SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	**Mesilla State #2 Flow line**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit H**	**Sec 16**	**T17S**	**R30E**		
Lease Number:	**API-30-015-31366**					
County:	**Eddy County**					
GPS:	**32.83502° N**			**103.96942° W**		
Surface Owner:	**State**					
Mineral Owner:						
Directions:	In Loco Hills, from the intersection of Goat Roper Rd and 82, travel north on Goat Roper for 1.2 miles, turn right (east) and travel for 0.3 miles, turn right (south) and travel for 500', turn left (east) and travel for 500' to site on the south side of the lease road.					

Release Data:	
Date Released:	3/21/2012
Type Release:	Oil and Produced Water
Source of Contamination:	Steel flowline failure
Fluid Released:	14 bbls water 8 bbls oil
Fluids Recovered:	13 bbls water 6 bbls oil

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
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

June 27, 2012

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

Re: Work Plan for the COG Operating LLC., Mesilla State #2, Unit H, 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 Mesilla State #2 flow line located in Unit H, Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.83502°, W 103.96942°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on March 21, 2012, and released approximately twenty-two (22) barrels of produced fluid from the flow line. To alleviate the problem, COG personnel repaired the flow line. A total of nineteen (19) barrels of standing fluids were recovered. The spill initiated south of the lease road affecting an area approximately 20' X 100' in the pasture. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 16. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 325' below surface. The groundwater data is shown in Figure 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 March 28, 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. 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, auger hole (AH-1) exceeded the RRAL for TPH at 0-1', but declined below the RRAL at 1-1.5' below surface. Auger hole (AH-2) was not defined and exceeded the RRAL for TPH, benzene and total BTEX down to a depth of 2.5-3.0' below surface.

Elevated chloride concentrations were also detected in both auger holes. Auger hole (AH-1) declined with depth and was defined at 4-4.5' below surface. However, AH-2 was not vertically defined and showed a chloride bottom hole sample of 7,030 mg/kg at 2.5-3.0' below surface. Deeper samples were not collected due to a dense formation.

On April 24, 2012, Tetra Tech supervised the installation of one (1) borehole (BH-1) using an air rotary drilling rig to assess the soils. The borehole was installed in the area of AH-2 to a total depth of 10' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The borehole results are summarized in Table 1.

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Referring to Table 1, the chloride impact was vertically defined in the shallow soils and significantly declined to <20.0 mg/kg at 2-3' below surface. In addition, the hydrocarbon impact was vertically defined and showed TPH and BTEX concentrations below the RRAL.

Work Plan

COG proposes removal of impacted material as highlighted (green) in Table 1 and shown on Figure 4. To remove the elevated chloride and hydrocarbon impact exceeding the RRAL, the areas of AH-1 and AH-2 will be excavated to a depth of approximately 2.0' to 3.0' below surface.

Due to the location of the spill, the proposed excavation depths and areas may not be achieved due to wall cave ins, oil and gas equipment, electrical, structures or lines which may not be feasible or practicable to be removed due to safely concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil to grade

