SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	**Continental A State #12**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit I**	**Sec. 30**	**T-17-S**	**R-29-E**		
Lease Number:	**API-30-015-35052**					
County:	**Eddy County**					
GPS:	**32.81204° N**			**104.11911° W**		
Surface Owner:	State					
Mineral Owner:						
Directions:	Intersection of Hwy 82 and CR-212 (West of Loco Hills), travel west on Hwy 82 2.4 mi, turn right 0.2 mi, turn left 500' to location - Injection well location west of wellhead					

Release Data:	
Date Released:	4/28/2012
Type Release:	Produced Water
Source of Contamination:	2" nipple failed on wellhead
Fluid Released:	60 bbls
Fluids Recovered:	52 bbls

Official Communication:			
Name:	Pat Ellis		Ike Taravez
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

July 18, 2012

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

Re: Assessment and Work Plan for the COG Operating LLC., Continental A State #12 Injection Well Located in Unit I, Section 30, Township 17 South, Range 29 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 Continental A State #12 Injection Well located in Unit I, Section 30, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81204°, W 104.11911°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico Oil Conservation Division (NMOCD) Form C-141 Initial Report, the leak was discovered on April 28, 2012, and released approximately sixty (60) barrels of produced water due to a 2" nipple failure at the wellhead. COG personnel replaced the defective nipple. Approximately fifty-two (52) barrels of produced water were recovered from the spill area.

The spill initiated from the wellhead and migrated approximately 120' east across the well pad in a narrow stream measuring approximately 1.0 to 6" wide. In addition, the fluids migrated off the well pad along a two-track road impacting an area approximately 5' x 40'. The footprint of the spill is shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

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

Groundwater

No wells were located in Section 30. According to the NMOCD groundwater map, depth to groundwater in this area is approximately 175' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the 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

On May 30, 2012, Tetra Tech personnel inspected and sampled the spill area. A total of four (4) auger holes (AH-1 through AH-4) 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. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, all of the auger hole samples were below the RRAL for TPH and BTEX. Elevated chlorides were detected at the site. The area of AH-1 was vertically defined, with chloride concentrations declining to 349 mg/kg at 3-3.5' below surface. The areas of AH-2 and AH-4 were not vertically defined and showed chloride concentrations ranging from 3,730 mg/kg (AH-4, 0-1') to 10,400 mg/kg (AH-2, 2-2.5'). Due to a dense caliche formation, deeper samples could not be collected with a hand auger. Auger hole (AH-3) did not show a chloride impact to the soils.

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Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of AH-1, AH-2 and AH-4 will be excavated to depths of approximately 1.5' to 4.0' below surface. Once excavated, the areas of AH-2 and AH-4 will be trenched with a backhoe to define the vertical extents of the chloride impact. The soil samples will be field screened for chlorides to assess the impacted areas. Based on field screening results, the areas of AH-2 and AH-4 will excavated to the appropriate depths and backfilled with clean soil. The excavated soil will be hauled to proper disposal.

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. If the impacted soil is not accessible, the soil will be deferred unit the abandonment of the facility. If deeper impact is encountered and excavation cannot be achieved, the impacted soil will be capped with either 40 mil liner or clay material at 3.0' to 4.0' below surface and backfilled with soil to grade.

