

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Polaris B	
Company:	COG Operating LLC	
Section, Township and Range	Sec 17 - T-17S - R-30E	
Lease Number:	NMLC-029342-B	
County:	Eddy County	
GPS:	32.83518° N	103.99529° W
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From Hwy 82 and CR-217 in Loco Hills, travel north on 217 0.9 mi, turn left 0.5 mi, right 0.1 mi, left 0.1 mi to location	

Release Data:

Date Released:	5/27/2011
Type Release:	Oil
Source of Contamination:	Oil tank overflow - equalizer valve failed
Fluid Released:	20 bbls
Fluids Recovered:	18 bbls

Official Communication:

Name:	Pat Ellis		Kim Dorey
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) 631-0348
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		kim.dorey@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	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

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OCT 11 2011

NMOCD ARTESIA



TETRA TECH

August 10, 2011

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., Polaris B Federal Tank Battery, Section 17, 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 Polaris B Federal Tank Battery located in Section 17, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.83518°, W 103.99529°. 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 27, 2011, and released approximately twenty (20) barrels of oil due a tank overflow caused by an equalizer valve failure. To alleviate the problem, COG personnel replaced the damaged valve. Eighteen (18) barrels of standing fluids were recovered. The spill initiated from the tank and impacted an area approximately 50' x 85'. The entire spill remained within the facility berms. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 17. According to the NMOCD Eddy County groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The groundwater information is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.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 July 14, 2011, Tetra Tech personnel inspected and sampled the spill area. A total of five (5) auger holes (AH-1 through AH-5) were installed using a stainless steel hand auger to assess the impacted soils. Select 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 results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, the samples from AH-1, AH-2, and AH-3 were all below the RRAL for TPH and BTEX. However, auger holes (AH-4 and AH-5) were not vertically defined and either exceeded the RRAL for TPH, Benzene or Total BTEX at depths of 0-1' and 1-1.5' below surface.

Auger holes (AH-1 and AH-5) did show chloride concentrations declining with depth, with bottom auger hole samples of 1,580 mg/kg at 3-3.5' and 1,520 mg/kg at 1-1.5', respectively.

Work Plan

COG proposes to removal of impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of AH-1 will be excavated to a depth of approximately 2.0' below surface. Once completed, a backhoe trench will be installed to define the vertical extent of the chloride impact. In addition, the areas of AH-4 and AH-5 will be excavated approximately 2.0' to 3.0' below surface to remove the hydrocarbon impacted soil above the



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RRAL. Once excavated to the appropriate depths, bottom hole confirmation samples will be collected for TPH and BTEX analysis. All of the excavated soil will be transported to proper disposal. Based on the results, the excavations will be backfilled with clean soil.

Based on location of the spill area, deeper excavation of the spill may not be achieve due to proximity of oil and gas equipment, structures or lines, which may cause cave ins and safety concerns for onsite equipment and personnel. As such, Tetra Tech will excavate the soils to the maximum extent practicable. In addition, the deeper chloride impact encountered does not appear an environmental concern, with groundwater depth being greater than 300' below surface in the area.

If you have any questions or comments concerning the assessment or the proposed work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavaréz, PG
Senior Project Manager