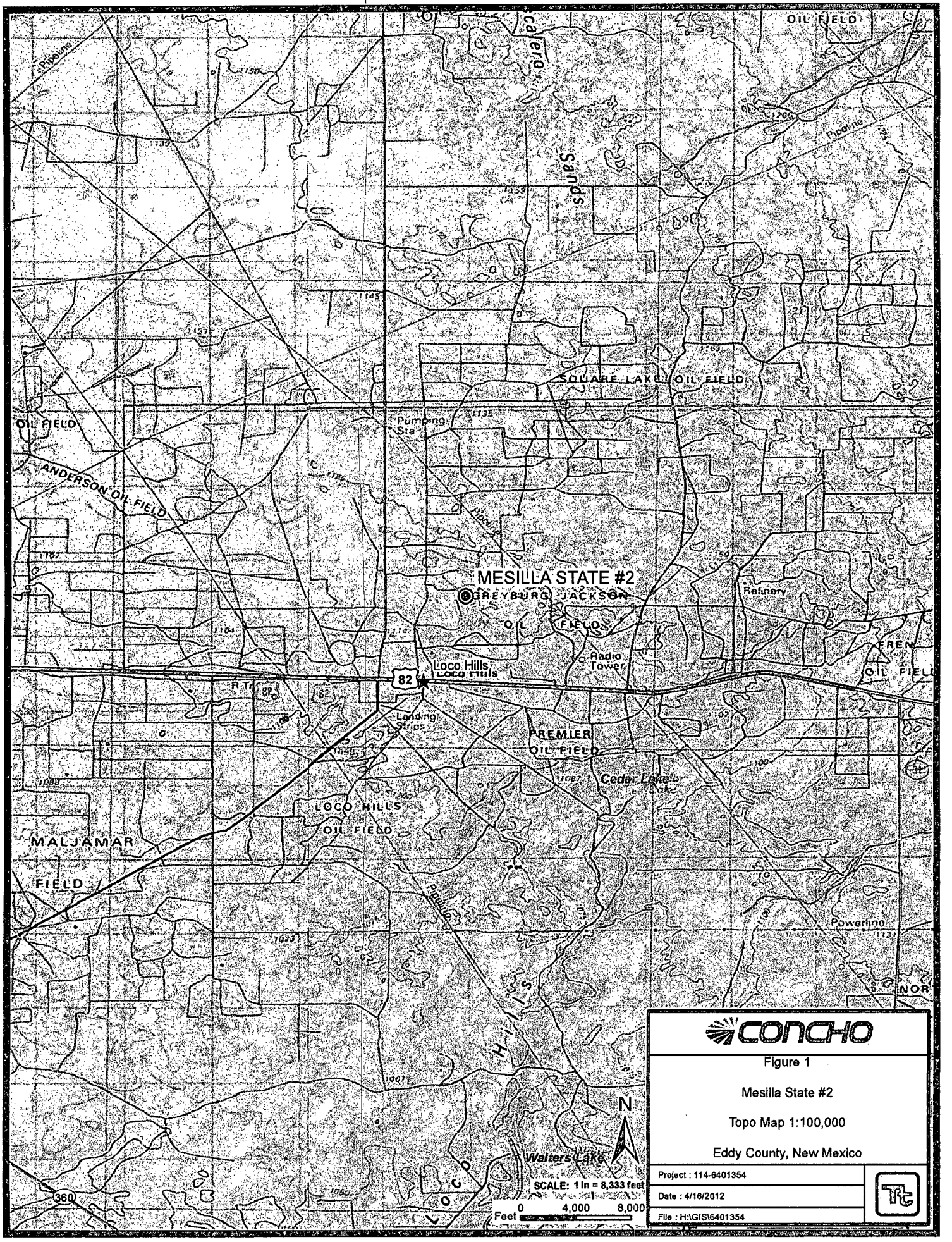
Upon completion a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Project Manager

