29	00:00	2013-05-31
330792	AH-4 0-1'	soil	2013-05-29	00:00	2013-05-31
330793	AH-4 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330794	AH-5 0-1'	soil	2013-05-29	00:00	2013-05-31
330795	AH-5 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330796	AH-5 2-2.5'	soil	2013-05-29	00:00	2013-05-31
330797	AH-6 0-1'	soil	2013-05-29	00:00	2013-05-31
330798	AH-6 1-1.5'	soil	2013-05-29	00:00	2013-05-31
330799	AH-6 2-2.5'	soil	2013-05-29	00:00	2013-05-31
330800	AH-7 0-1'	soil	2013-05-30	00:00	2013-05-31
330801	AH-7 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330802	AH-7 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330803	AH-7 3-3.5'	soil	2013-05-30	00:00	2013-05-31
330804	AH-8 0-1'	soil	2013-05-30	00:00	2013-05-31
330805	AH-8 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330806	AH-8 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330807	AH-8 3-3.5'	soil	2013-05-30	00:00	2013-05-31
330808	AH-9 0-1'	soil	2013-05-30	00:00	2013-05-31
330809	AH-9 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330810	AH-9 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330811	AH-9 2.5-3'	soil	2013-05-30	00:00	2013-05-31

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
330812	AH-10 0-1'	soil	2013-05-30	00:00	2013-05-31
330813	AH-10 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330814	AH-11 0-1'	soil	2013-05-30	00:00	2013-05-31
330815	AH-11 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330816	AH-11 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330817	AH-12 0-1'	soil	2013-05-30	00:00	2013-05-31
330818	AH-12 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330819	AH-13 0-1'	soil	2013-05-30	00:00	2013-05-31
330820	AH-13 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330821	AH-13 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330822	AH-14 0-1'	soil	2013-05-30	00:00	2013-05-31
330823	AH-14 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330824	AH-14 2-2.5'	soil	2013-05-30	00:00	2013-05-31
330825	BG 1 0-1'	soil	2013-05-30	00:00	2013-05-31
330826	BG 1 1-1.5'	soil	2013-05-30	00:00	2013-05-31
330827	BG 1 2-2.5'	soil	2013-05-30	00:00	2013-05-31

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
330784 - AH-1 0-1'					<50.0	<4.00
330786 - AH-2 0-1'					**407**	**113**
330789 - AH-3 0-1'					<50.0	<4.00
330792 - AH-4 0-1'					<50.0	**7.31**
330794 - AH-5 0-1'	<0.100 [1]	<0.100	<0.100	**1.37**	**654**	**67.3**
330797 - AH-6 0-1'					<50.0	**7.19**
330800 - AH-7 0-1'					<50.0	**35.1**
330804 - AH-8 0-1'	<0.400 [2]	<0.400	<0.400	**2.62**	**2770**	**299**
330808 - AH-9 0-1'	<0.200 [3]	**1.98**	**10.9**	**28.0**	**129**	**691**
330812 - AH-10 0-1'	**17.3**	**74.9**	**164**	**386**	**7770**	**1880**
330813 - AH-10 1-1.5'	**3.42**	**27.4**	**85.3**	**160**	**4650**	**4430**
330814 - AH-11 0-1'					**163**	**33.2**
330817 - AH-12 0-1'	<0.200 [4]	**12.9**	**58.6**	**116**	**916**	**3860**
330818 - AH-12 1-1.5'	<0.0200	<0.0200	**0.498**	**1.46**		
330819 - AH-13 0-1'	<0.200 [5]	**11.2**	**66.5**	**139**	**2770**	**4270**
330820 - AH-13 1-1.5'	<0.0200	<0.0200	<0.0200	**0.974**	**207** Qr,Qs	**39.5**
330822 - AH-14 0-1'	**5.23**	**35.2**	**119**	**219**	**3740**	**6620**
330823 - AH-14 1-1.5'	<0.0200	<0.0200	<0.0200	**0.118**	<50.0 Qr,Qs	**8.34**
330825 - BG 1 0-1'					<50.0	<4.00

Sample: 330784 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**1480**	mg/Kg	4

[1]Dilution due to hydrocarbons.
[2]Dilutions due to hydrocarbons.
[3]Dilutions due to hydrocarbons.
[4]Dilution due to hydrocarbons.
[5]Dilution due to hydrocarbons.

Sample: 330785 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1490**	mg/Kg	4

Sample: 330786 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**7850**	mg/Kg	4

Sample: 330787 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**8060**	mg/Kg	4

Sample: 330788 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**339**	mg/Kg	4

Sample: 330789 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**319**	mg/Kg	4

Sample: 330790 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**648**	mg/Kg	4

Sample: 330791 - AH-3 2-2.5'

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

Sample: 330792 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**2350**	mg/Kg	4

Sample: 330793 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1100**	mg/Kg	4

Sample: 330794 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**429**	mg/Kg	4

Sample: 330795 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**74.7**	mg/Kg	4

Sample: 330796 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**54.8**	mg/Kg	4

Sample: 330797 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		**4490**	mg/Kg	4

Sample: 330798 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**5880**	mg/Kg	4

Sample: 330799 - AH-6 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**4840**	mg/Kg	4

Sample: 330800 - AH-7 0-1'

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

Sample: 330801 - AH-7 1-1.5'

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

Sample: 330802 - AH-7 2-2.5'

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

Sample: 330803 - AH-7 3-3.5'

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

Sample: 330804 - AH-8 0-1'

