SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	Burch Keely Unit #100 Flow line					
Company:	COG Operating LLC					
Section, Township and Range	Unit P	Sec. 18	T-17-S	R-30-E		
Lease Number:	API-30-015-04213					
County:	Eddy County					
GPS:	32.81382° N			104.00933° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	Intersection of 529 and Hagerman Cutoff, travel west on 82 1.6 mi, turn left at COG BKU Yard 300', left 0.2 mi, turn right 0.2 mi, turn left 0.2 mi to location					

Release Data:	
Date Released:	6/15/2012
Type Release:	Produced Fluids
Source of Contamination:	Steel line ruptured
Fluid Released:	30 bbls
Fluids Recovered:	15 bbls

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

August 13, 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., Burch Keely Unit #100, Unit P, Section 18, 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 Burch Keely Unit #100, Unit P, Section 18, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81382°, W 104.00933°. 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 June 15, 2012, and released approximately thirty (30) barrels of produced water from a rupture steel line (injection line) with fifteen (15) barrels of standing fluids recovered. The spill is located in the pasture south of the lease road and measured approximately 10' x 30'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 18. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 325' below surface. The average depth to groundwater map is shown in Appendix B.

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

Tetra Tech
1910 North Big Spring, Midland,TX 79705
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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 July 3, 2012, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was 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 location is shown on Figure 3.

Referring to Table 1, the samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected in the auger hole, with concentrations of 11,700 mg/kg at 0-1' and 10,000 mg/kg at 1-1.5' below surface. The chloride impact was not vertically defined at the site. Deeper samples could not be collected due to a dense caliche formation.

Work Plan

COG proposes to excavate the impacted soil to a minimum depth of 4.0' below surface. Due to the limited spill area, a backhoe trench will be installed to assess and attempt to vertically define the chloride impact at the site. Based on the field data, the spill area will be excavated to the appropriate depth. All of the excavated material will be transported offsite for proper disposal. Once final excavation depths are achieved, the site will be backfilled with clean material and brought to grade.

If the area shows a deeper impact to the soils and not vertically defined, the spill area will be excavated and capped with either a 40-mil liner or clay material at 4.0' below surface and backfilled with clean soil. If necessary, Tetra Tech will then oversee the installation of a single borehole to define the extents of the chloride impact.

Due to the location of the spill, the proposed excavation depths or deeper excavation may not be achieved due to wall cave ins, limited access, 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 until the abandonment of the facility.