cc: Pat Ellis – COG

FIGURES



CONCHO

Figure 1

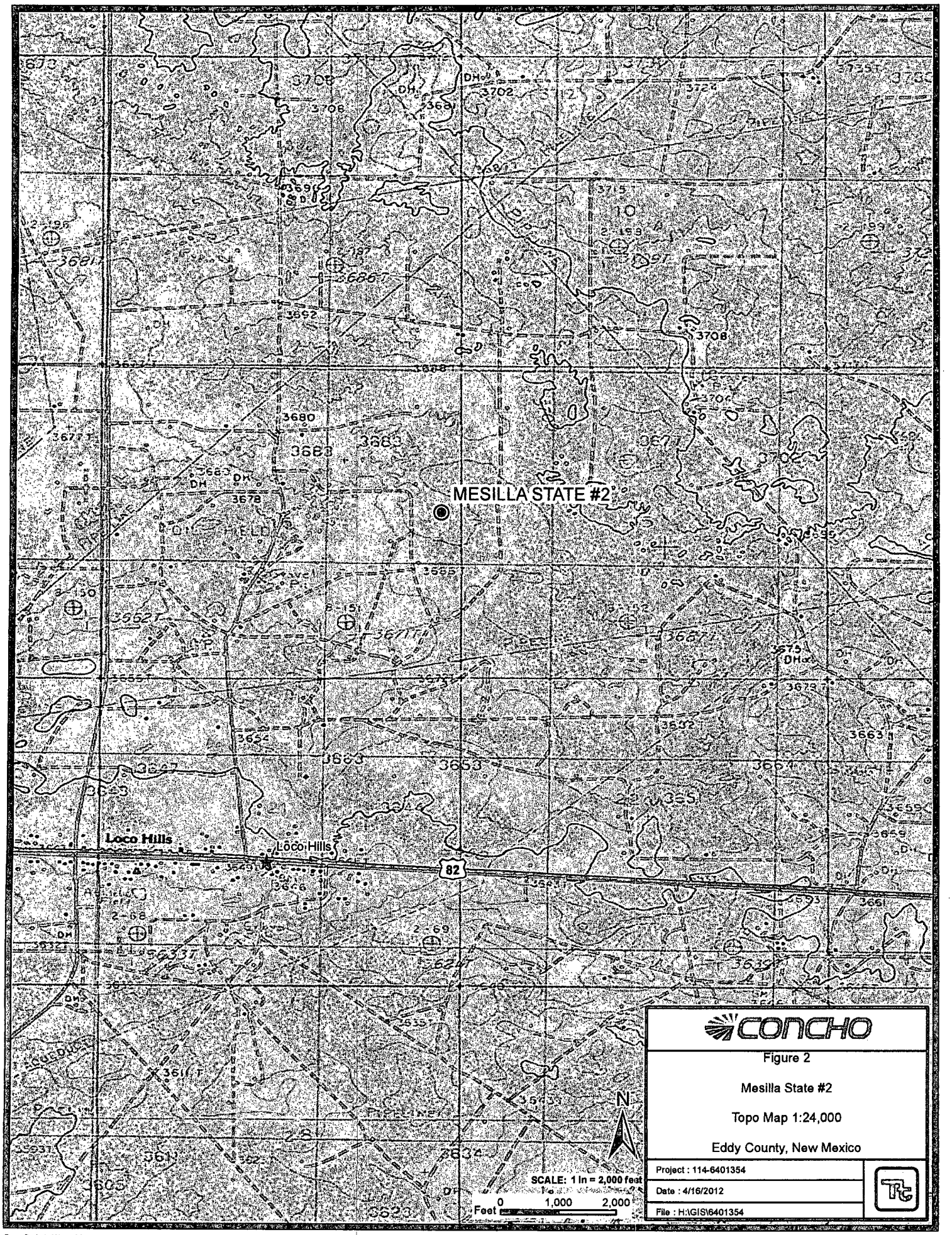
Mesilla State #2

Topo Map 1:100,000

Eddy County, New Mexico

Project : 114-6401354	
Date : 4/16/2012	
File : H:\GIS\6401354	

Drawn By: Isabel Marmolejo



CONCHO

Figure 2

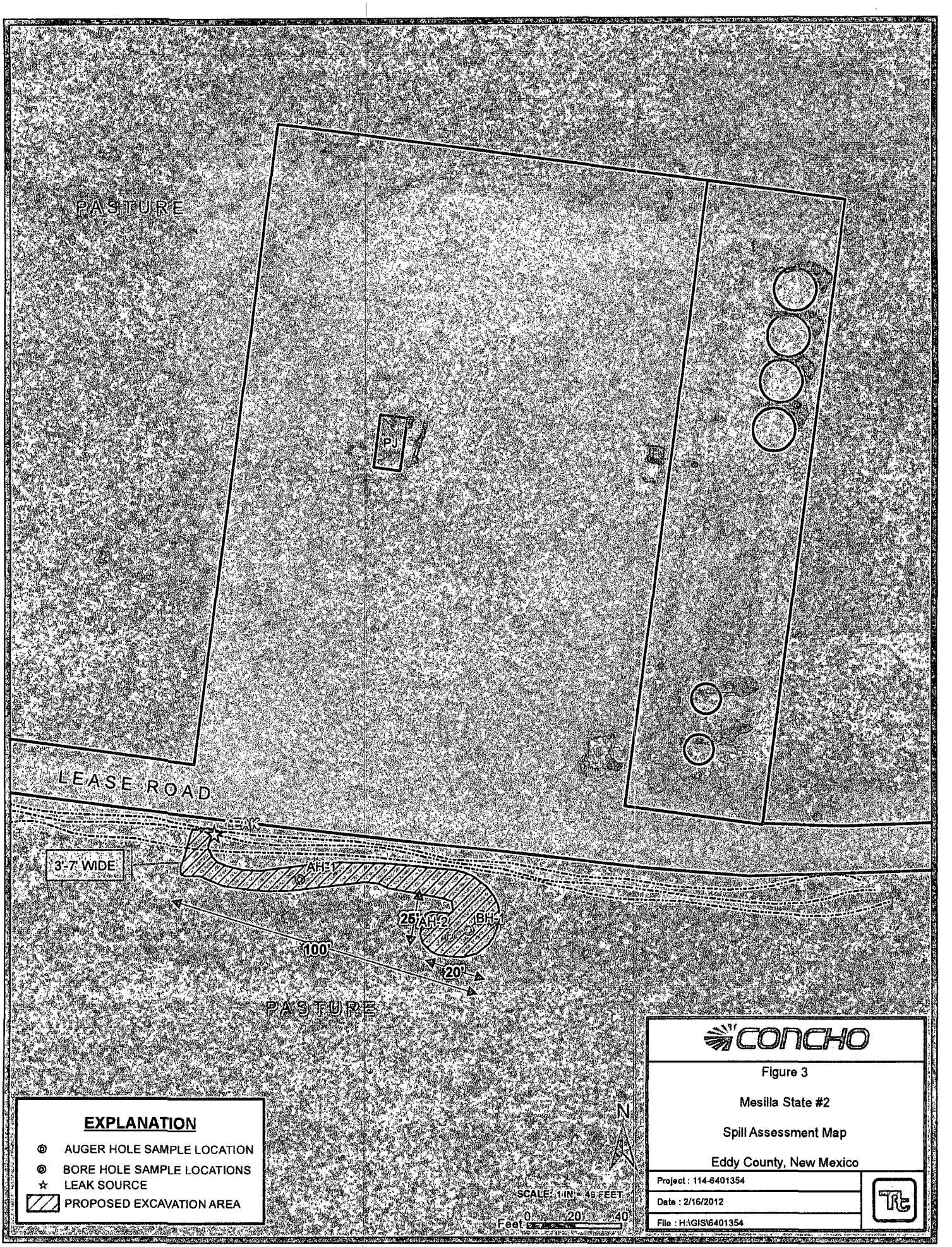
Mesilla State #2

Topo Map 1:24,000

Eddy County, New Mexico

Project : 114-6401354	
Date : 4/16/2012	
File : H:\GIS\6401354	

Drawn By: Isabel Marmolejo



CONCHO

Figure 3

Mesilla State #2

Spill Assessment Map

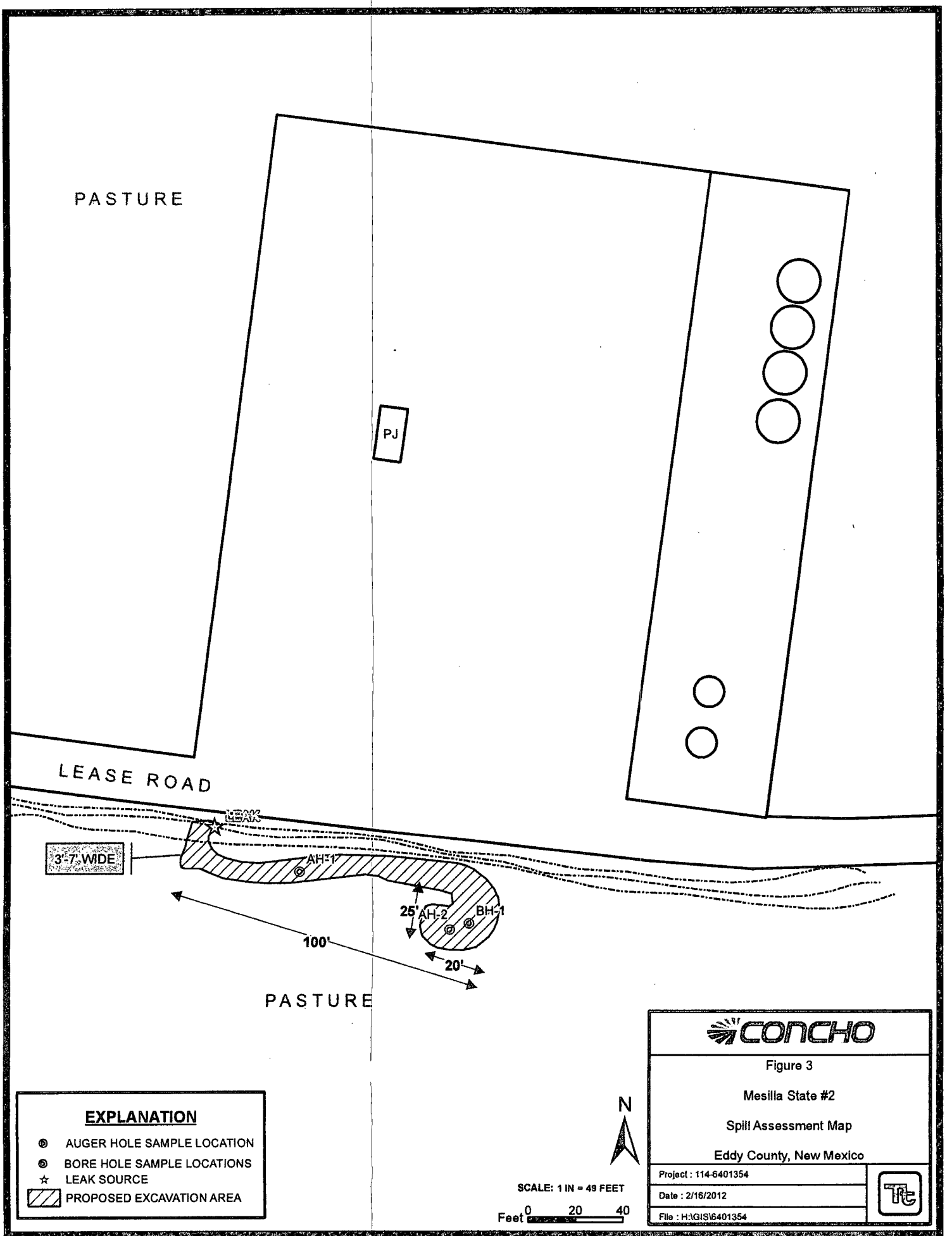
Eddy County, New Mexico