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

Figures

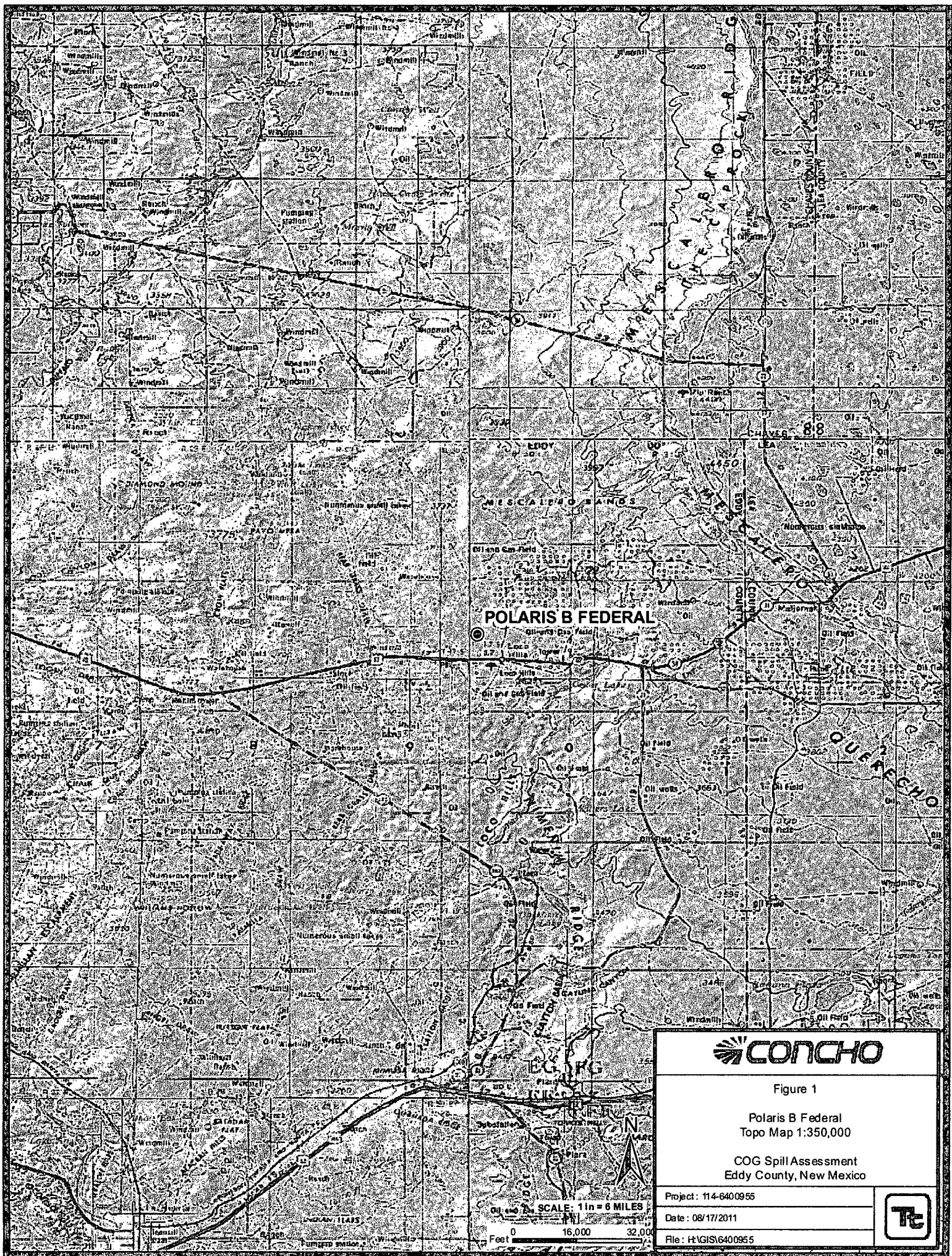


Figure 1