TETRA TECH

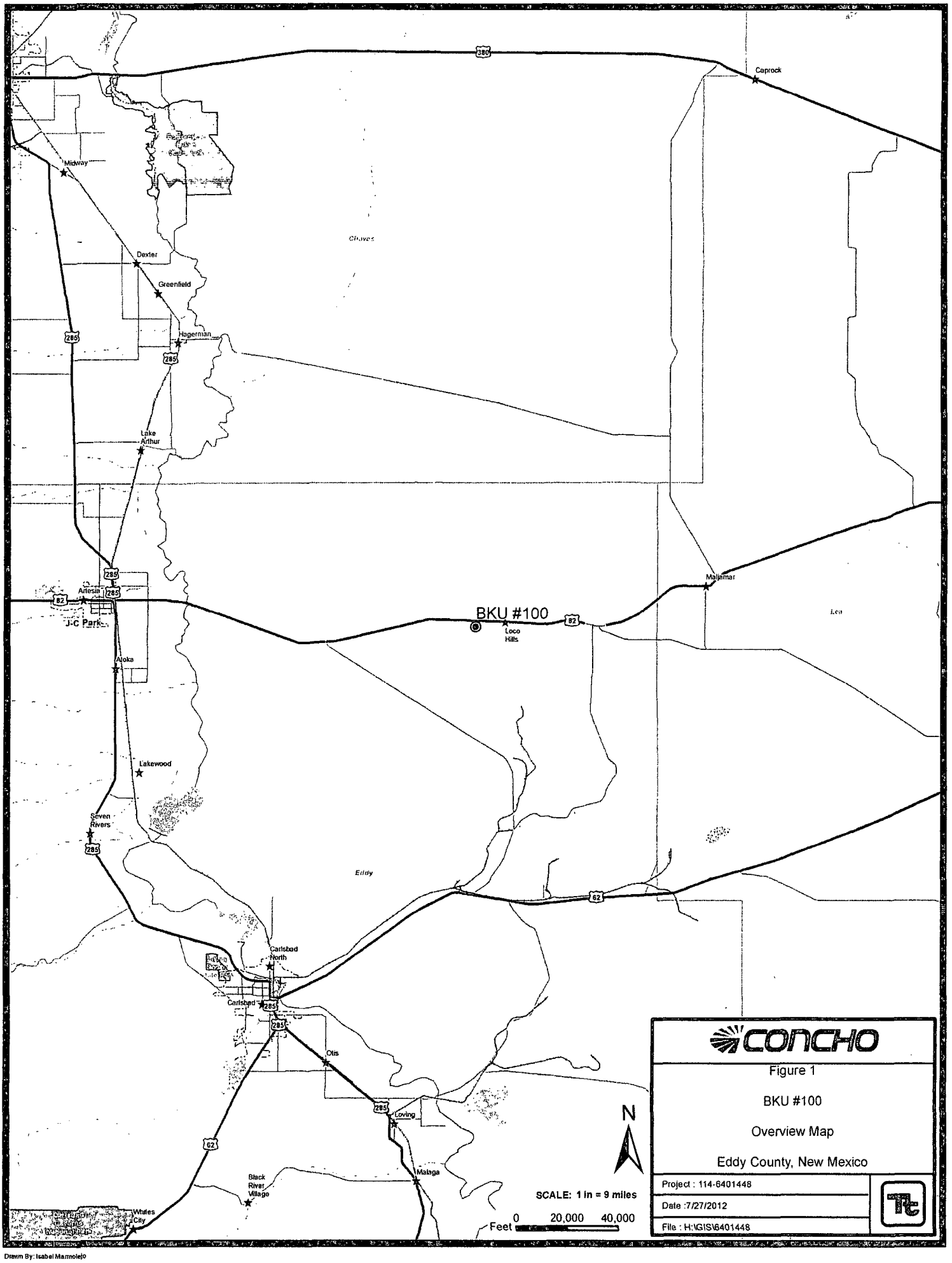
Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