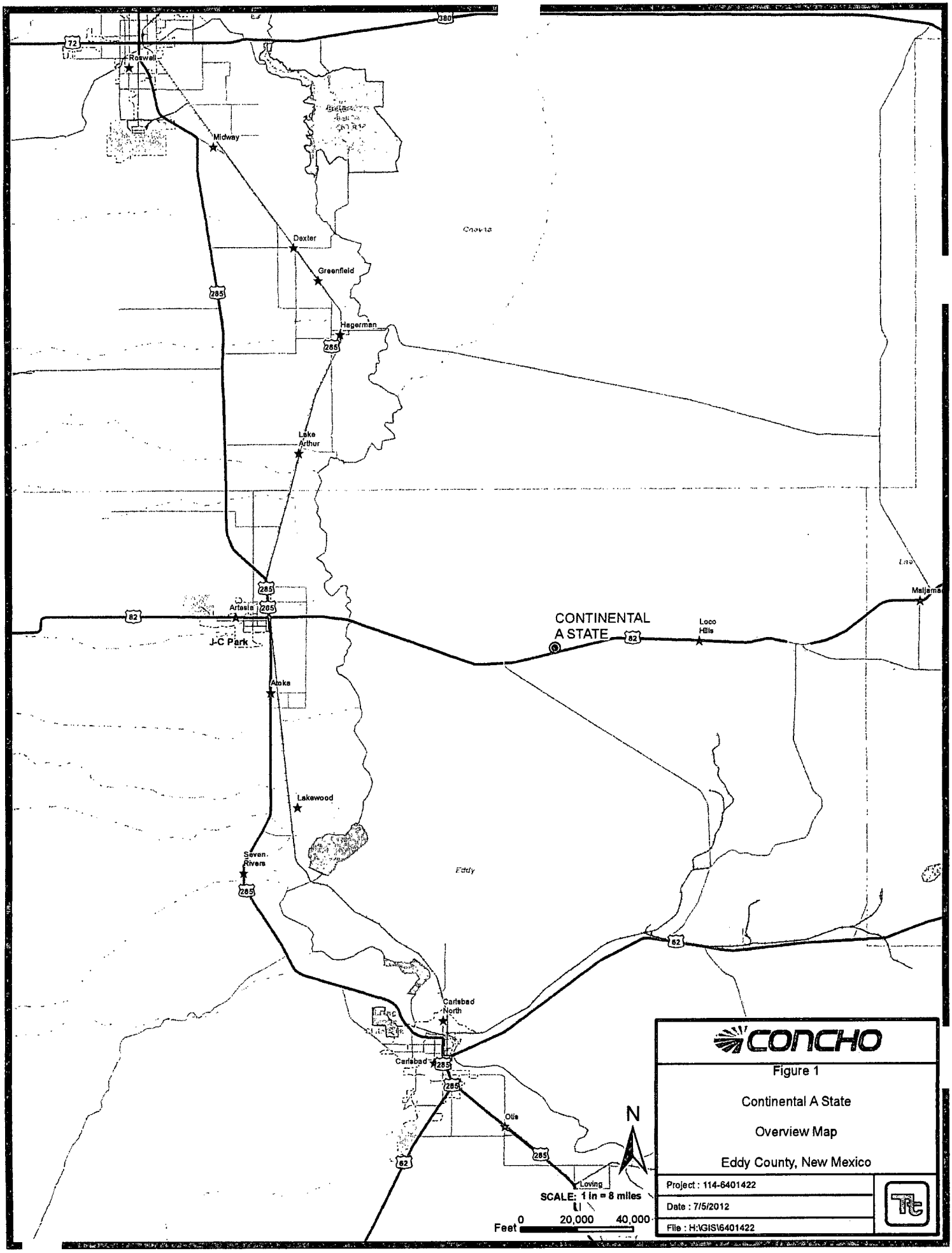
Upon completion, a final report will be submitted to the NMOCD. If you have any questions or require any additional information regarding this work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Senior Project Manager