Polaris B Federal
Topo Map 1:350,000

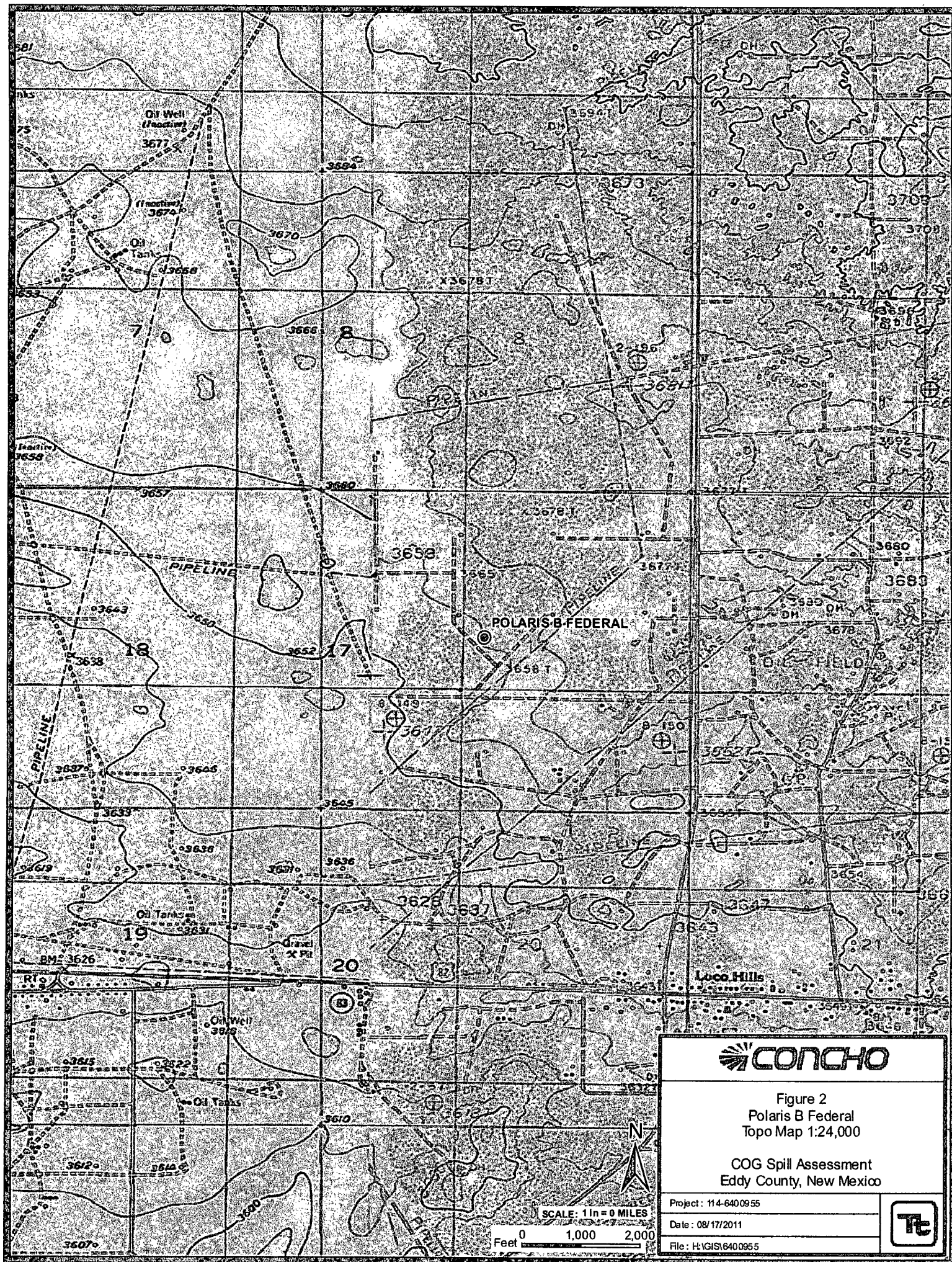
COG Spill Assessment
Eddy County, New Mexico