Project : 114-6401354

Date : 2/16/2012

File : H:\GIS\6401354

Drawn By: Isabel Marmolejo



CONCHO

Figure 3

Mesilla State #2

Spill Assessment Map

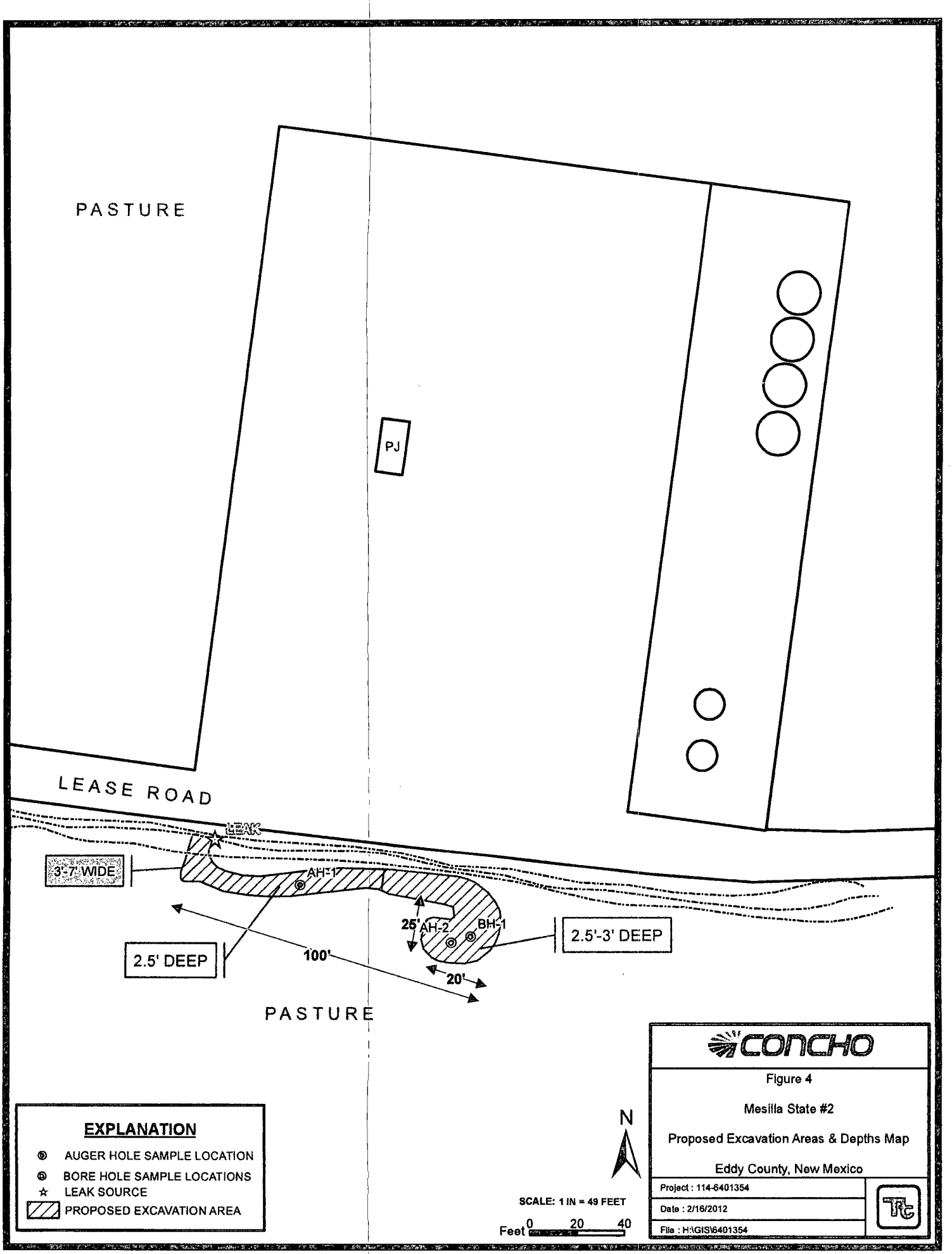
Eddy County, New Mexico

Project : 114-6401354

Date : 2/16/2012

File : H:\GIS\6401354

Drawn By: Isabel Marmolejo


PASTURE
PJ
LEASE ROAD
LEAK
3'-7' WIDE
AH-1
25'
AH-2
BH-1
2.5'-3' DEEP
2.5' DEEP
100'
20'
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATION
BORE HOLE SAMPLE LOCATIONS
LEAK SOURCE
PROPOSED EXCAVATION AREA
N
SCALE: 1 IN = 49 FEET
Feet 0 20 40
CONCHO
Figure 4