cc: Pat Ellis – COG

Figures



CONCHO

Figure 1

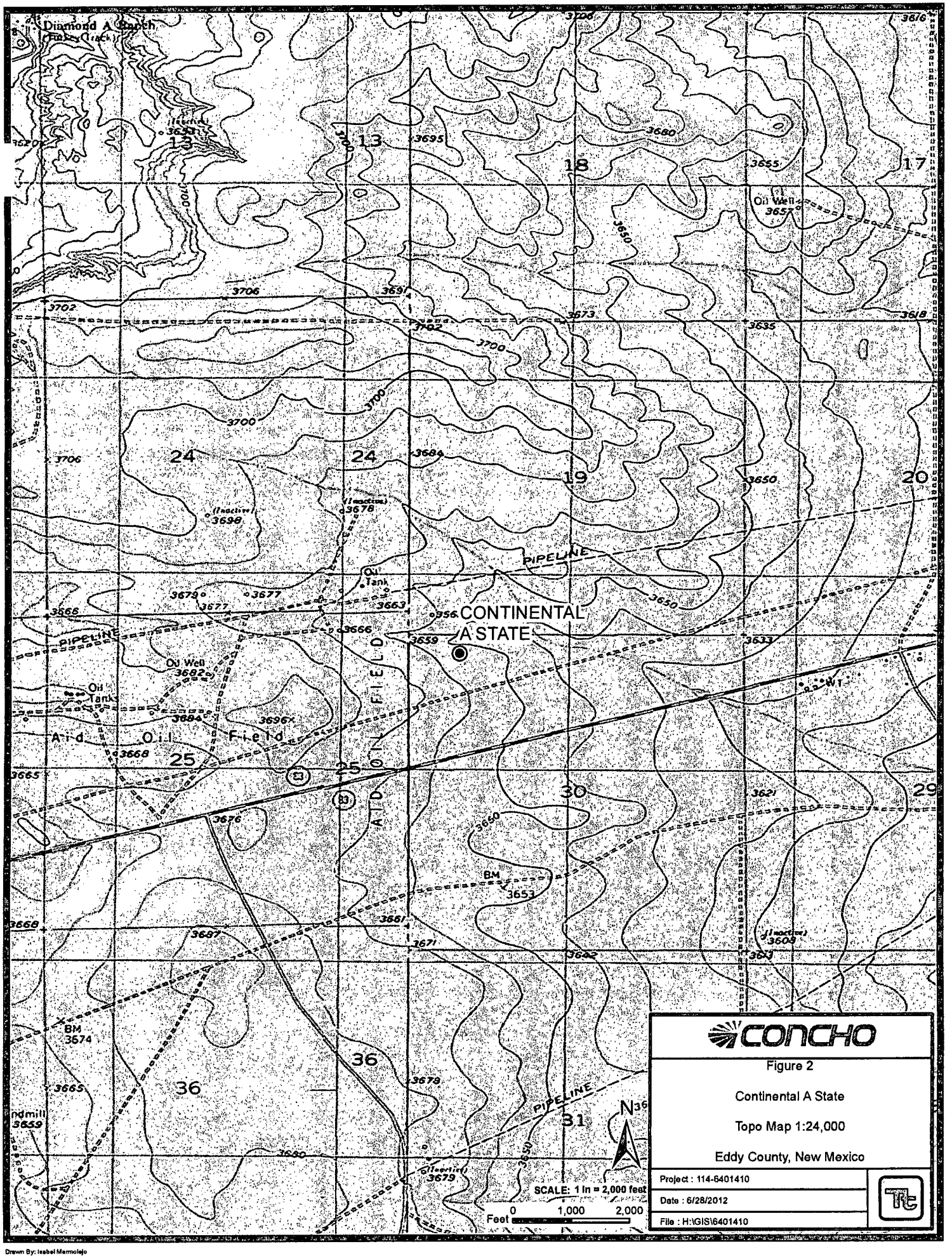
Continental A State

Overview Map

Eddy County, New Mexico

Project : 114-6401422	
Date : 7/5/2012	
File : H:\GIS\6401422	

Drawn By: Isabel Marmolejo



CONCHO

Figure 2

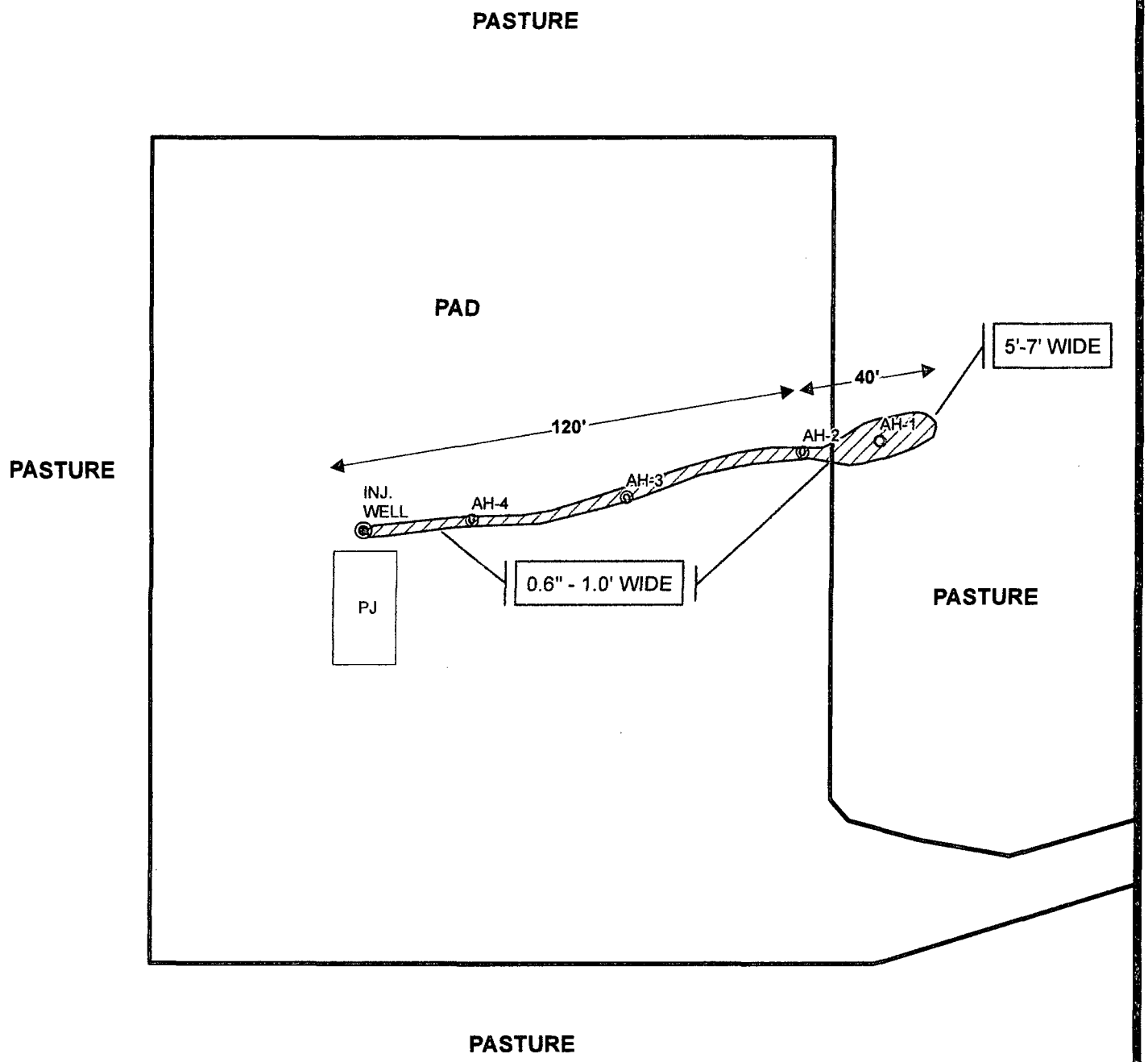
Continental A State

Topo Map 1:24,000

Eddy County, New Mexico

Project : 114-6401410	
Date : 6/28/2012	
File : H:\GIS\6401410	

Drawn By: Isabel Marmolejo



EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA

N

SCALE: 1 IN = 49 FEET

Feet 0 20 40

CONCHO

Figure 3

Continental A State

Spill Assessment Map

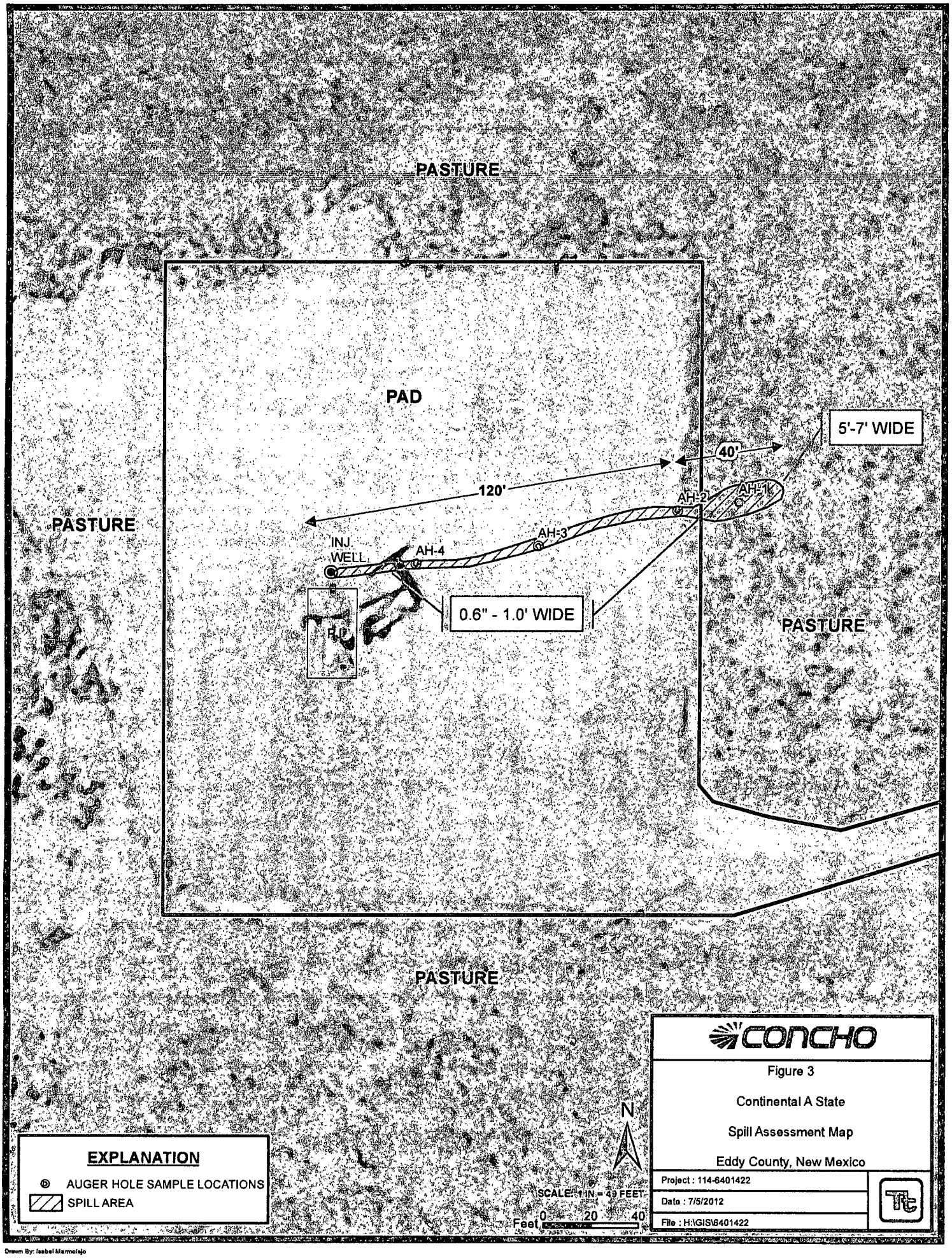
Eddy County, New Mexico

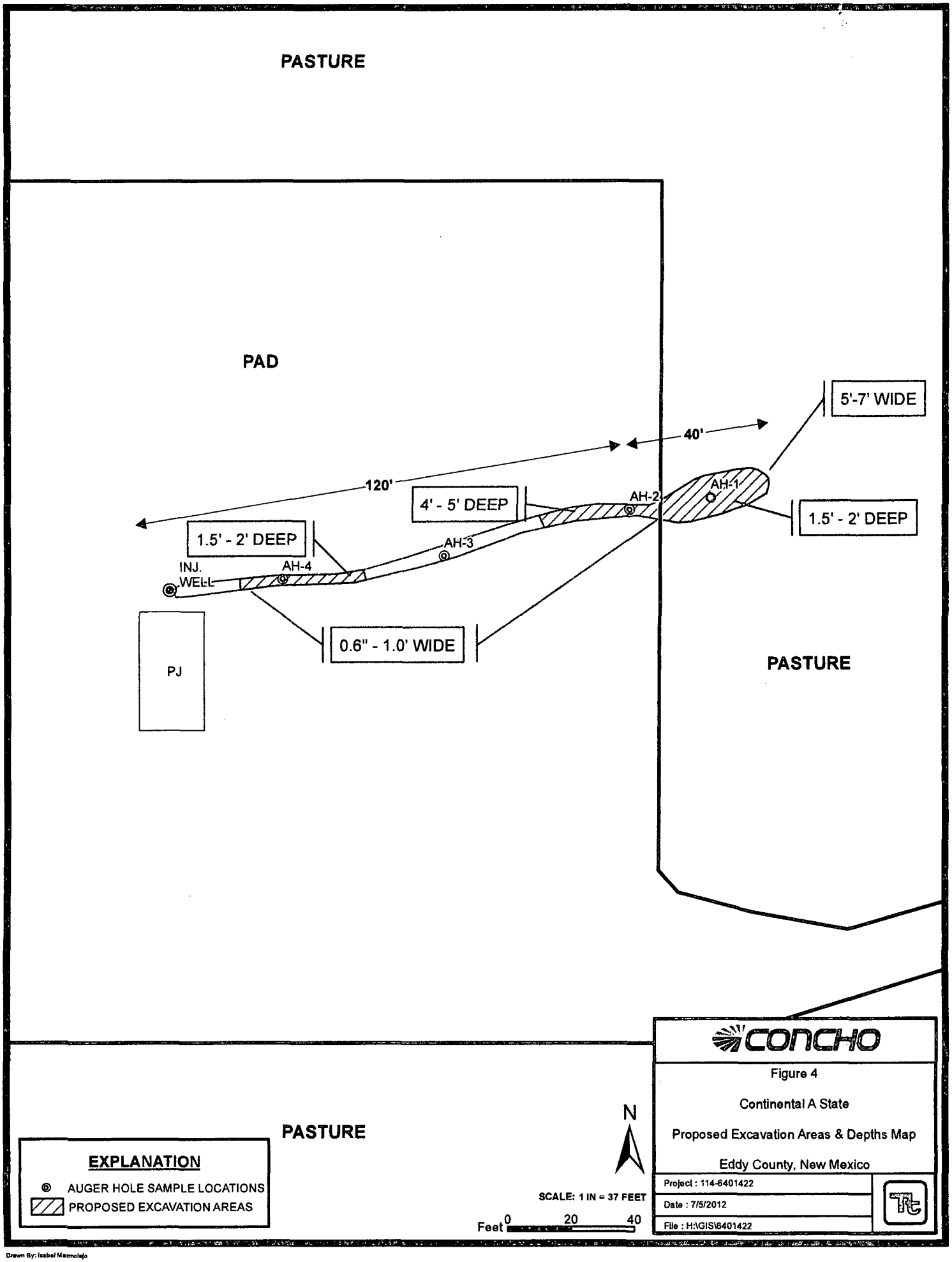
Project : 114-6401422

Date : 7/5/2012

File : H:\GIS\6401422

Drawn By: Isabel Marmolejo


PASTURE
PAD
5'-7' WIDE
40'
120'
AH-1
AH-2
AH-3
AH-4
INJ. WELL
0.6" - 1.0' WIDE
PASTURE
PASTURE
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
N
SCALE: 1 IN = 49 FEET
Feet 0 20 40
CONCHO
Figure 3
Continental A State
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401422
Date : 7/5/2012
File : H:\GIS\6401422
Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Continental A State #12 Injection Well
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	5/30/2012	0-1	X		<2.00	<50.0	<50.0	<0.0200	0.0538	<0.0200	0.0200	0.0738	8,380
	"	1-1.5	X		-	-	-	-	-	-	-	-	8,820
	"	2-2.5	X		-	-	-	-	-	-	-	-	988
	"	3-3.5	X		-	-	-	-	-	-	-	-	349
AH-2	5/30/2012	0-1	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	9,030
T	"	1-1.5	X		-	-	-	-	-	-	-	-	7,910
	"	2-2.5	X		-	-	-	-	-	-	-	-	10,400
	"	2.5-3.0	X		-	-	-	-	-	-	-	-	3,920
AH-3	5/30/2012	0-0.5	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	126
AH-4	5/30/2012	0-1	X		<2.00	636	636	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	3,730
T													