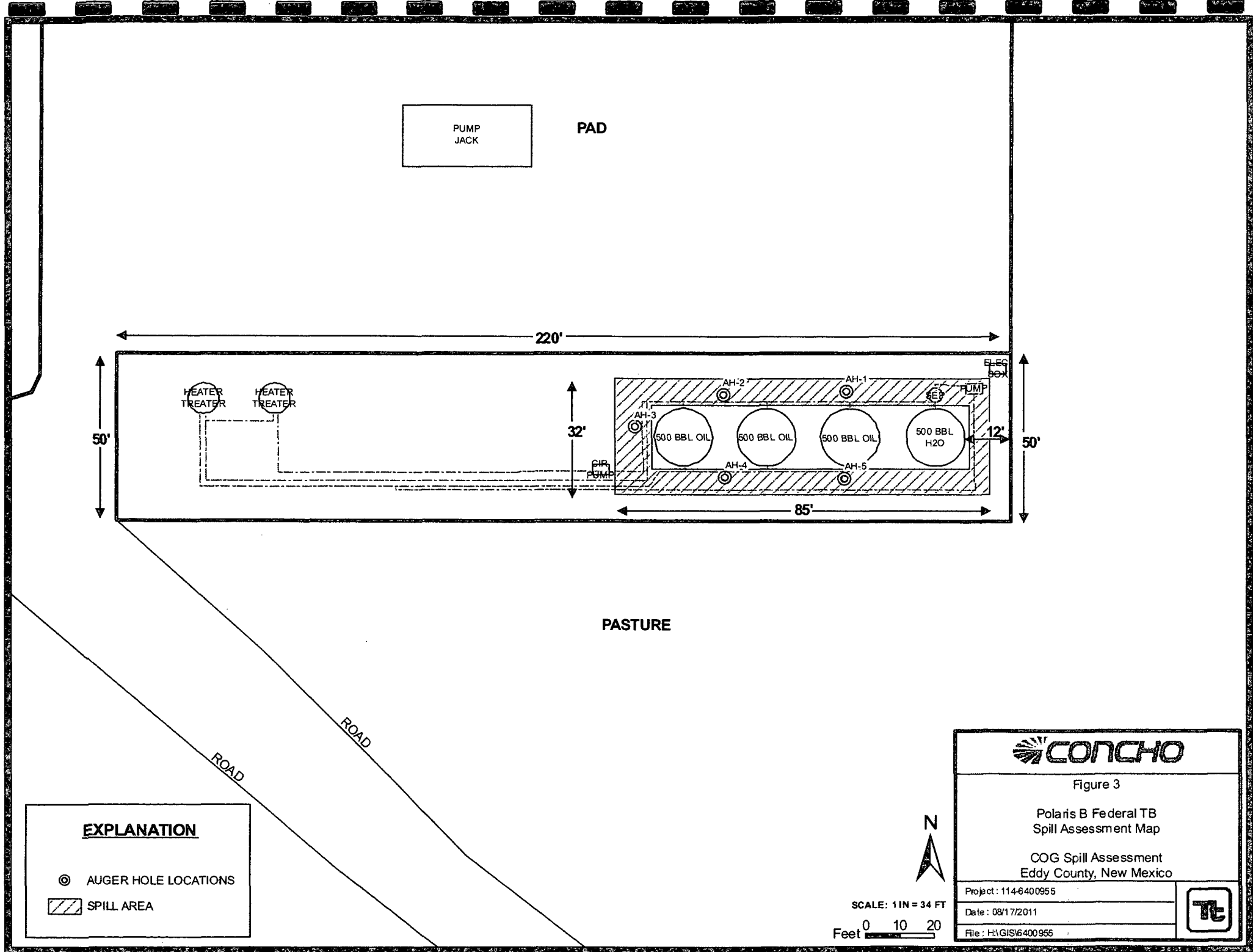
Project: 114-6400955

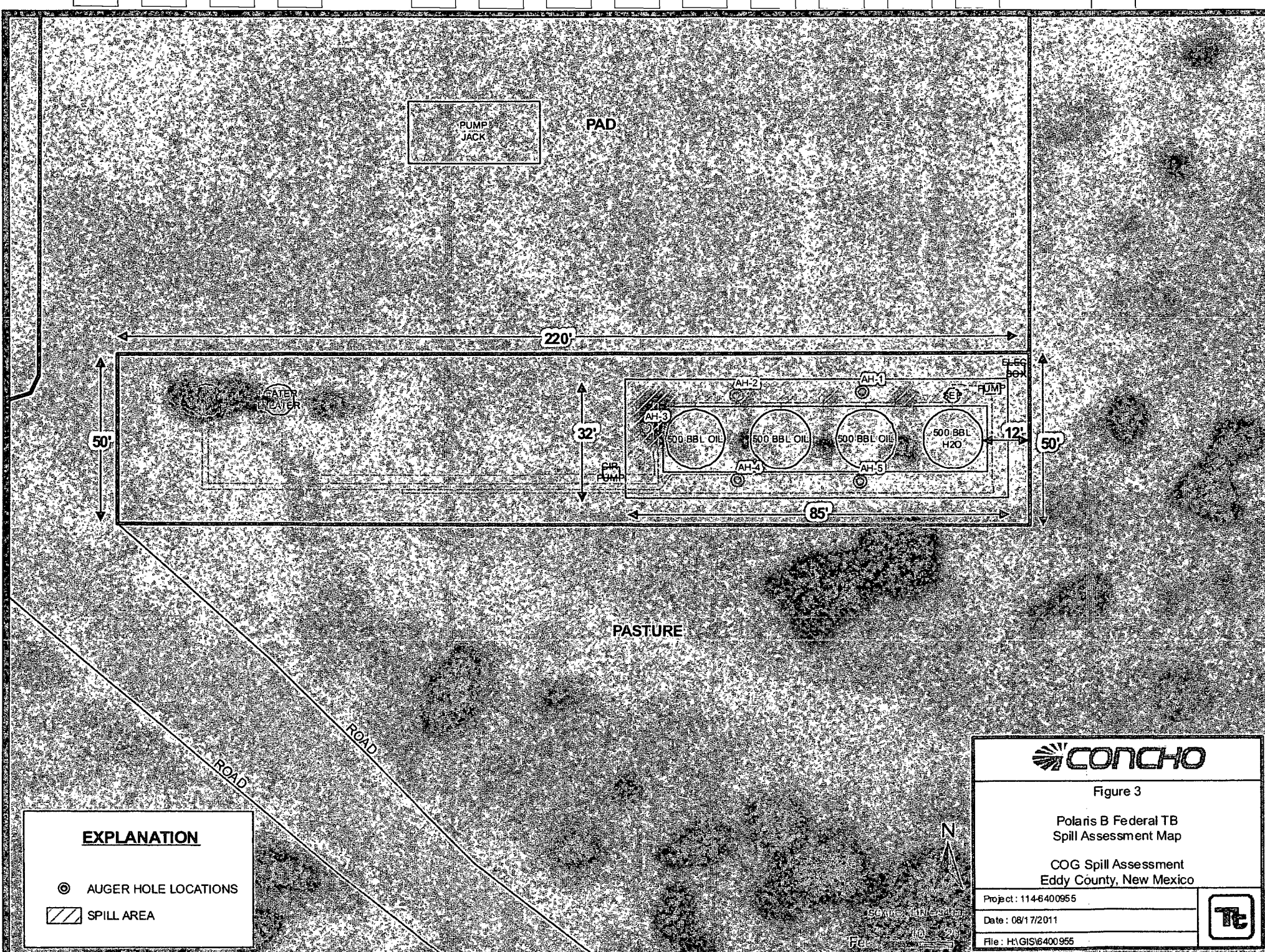
Date: 08/17/2011

File: H:\GIS\6400955









EXPLANATION