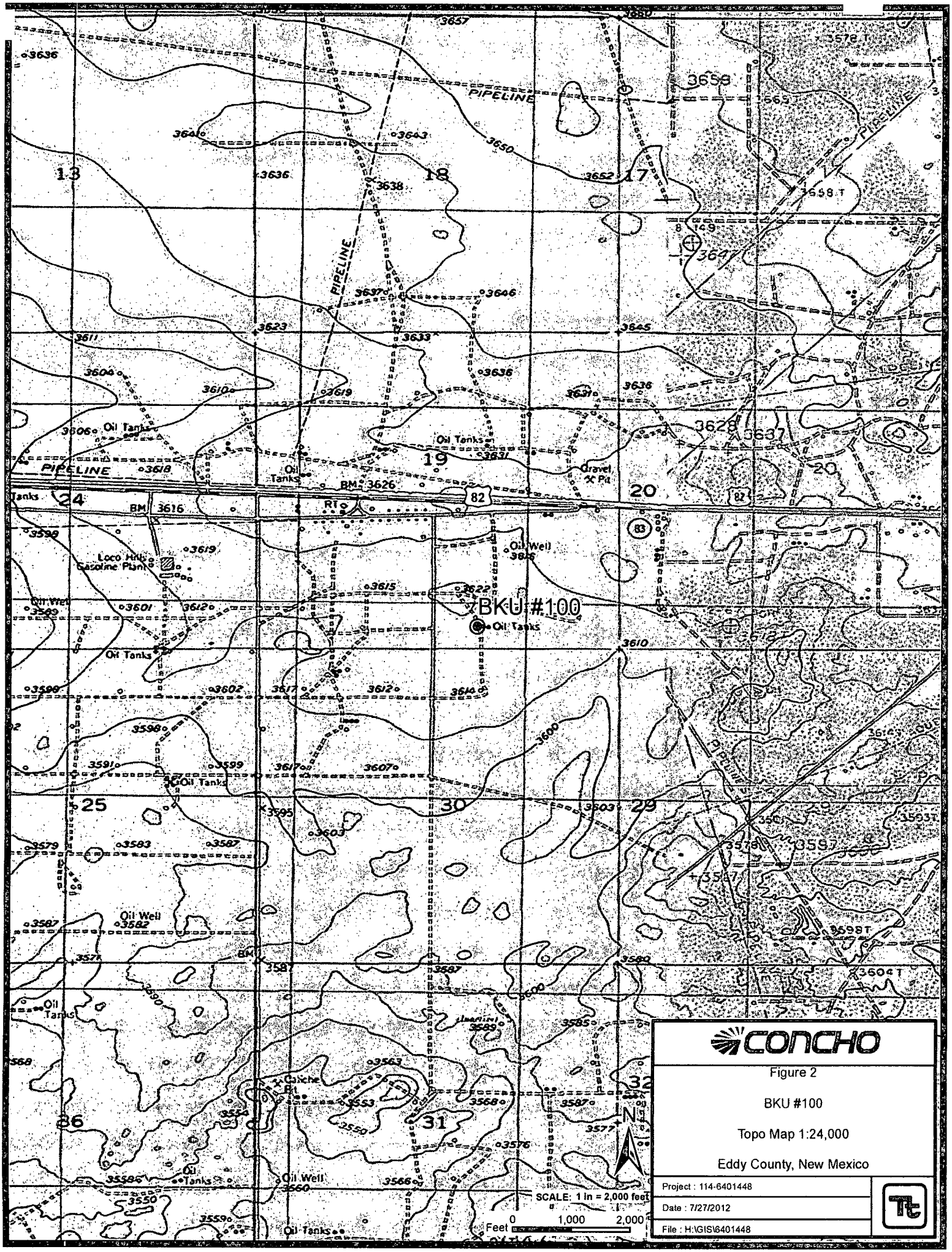
Ike Tavarez. PG
Senior Project Manager

cc: Pat Ellis – COG
cc: Terry Gregston - BLM

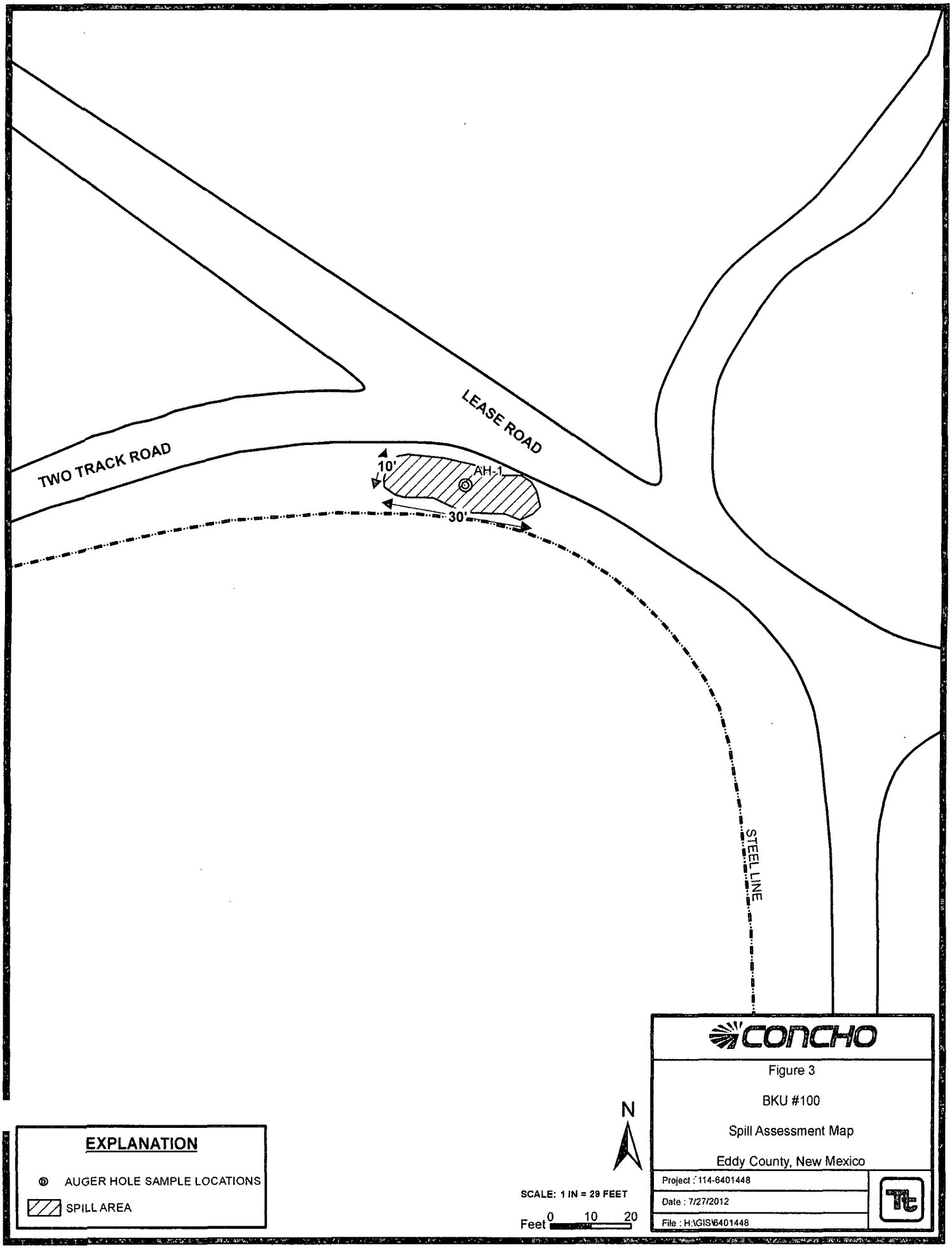
Figures

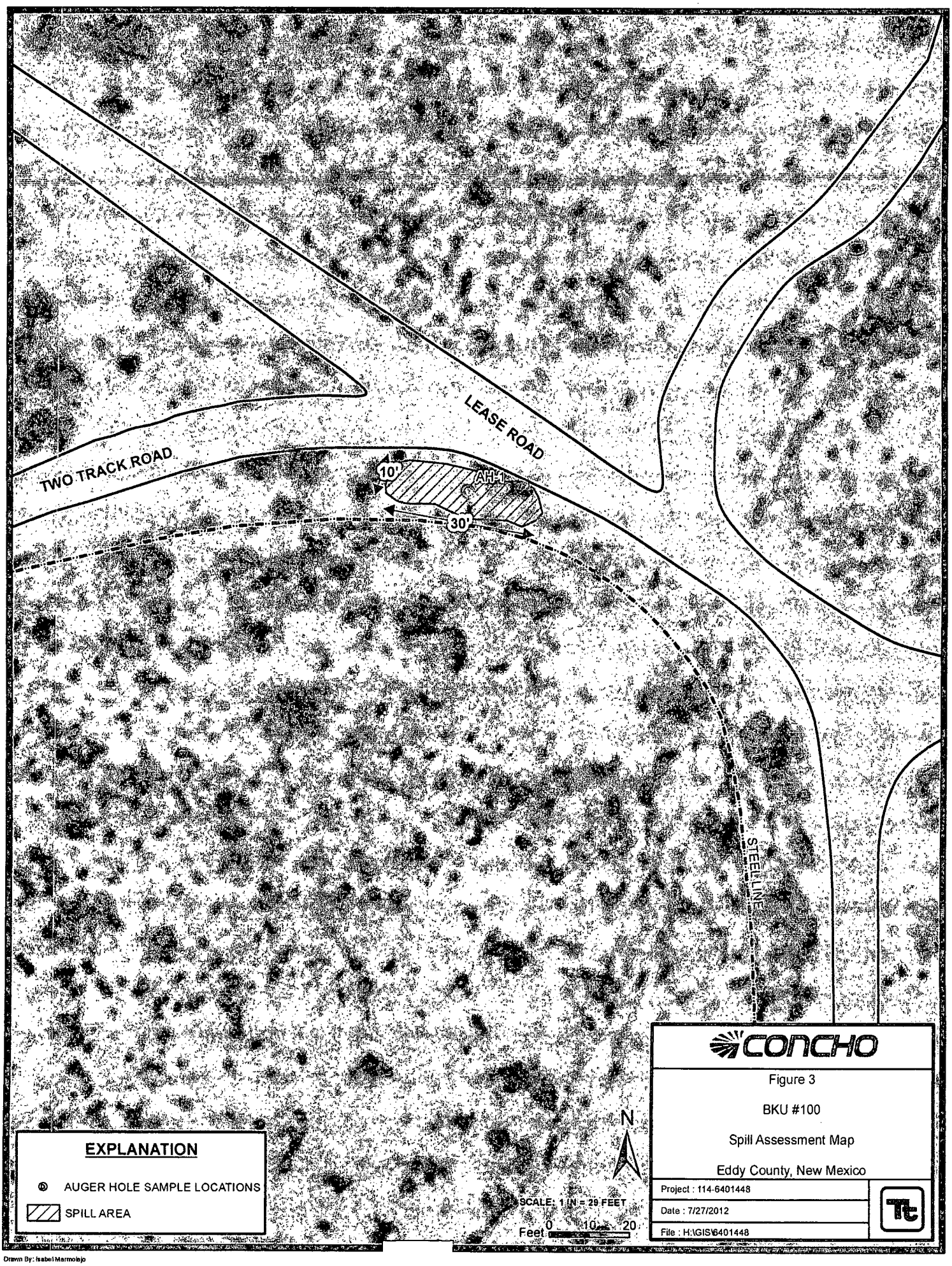


Drawn By: Isabel Marmolejo



Drawn By: Isabel Marmolejo


LEASE ROAD
TWO TRACK ROAD
10'
AH-1
30'
STEEL LINE
N
SCALE: 1 IN = 29 FEET
Feet 0 10 20
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
CONCHO
Figure 3
BKU #100
Spill Assessment Map
Eddy County, New Mexico
Project : 114-6401448
Date : 7/27/2012
File : H:\GIS\6401448
Drawn By: Isabel Marmolejo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Tables

Table 1
COG Operating LLC.
BKU #100
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	7/3/2012	0-1	X		66.2	<250	66.2	0.223	0.259	0.410	0.944	1.84	11,700
	"	1-1.5	X		-	-	-	-	-	-	-	-	10,000