Mesilla State #2
Proposed Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 114-6401354
Date : 2/16/2012
File : H:\GIS\6401354
Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Mesilla State #2
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	3/28/2012	0-1	X		821	4,190	5,011	1.64	13.6	8.40	14.0	37.6	241
	"	1-1.5	X		4.36	<50.0	4.36	-	-	-	-	-	1,430
	"	2-2.5	X		-	-	-	-	-	-	-	-	1,480
	"	3-3.5	X		-	-	-	-	-	-	-	-	1,910
	"	4-4.5	X		-	-	-	-	-	-	-	-	<200
AH-2	3/28/2012	0-1	X		9,470	16,100	25,570	123	344	177	286	930	2,540
	"	1-1.5	X		9,780	14,400	24,180	129	334	182	286	931	1,970
	"	2-2.5	X		9,290	5,560	14,850	87.7	235	125	196	644	7,840
	"	2.5-3	X		14,200	8,450	22,650	198	443	216	377	1,234	7,030
BH-1	4/24/2012	0-1	X		-	-	-	-	-	-	-	-	3,730
	"	2-3	X		-	-	-	-	-	-	-	-	<20.0
	"	4-5	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<20.0
	"	6-7	X		-	-	-	-	-	-	-	-	169
	"	9-10	X		-	-	-	-	-	-	-	-	<20.0

(-) Not Analyzed

Proposed Excavation Depths

Photos

COG Operating LLC
Mesilla State #2
Eddy County, New Mexico

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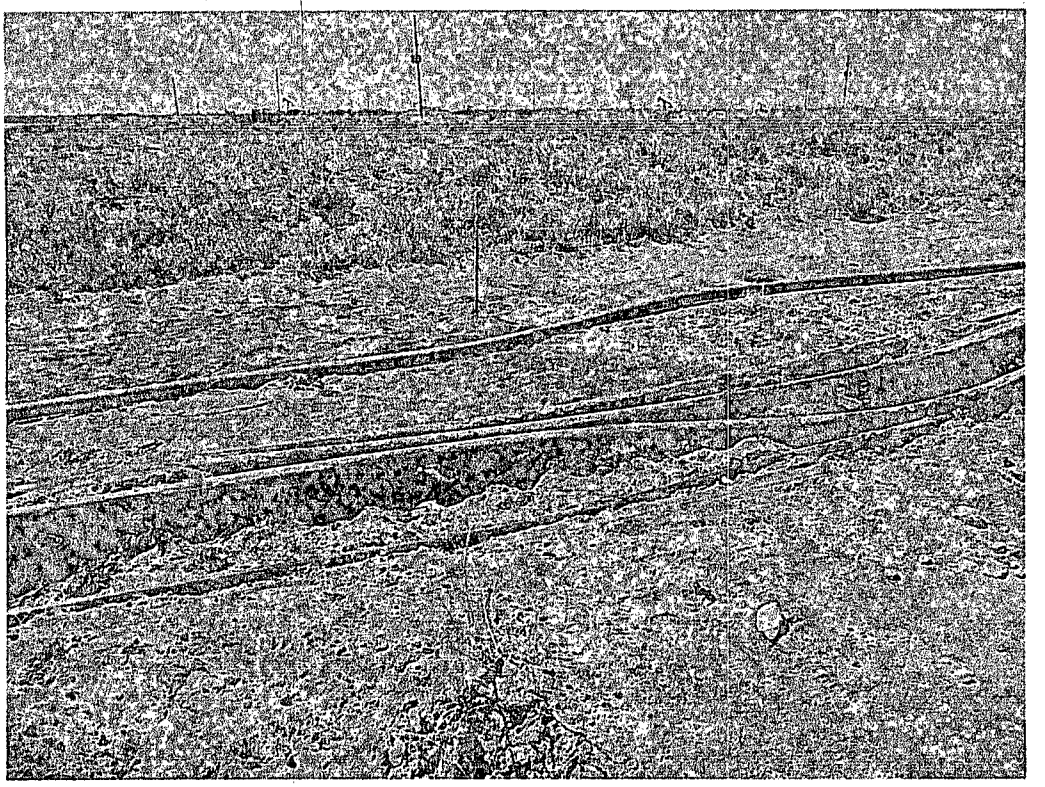
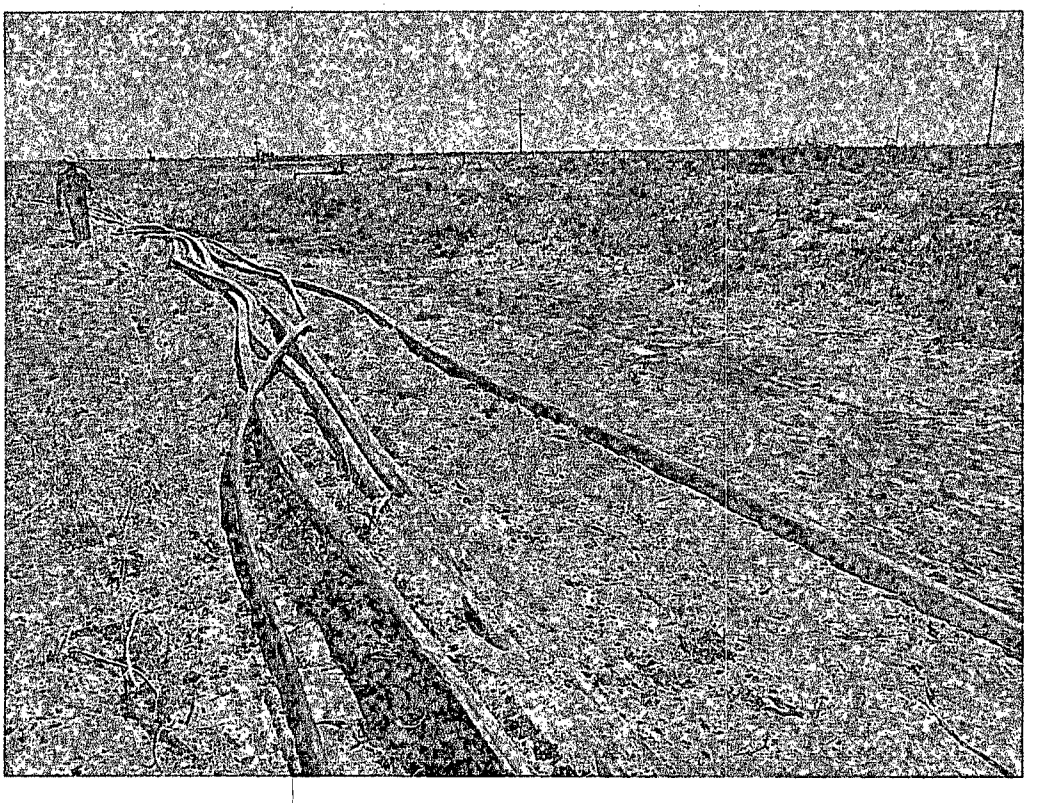