- ⊙ AUGER HOLE LOCATIONS
- ▨ SPILL AREA



Figure 3

Polaris B Federal TB
Spill Assessment Map

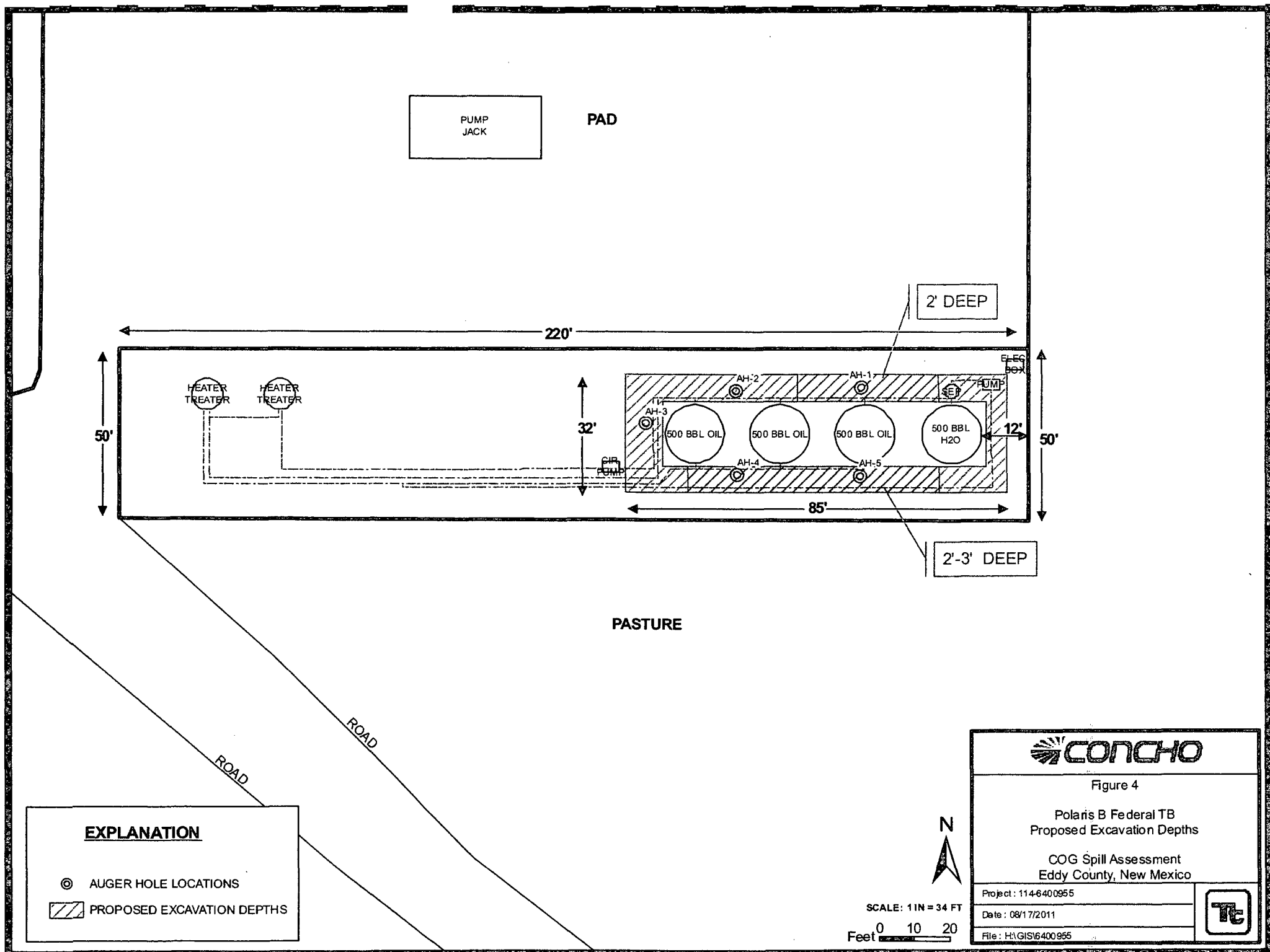
COG Spill Assessment
Eddy County, New Mexico