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

Sample: 330805 - AH-8 1-1.5'

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

Sample: 330806 - AH-8 2-2.5'

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

Sample: 330807 - AH-8 3-3.5'

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

Sample: 330808 - AH-9 0-1'

Param	Flag	Result	Units	RL
Chloride		**7510**	mg/Kg	4

Sample: 330809 - AH-9 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**2030**	mg/Kg	4

Sample: 330810 - AH-9 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**3220**	mg/Kg	4

Sample: 330811 - AH-9 2.5-3'

Param	Flag	Result	Units	RL
Chloride		**396**	mg/Kg	4

Sample: 330812 - AH-10 0-1'

Param	Flag	Result	Units	RL
Chloride		**4550**	mg/Kg	4

Sample: 330813 - AH-10 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**3530**	mg/Kg	4

Sample: 330814 - AH-11 0-1'

Param	Flag	Result	Units	RL
Chloride		**3650**	mg/Kg	4

Sample: 330815 - AH-11 1-1.5'

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

Sample: 330816 - AH-11 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**147**	mg/Kg	4

Sample: 330817 - AH-12 0-1'

Param	Flag	Result	Units	RL
Chloride		**832**	mg/Kg	4

Sample: 330818 - AH-12 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**65.5**	mg/Kg	4

Sample: 330819 - AH-13 0-1'

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

Sample: 330820 - AH-13 1-1.5'

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

Sample: 330821 - AH-13 2-2.5'

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

Sample: 330822 - AH-14 0-1'

Param	Flag	Result	Units	RL
Chloride		**282**	mg/Kg	4

Sample: 330823 - AH-14 1-1.5'

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

Sample: 330824 - AH-14 2-2.5'

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

Sample: 330825 - BG 1 0-1'

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

Sample: 330826 - BG 1 1-1.5'

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

Sample: 330827 - BG 1 2-2.5'

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

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

September 26, 2013

IKE TAVAREZ

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: HEARSE 36 STATE #4 H

Enclosed are the results of analyses for samples received by the laboratory on 08/30/13 13:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	08/30/2013	Sampling Date:	08/30/2013
Reported:	09/26/2013	Sampling Type:	Soil
Project Name:	HEARSE 36 STATE #4 H	Sampling Condition:	** (See Notes)
Project Number:	112MC05443	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

Sample ID: T 1 (AH-10) 0' (H302100-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**17000**	16.0	09/03/2013	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: AR/** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<100	100	09/03/2013	ND	197	98.4	200	0.223	
DRO >C10-C28	**14000**	100	09/03/2013	ND	189	94.3	200	1.30	

Surrogate: 1-Chlorooctane	*89.3 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*592 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	08/30/2013	Sampling Date:	08/30/2013
Reported:	09/26/2013	Sampling Type:	Soil
Project Name:	HEARSE 36 STATE #4 H	Sampling Condition:	** (See Notes)
Project Number:	112MC05443	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

Sample ID: T 1 (AH-10) 2' (H302100-02)

BTEX 8021B mg/kg Analyzed By: MS O-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/26/2013	ND	1.89	94.4	2.00	3.20	
Toluene*	<0.050	0.050	09/26/2013	ND	1.95	97.3	2.00	2.40	
Ethylbenzene*	<0.050	0.050	09/26/2013	ND	2.06	103	2.00	2.62	
Total Xylenes*	<0.150	0.150	09/26/2013	ND	6.20	103	6.00	2.42	
Total BTEX	<0.300	0.300	09/26/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**384**	16.0	09/03/2013	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: AR/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/03/2013	ND	197	98.4	200	0.223	
DRO >C10-C28	**169**	10.0	09/03/2013	ND	189	94.3	200	1.30	

Surrogate: 1-Chlorooctane *93.7 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *96.7 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:	08/30/2013	Sampling Date:	08/30/2013
Reported:	09/26/2013	Sampling Type:	Soil
Project Name:	HEARSE 36 STATE #4 H	Sampling Condition:	** (See Notes)
Project Number:	112MC05443	Sample Received By:	Jodi Henson
Project Location:	EDDY COUNTY, NM		

Sample ID: T 1 (AH-10) 4' (H302100-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	09/03/2013	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: AR/**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/03/2013	ND	197	98.4	200	0.223	
DRO >C10-C28	**149**	10.0	09/03/2013	ND	189	94.3	200	1.30	

Surrogate: 1-Chlorooctane	*87.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*88.9 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
O-04	This sample was analyzed outside the EPA recommended holding time.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

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

H30220000

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 112M105443

PROJECT NAME: COG / Hearse 36 State #4 H
Eddy Co, NM

LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. (Ext. to C35)	TX1005	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
1	8/30		S		X	~~DUP~~ T1 (AH 10) 0'	1				X			X												X				
2			S		X	2'	1				X		X	X												X				
3			S		X	4'	1				X			X												X				

added 9/25/13

Page 6 of 6

RELINQUISHED BY: (Signature) — Date: 8-30-13 Time: 1430
RECEIVED BY: (Signature) Dale Henson — Date: 8/30/13 Time: 1:30
SAMPLED BY: (Print & Initial) — Date: 8-30-13 Time: 1430

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: Ike Tavarez
Results by:

RECEIVING LABORATORY: Cardinal
ADDRESS:
CITY: Hobbs STATE: NM ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:
REMARKS: * Straight from field *
RUSH!!
9e #54

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

Ryan Reich - ryan.reich@tetratech.com // Ike Tavarez - Ike.tavarez@tetratech.com