(--) Not Analyzed

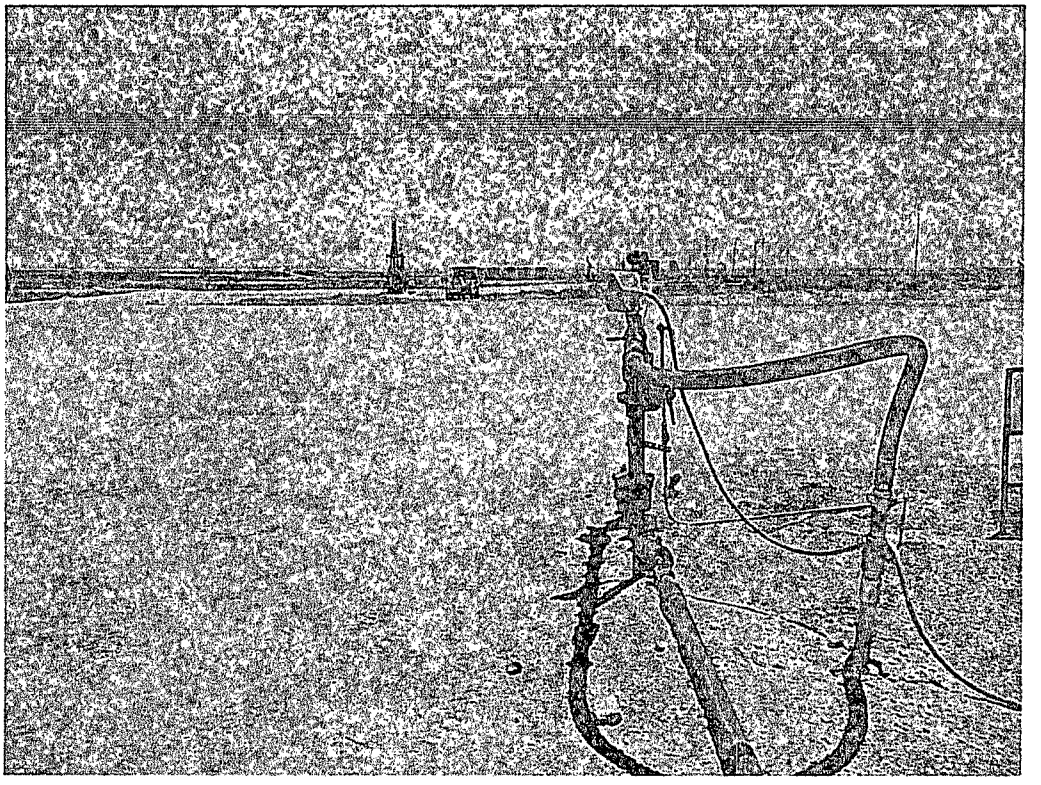
Proposed Excavation Depth

T Proposed Backhoe Trench to Define Extents

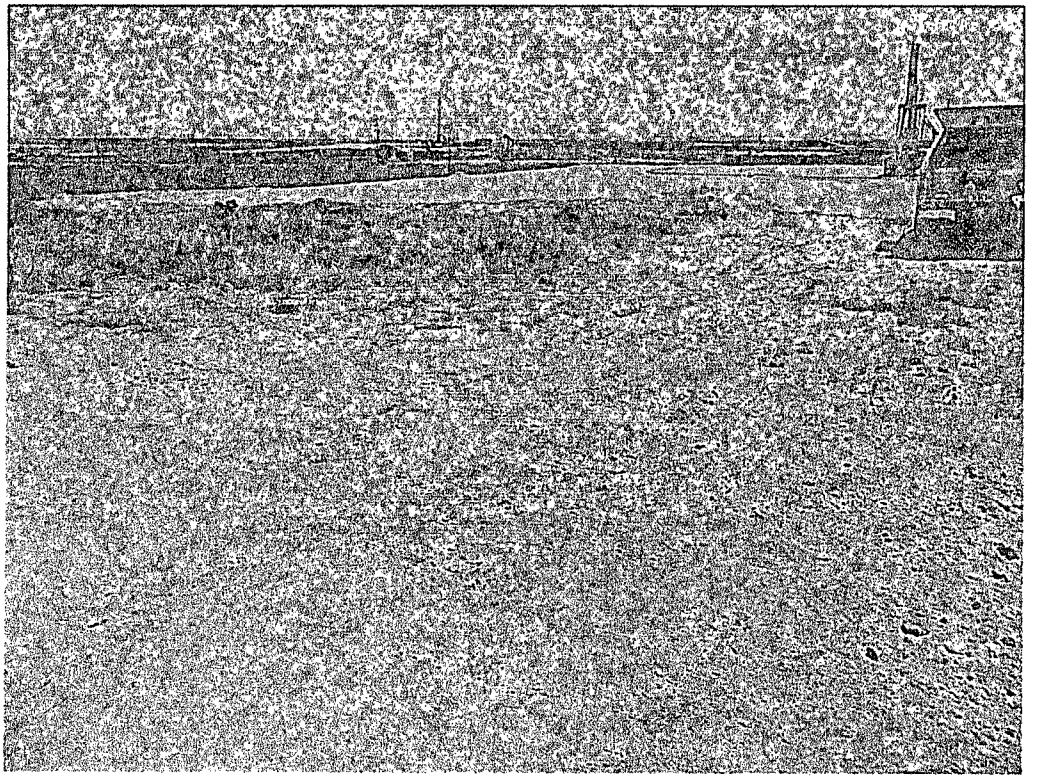
Photos

COG Operating LLC
Continental A State #12 Injection Well
Eddy County, New Mexico

TETRA TECH



View east – Photo near source and AH-4



View north east – Near AH-1 in pooled area along trespass road

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	Continental A State #12	Facility Type	Well location

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-35052

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	30	17S	29E	330	N	583	W	Eddy

Latitude 32 48.696 **Longitude** 104 07.157

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 60bbls	Volume Recovered 52bbls
Source of Release 2" nipple at wellhead	Date and Hour of Occurrence 04/28/2012	Date and Hour of Discovery 04/28/2012 8:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 04/28/12 6:59 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

A 2" nipple failed between the check valve and wellhead at the Continental A State #12 well location. The wellhead connections have been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 60bbls of produced water was released from the wellhead and we were able to recover 52bbls with a vacuum truck. The fluid streamed from the wellhead into the pasture where it collected in a 10' x 20' area. All free fluid has been picked up from the pasture and the pad location has been scraped. Tetra Tech will sample the spill site area in the pasture to delineate any possible contamination from the release and we will present the NMOCD with a work plan 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: 05/04/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Continental A State #12
Eddy County, New Mexico

16 South 28 East

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

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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **79**	23	24
30	29	28	27	26	25
31	32	33	34 **53**	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	23	24
30 **SITE**	29	28	27	26	25
31	32	33	34	35	36

17 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 28 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 **65**	36