Project : 114-6400955

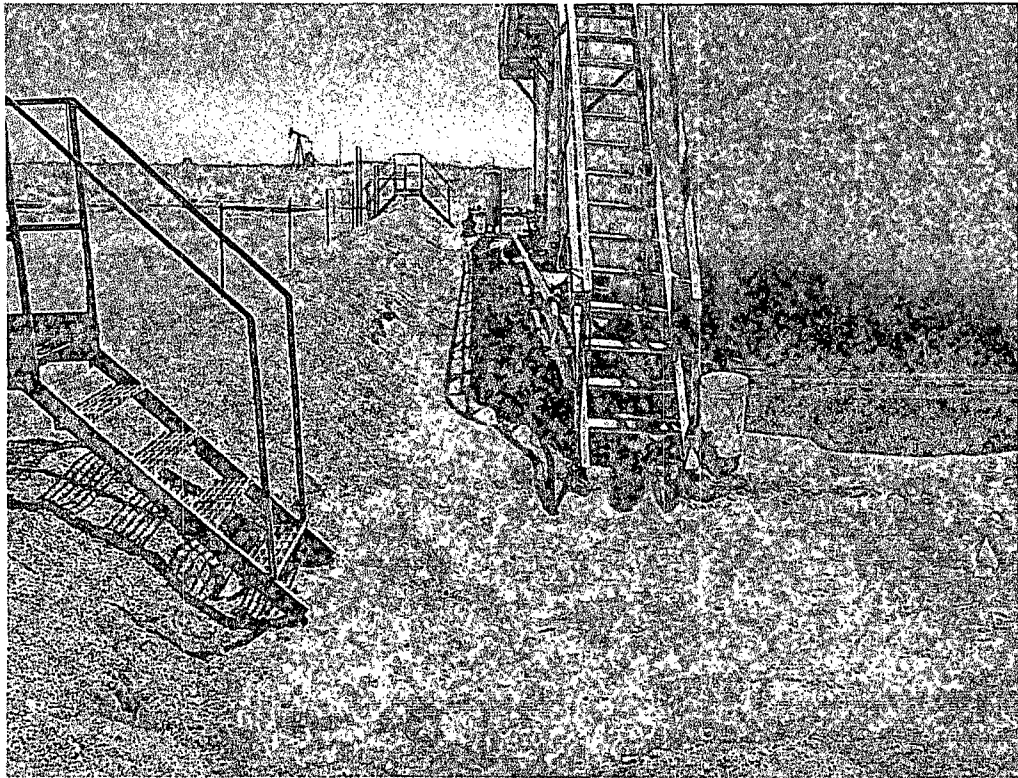
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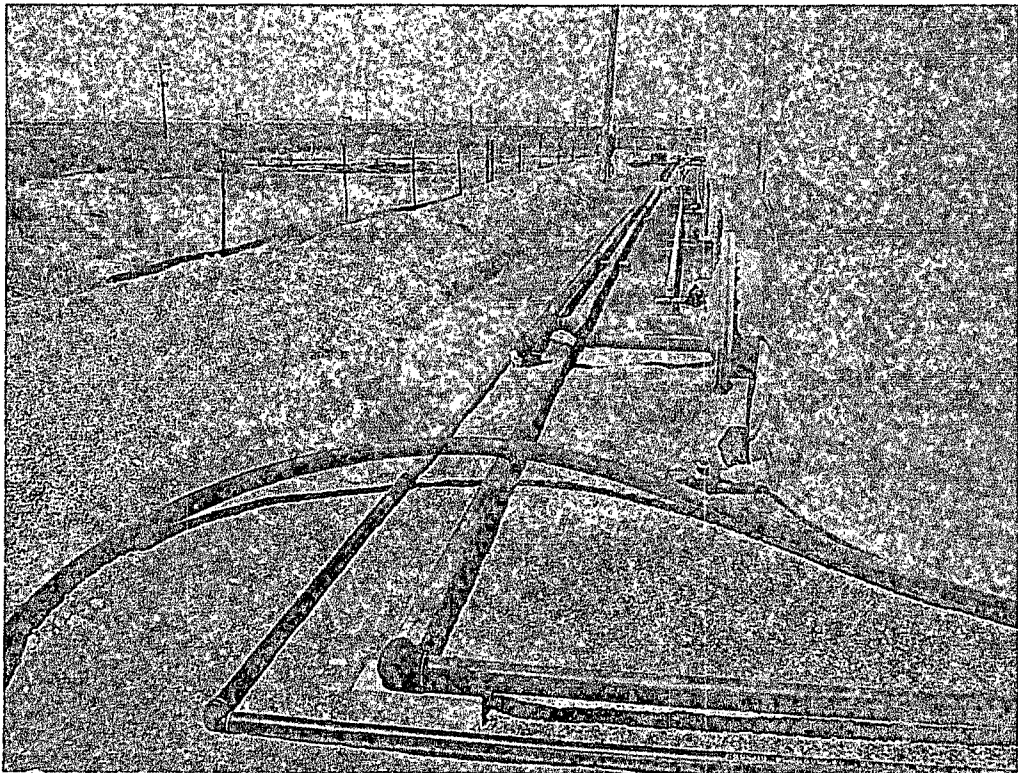