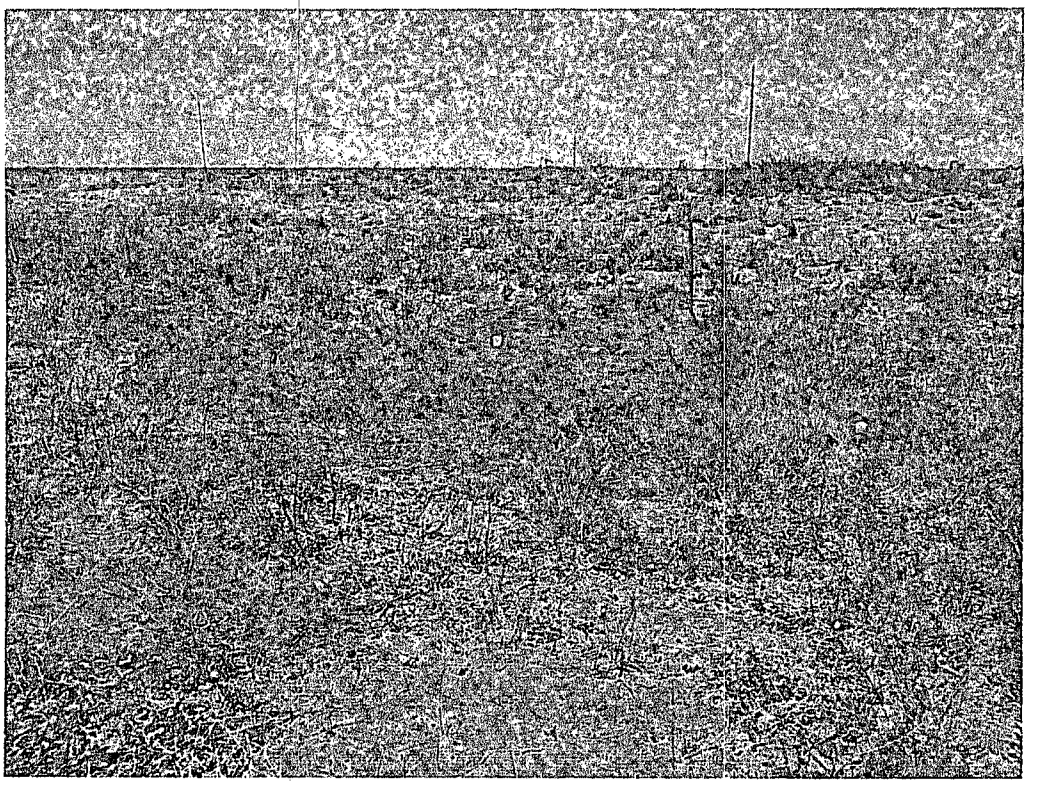
View South – Area of Leak



View South East – Area of AH-1

COG Operating LLC
Mesilla State #2
Eddy County, New Mexico

TETRA TECH



View South – Area of AH-2

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	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Mesilla State #2	Facility Type	Flowline

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-31366

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	16	17S	30E					Eddy

Latitude 32 50.104 **Longitude** 103 58.159

NATURE OF RELEASE

Type of Release Oil and Produced water	Volume of Release 14bbls PW 8bbls Oil	Volume Recovered 13bbls PW 6bbls Oil
Source of Release Steel flowline	Date and Hour of Occurrence 03/21/2012	Date and Hour of Discovery 03/21/2012 7:00 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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 Mesilla State #2 steel flowline developed a hole in it releasing produced fluids. The defective joint has been replaced with a new one and the flowline has been returned to service.

