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	Prohibition Federal Unit #2 SWD	Facility Type	SWD

Surface Owner Federal	Mineral Owner	Lease No. (API#) 30-025-31716

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	11	22S	32E	1980	SOUTH	2080	WEST	Lea

Latitude 32.404438 Longitude 103.6473011

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 20bbls	Volume Recovered 10bbls
Source of Release Triplex Pump	Date and Hour of Occurrence 07/17/2010	Date and Hour of Discovery 07/17/2010 10:00 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.*

Union on triplex threads were cut and failed. All of the fittings on the triplex were replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 20bbls of produced water was released from the triplex pump and we were able to recover 10bbls. The dimensions of the spill site measured an area of 1' x 100', originating around the pump and following the path of a lease road. The chloride concentration of the produced water in this area is 135,000 mg/l. 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 BLM/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: 07/17/2010	Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

GW 325'

SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	MC Federal #37 (Well Site)					
Company:	COG Operating LLC					
Section, Township and Range	Unit N	Sec 21	T17S	R32E		
Lease Number:	API-30-025-39108					
County:	Lea County					
GPS:	32.81531			103.77483		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of Hwy 529 and CR 126, turn north on CR 126 and travel 1.8 miles, turn left and travel 0.6 miles to location.					

Release Data:	
Date Released:	12/13/2009
Type Release:	Oil
Source of Contamination:	Wellhead
Fluid Released:	55 bbls
Fluids Recovered:	45 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	**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:	**10**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	1,000

HOBBS OCD

JUL 01 2011

RECEIVED

TETRA TECH

June 10, 2011

HOBBS OCD

JUL 01 2011

RECEIVED

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC., MC Federal #37 Well Site, Unit N, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the MC Federal #37 Well Site located in Unit N, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.81531°, W 103.77483°. 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 December 13, 2010, and released approximately fifty five (55) barrels of oil due to a malfunction on the wellhead. To alleviate the problem, COG personnel repaired the wellhead. Forty five (45) barrels of standing fluids were recovered. The spill initiated on the well pad and traveled west off the pad into the pasture. The initial C-141 form is enclosed in Appendix C.

Groundwater

The United States Geological Survey (USGS) Well Reports showed one well in Section 11 with a reported depth of 88.0' below ground surface. However, the Geology and Ground Water Conditions showed depth to

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

groundwater in Sections 2, 3, 4 and 11 ranging from 60' to 175'. According to the NMOCD groundwater map, the average depth to groundwater appears to be around 90' to 100' below surface. The groundwater data is shown in Appendix A.

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 1,000 mg/kg.

Soil Assessment and Analytical Results

On February 8, 2009, Tetra Tech personnel inspected and sampled the spill area, which measured approximately 10' x 100' on the pad and migrated west off the pad measuring approximately 5' x 80', 20' x 45' and 10' x 35'. A total of six (6) auger holes (AH-1 through AH-6) were installed using a stainless steel hand auger to assess the impacted soils.

Referring to Table 1, all of the submitted samples were below the TPH and BTEX RRAL. On the pad, auger holes (AH-1 and AH-2) did show a chloride impact the subsurface soils. Auger hole (AH-1) was not vertically defined, with a chloride concentration of 1,150 mg/kg at 3-3.5' below surface. Auger hole (AH-2) was defined and showed a shallow impact to the soil at 1.5' below surface. The remaining auger holes (AH-3, AH-4, AH-5 and AH-6) were installed in the pasture. Auger holes (AH-4 and AH-6) did not show a chloride impact to the soils. The areas of auger holes (AH-3 and AH-5) were not vertically defined showing chloride concentrations of 3,560 mg/kg (9-9.5') and 3,300 mg/kg (4-4.5'), respectively.

On April 22, 2010 Tetra Tech personnel supervised installation of soil borings using an air rotary drilling rig. A total of three (3) soil borings were installed in the areas of AH-1, AH-3 and AH-5 to vertically define the chloride impact. The sampling results are summarized in Table 1. Copies

of laboratory analysis and chain-of-custody documentation are included in Appendix B. The soil boring locations are shown on Figure 3.

Referring to Table 1, SB-1 (AH-1) did not show a significant chloride impact below 2.0' below surface and SB-3 (AH-5) did not show any impact the subsurface soils.