Photos



North side of tank battery (AH-1, AH-2 and AH-3)



South side of tank battery (AH-4 and AH-5)

Tables

Table 1
COG Operating LLC.
Polaris B Federal
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	7/14/2011	0-1'	X		197	213	410	<0.400	<0.400	1.66	4.49	6.15	4,190
	"	1-1.5'	X		-	-	-	-	-	-	-	-	3,890
	"	2-2.5'	X		-	-	-	-	-	-	-	-	2,030
	"	3-3.5'	X		-	-	-	-	-	-	-	-	1,580
AH-2	7/14/2011	0-1'	X		150	115	265	<0.0200	<0.0200	<0.0200	0.654	0.654	<200
	"	1-1.5'	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5'	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5'	X		-	-	-	-	-	-	-	-	<200
	"	4-4.5'	X		-	-	-	-	-	-	-	-	<200
AH-3	7/14/2011	0-1'	X		281	320	601	<0.400	2.4	4.21	8.58	15.19	<200
		1-1.5'	X		-	-	-	-	-	-	-	-	<200
		2-2.5'	X		-	-	-	-	-	-	-	-	<200
		3-3.5'	X		-	-	-	-	-	-	-	-	<200
		4-4.5'	X		-	-	-	-	-	-	-	-	257
		5-5.5'	X		-	-	-	-	-	-	-	-	<200
AH-4	7/14/2011	0-1'	X		530	7,700	8,230	3.25	22.4	1.63	33	60.28	549
		1-1.5'	X		7,310	10,400	17,710	95.6	342	193	220	850.6	311
AH-5	7/14/2011	0-1'	X		2,020	6,930	8,950	12.9	133	110	123	378.9	1,750
		1-1.5'	X		4,360	4,990	9,350	27.7	184	121	138	470.7	1,520

(--) Not Analyzed

 Proposed Excavation Depths

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	Polaris B	Facility Type	Tank Battery

Surface Owner	Federal	Mineral Owner		Lease No.	NMLC-029342-B
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LOCATION OF RELEASE

Unit Letter	Section 17	Township 17S	Range 30E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude 32 50.111 Longitude 103 59.722

NATURE OF RELEASE

Type of Release	Oil	Volume of Release	20bbls	Volume Recovered	18bbls
Source of Release	Oil tank	Date and Hour of Occurrence	05/27/2011	Date and Hour of Discovery	05/27/2011 4:00 a.m.

Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?
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By Whom?	Date and Hour
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Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.
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If a Watercourse was Impacted, Describe Fully.*

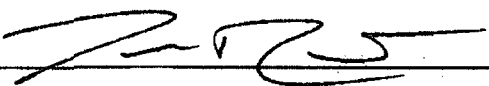
Describe Cause of Problem and Remedial Action Taken.*

The equalizer valve between tanks failed causing the oil tank to overflow. The valve has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 20bbls of oil was released from the oil tanks and we were able to recover 18bbls with a vacuum truck. The tanks have been steamed and all free fluid has been recovered. The entire release was contained inside the dike walls of the facility. Noticeable contaminated gravel and soil has been removed. The closest well location to the release site is the Polaris B #1, (API#) 30-015-31565. 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 <input type="checkbox"/>
Date: 06/01/2011	Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Polaris B Federal
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	20	21	22	23	24
110	30	29	28	27	26
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
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			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	210	28	27	26
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