Describe Area Affected and Cleanup Action Taken.*

Initially 22bbls of produced fluids were released from the ruptured steel flowline and we were able to recover 19bbls of fluid with a vacuum truck. The spill area runs parallel to a lease road and measured an area of roughly 5' x 50' directly off the road in the pasture. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a work plan 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:	OIL CONSERVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:
Title: HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval: / Attached ☐
Date: 03/27/2012 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Mesilla State #2
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	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	1
7	8	9	10	11	12 288
18	17	16	15	14	13 113
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 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	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	23	24
30	29	28	27	26	25
31	32	33	34 271	35	36

18 South 29 East

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

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
- Site Location

Appendix C

Summary Report

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

Report Date: May 9, 2012

Work Order: 12042609

Project Location: Eddy Co., NM
Project Name: COG/Mesilla State #2
Project Number: 114-6401354

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
295424	BH-1 @ AH-2 0-1'	soil	2012-04-24	00:00	2012-04-26
295425	BH-1 @ AH-2 2-3'	soil	2012-04-24	00:00	2012-04-26
295426	BH-1 @ AH-2 4-5'	soil	2012-04-24	00:00	2012-04-26
295427	BH-1 @ AH-2 6-7'	soil	2012-04-24	00:00	2012-04-26
295428	BH-1 @ AH-2 9-10'	soil	2012-04-24	00:00	2012-04-26

	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)
295426 - BH-1 @ AH-2 4-5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 Q_{T,Q_S}

Sample: 295424 - BH-1 @ AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**3730**	mg/Kg	4

Sample: 295425 - BH-1 @ AH-2 2-3'

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

Sample: 295426 - BH-1 @ AH-2 4-5'

continued ...

sample 295426 continued ...

Param	Flag	Result	Units	RL

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

Sample: 295427 - BH-1 @ AH-2 6-7'

Param	Flag	Result	Units	RL
Chloride		**169**	mg/Kg	4

Sample: 295428 - BH-1 @ AH-2 9-10'

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

Summary Report

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

Report Date: April 11, 2012

Work Order: 12040201

Project Location: Eddy Co., NM
Project Name: COG/Mesilla State #2
Project Number: 114-6401354

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
293106	AH-1 0-1'	soil	2012-03-28	00:00	2012-03-30
293107	AH-1 1-1.5'	soil	2012-03-28	00:00	2012-03-30
293108	AH-1 2-2.5'	soil	2012-03-28	00:00	2012-03-30
293109	AH-1 3-3.5'	soil	2012-03-28	00:00	2012-03-30
293110	AH-1 4-4.5'	soil	2012-03-28	00:00	2012-03-30
293111	AH-2 0-1'	soil	2012-03-28	00:00	2012-03-30
293112	AH-2 1-1.5'	soil	2012-03-28	00:00	2012-03-30
293113	AH-2 2-2.5'	soil	2012-03-28	00:00	2012-03-30
293114	AH-2 2.5-3'	soil	2012-03-28	00:00	2012-03-30

	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)
293106 - AH-1 0-1'	**1.64**	**13.6**	**8.40**	**14.0**	**4190**	**821**
293107 - AH-1 1-1.5'					<50.0 Qs	**4.36**
293111 - AH-2 0-1'	**123**	**344**	**177**	**286**	**16100**	**9470** Qs
293112 - AH-2 1-1.5'	**129**	**334**	**182**	**286**	**14400** Qs	**9780**
293113 - AH-2 2-2.5'	**87.7**	**235**	**125**	**196**	**5560** Qs	**9290**
293114 - AH-2 2.5-3'	**198**	**443**	**216**	**377**	**8450**	**14200**

Sample: 293106 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**241**	mg/Kg	4

Sample: 293107 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1430**	mg/Kg	4

Sample: 293108 - AH-1 2-2.5'

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

Sample: 293109 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**1910**	mg/Kg	4

Sample: 293110 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 293111 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**2540**	mg/Kg	4

Sample: 293112 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1970**	mg/Kg	4

Sample: 293113 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**7840**	mg/Kg	4

Sample: 293114 - AH-2 2.5-3'

Param	Flag	Result	Units	RL
Chloride		**7030**	mg/Kg	4