18 South 29 East

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

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

☐ New Mexico State Engineers Well Reports
☐ USGS Well Reports
☐ Site Location - Continental A State #12

Appendix C

Summary Report

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

Report Date: June 11, 2012

Work Order: 12060447

Project Location: Eddy Co., NM
Project Name: COG/Continental A State #12 Inj. Well
Project Number: 114-6401422

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
299882	AH-1 0-1'	soil	2012-05-30	00:00	2012-06-04
299883	AH-1 1-1.5'	soil	2012-05-30	00:00	2012-06-04
299884	AH-1 2-2.5'	soil	2012-05-30	00:00	2012-06-04
299885	AH-1 3-3.5'	soil	2012-05-30	00:00	2012-06-04
299886	AH-2 0-1'	soil	2012-05-30	00:00	2012-06-04
299887	AH-2 1-1.5'	soil	2012-05-30	00:00	2012-06-04
299888	AH-2 2-2.5'	soil	2012-05-30	00:00	2012-06-04
299889	AH-2 2.5-3'	soil	2012-05-30	00:00	2012-06-04
299890	AH-3 0-.5'	soil	2012-05-30	00:00	2012-06-04
299891	AH-4 0-1'	soil	2012-05-30	00:00	2012-06-04

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
299882 - AH-1 0-1'	<0.0200	**0.0538**	<0.0200	**0.0200**	<50.0	<2.00 Qs
299886 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 Qs
299890 - AH-3 0-.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00 Qs
299891 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**636**	<2.00 Qs

Sample: 299882 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**8380**	mg/Kg	4

Sample: 299883 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**8820**	mg/Kg	4

Sample: 299884 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**988**	mg/Kg	4

Sample: 299885 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**349**	mg/Kg	4

Sample: 299886 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**9030**	mg/Kg	4

Sample: 299887 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**7910**	mg/Kg	4

Sample: 299888 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**10400**	mg/Kg	4

Sample: 299889 - AH-2 2.5-3'

Param	Flag	Result	Units	RL
Chloride		**3920**	mg/Kg	4

Sample: 299890 - AH-3 0-.5'

Param	Flag	Result	Units	RL
Chloride		**126**	mg/Kg	4

Sample: 299891 - AH-4 0-1'

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