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	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
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
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Site Location - Electra Federal #5 Site

Appendix C

Summary Report

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

Report Date: July 22, 2011

Work Order: 11071511

Project Location: Eddy Co., NM
Project Name: COG/Polaris B Federal
Project Number: 114-6400955

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
272027	AH-1 0-1	soil	2011-07-14	00:00	2011-07-15
272028	AH-1 1-1.5	soil	2011-07-14	00:00	2011-07-15
272029	AH-1 2-2.5	soil	2011-07-14	00:00	2011-07-15
272030	AH-1 3-3.5	soil	2011-07-14	00:00	2011-07-15
272031	AH-2 0-1	soil	2011-07-14	00:00	2011-07-15
272032	AH-2 1-1.5	soil	2011-07-14	00:00	2011-07-15
272033	AH-2 2-2.5	soil	2011-07-14	00:00	2011-07-15
272034	AH-2 3-3.5	soil	2011-07-14	00:00	2011-07-15
272035	AH-2 4-4.5	soil	2011-07-14	00:00	2011-07-15
272036	AH-3 0-1	soil	2011-07-14	00:00	2011-07-15
272037	AH-3 1-1.5	soil	2011-07-14	00:00	2011-07-15
272038	AH-3 2-2.5	soil	2011-07-14	00:00	2011-07-15
272039	AH-3 3-3.5	soil	2011-07-14	00:00	2011-07-15
272040	AH-3 4-4.5	soil	2011-07-14	00:00	2011-07-15
272041	AH-3 5-5.5	soil	2011-07-14	00:00	2011-07-15
272042	AH-4 0-1	soil	2011-07-14	00:00	2011-07-15
272043	AH-4 1-1.5	soil	2011-07-14	00:00	2011-07-15
272044	AH-5 0-1	soil	2011-07-14	00:00	2011-07-15
272045	AH-5 1-1.5	soil	2011-07-14	00:00	2011-07-15

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
272027 - AH-1 0-1	<0.400	<0.400	1.66	4.49	213	197
272031 - AH-2 0-1	<0.0200	<0.0200	<0.0200	0.654	115	150
272036 - AH-3 0-1	<0.400	2.40	4.21	8.58	320	281
272042 - AH-4 0-1	3.25	22.4	1.63	33.0	7700	530
272043 - AH-4 1-1.5	95.6	342	193	220	10400	7310
272044 - AH-5 0-1	12.9	133	110	123	6930	2020

continued ...

... continued

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
272045 - AH-5 1-1.5	27.7	184	121	138	4990	4360

Sample: 272027 - AH-1 0-1

Param	Flag	Result	Units	RL
Chloride		4190	mg/Kg	4

Sample: 272028 - AH-1 1-1.5

Param	Flag	Result	Units	RL
Chloride		3890	mg/Kg	4

Sample: 272029 - AH-1 2-2.5

Param	Flag	Result	Units	RL
Chloride		2030	mg/Kg	4

Sample: 272030 - AH-1 3-3.5

Param	Flag	Result	Units	RL
Chloride		1580	mg/Kg	4

Sample: 272031 - AH-2 0-1

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

Sample: 272032 - AH-2 1-1.5

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

Sample: 272033 - AH-2 2-2.5

continued ...

sample 272033 continued ...

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

Sample: 272034 - AH-2 3-3.5

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

Sample: 272035 - AH-2 4-4.5

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

Sample: 272036 - AH-3 0-1

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

Sample: 272037 - AH-3 1-1.5

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

Sample: 272038 - AH-3 2-2.5

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

Sample: 272039 - AH-3 3-3.5

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

Sample: 272040 - AH-3 4-4.5

Param	Flag	Result	Units	RL
Chloride		257	mg/Kg	4

Sample: 272041 - AH-3 5-5.5

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

Sample: 272042 - AH-4 0-1

Param	Flag	Result	Units	RL
Chloride		549	mg/Kg	4

Sample: 272043 - AH-4 1-1.5

Param	Flag	Result	Units	RL
Chloride		311	mg/Kg	4

Sample: 272044 - AH-5 0-1

Param	Flag	Result	Units	RL
Chloride		1750	mg/Kg	4

Sample: 272045 - AH-5 1-1.5

Param	Flag	Result	Units	RL
Chloride		1520	mg/Kg	4