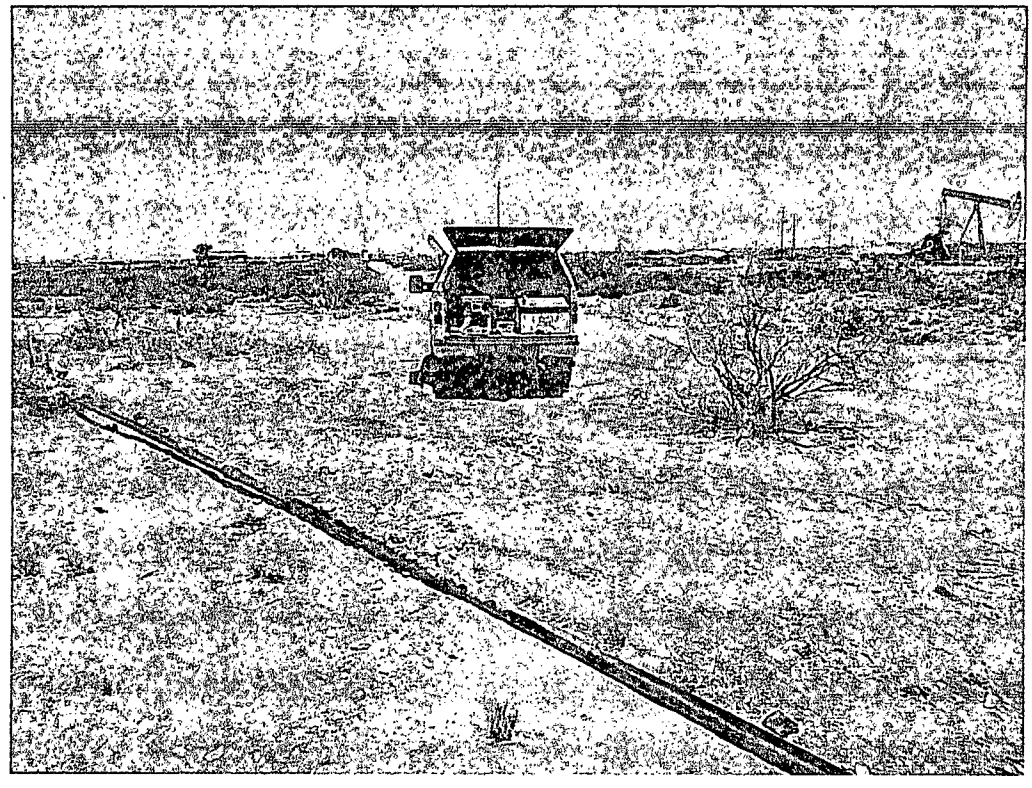
(-) Not Analyzed

[ ] Proposed Excavation Depth

Photos

COG Operating LLC
Burch Keely Unit #100
Eddy County, New Mexico

TETRA TECH



View north – Steel line (source) AH-1

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	Burch Keely Unit #100	Facility Type	Injection line

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-015-04213

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	18	17S	30E					Eddy

Latitude 32 48.877 **Longitude** 104 00.563

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 30bbls	Volume Recovered 15bbls
Source of Release Steel line	Date and Hour of Occurrence 06/15/2012	Date and Hour of Discovery 06/15/2012 10:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher-OCD	
By Whom? Michelle Mullins	Date and Hour 06/16/2012 6:15 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.*

The Burch Keely Unit #100 steel line ruptured roughly 50 yards from the Burch Keely Unit #279 well. We have replaced the faulty joint of pipe with a new joint.

Describe Area Affected and Cleanup Action Taken.*

Initially 30bbls of produced water was released from the steel line and we were able to recover 15bbls with a vacuum truck. The release was contained by the roadway and measured and area of 31' x 11' in the pasture. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM 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: 06/22/2012 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - BKU #100 Steel line
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 **SITE**	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 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: July 20, 2012

Work Order: 12070517

Project Location: Eddy Co., NM
Project Name: COG/BKU #100
Project Number: 114-6401448

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
302733	AH-1 0-1'	soil	2012-07-03	00:00	2012-07-05
302734	AH-1 1-1.5"	soil	2012-07-03	00:00	2012-07-05

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
302733 - AH-1 0-1'	**0.223**	**0.259**	**0.410**	**0.944**	<250 Qs	**66.2** Qs

Sample: 302733 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**11700**	mg/Kg	4

Sample: 302734 - AH-1 1-1.5"

Param	Flag	Result	Units	RL
Chloride		**10000**	mg/Kg	4