In the area of SB-2 (AH-3), elevated concentrations were detected from 0 to 5.0' below surface and declined at 6-6.5' (416 mg/kg) and 7-7.5' (727 mg/kg). However, the chloride concentrations in the soil boring peaked at 10.0' and steadily declined to a chloride of 2,680 mg/kg at 80.0' below surface. Due to the sandy formation, the deeper samples appeared to be somewhat cross-contaminated with the uppers soils.

After reviewing the aerial photograph, the two production wells (MC Federal #37 and the MC Federal #5 are located on the same pad as shown in Figure 4. According to the well information, MC Federal #5 was installed around 2001 by Mack Energy Corporation and the reserve pit was located west of the well pad. In 2009, COG installed the MC Federal #37 and drilled the well using a closed loop system (no reserve pit). Based on the soil boring profile and the deeper chloride impact, the area of SB-2 (AH-3) appears to be near or in a closed reserve pit and adjacent to a pipeline ROW.

Work Plan

COG proposes the removal of impacted material to the appropriate depth as highlighted in Table 1 and shown on Figure 5. The excavation will be performed in the areas of AH-1 (SB-1), AH-2 and AH-3 (SB-2). The proposed excavation depths range from 1.5' to 5.0' below surface. Based on the deep chloride impact encountered at AH-3 (SB-2), the area will be capped with a 40 mil liner and installed at 4.0 to 5.0 below surface. All of the excavated soil will be transported to proper disposal. Once excavated to the appropriate depths, the excavations will be backfilled with clean soil.

Since the impacted area is in the native sand dunes, the proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines 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.

TETRA TECH

Upon completion, a final report will be submitted to the NMOCD and BLM. If you have any questions or comments concerning the assessment or the work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Project Manager

cc: Pat Ellis – COG
cc: James Amos – BLM

SITE INFORMATION

Report Type: Work Plan

RECEIVED
MAR 29 2012
HOBBSOCD

General Site Information:				
Site:	Prohibition Federal Unit #2 SWD			
Company:	COG Operating LLC			
Section, Township and Range	Sec 11	T22S	R32E	Unit K
Lease Number:	API-30-025-31716			
County:	Lea County			
GPS:	32.40418° N			103.64706° W
Surface Owner:	Federal 3251			
Mineral Owner:				
Directions:	From the intersection of Hwy 248 and Hwy 8, travel north on Hwy 8 for 2.7 miles, turn left on Hwy 176 and travel for 21.7 miles, turn left onto lease road and travel 0.5 miles, turn right and travel 1.5 miles, turn left and travel 0.7 miles, turn left and travel 6 miles, turn right and travel 0.8 miles, turn left and travel 0.2 miles, turn right and travel 0.7 miles to site.			

Release Data:	
Date Released:	7/17/2010
Type Release:	Produced Water
Source of Contamination:	Triplex Pump
Fluid Released:	20 bbls
Fluids Recovered:	10 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

ECOPY: Approved w/ conditions
Geoff Leking
Env. Specialist
NMOCD-HOBBS
4/11/12

TETRA TECH

March 22, 2012

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC., Prohibition Federal #2 SWD, Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Prohibition Federal Unit #2 SWD located in Unit K, Section 11, Township 22 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.40418°, W 103.64706°. 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 July 17, 2010, and released approximately twenty (20) barrels of produced water due to worn out threads on a triplex pump. To alleviate the problem, COG personnel replace all fittings on the pump. Ten (10) barrels of standing fluids were recovered. The spill traveled outside the firewall of the battery and migrated south affecting an area approximately 120' long, with a width of 2' to 35' wide. The initial C-141 form 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 water wells were listed within Section 11. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 325' below surface. The well report data is shown in Appendix A.

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 September 9, 2010, 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. 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, all of the submitted samples were below the RRAL for TPH and BTEX. All of the auger holes (AH-1, AH-2, AH-3, AH-4 and AH-5) detected elevated chloride concentrations in the soils, with bottom hole samples of 17,300 mg/kg (2-2.5'), 1,110 mg/kg (1-1.5'), 670 mg/kg (0-1'), 12,000 mg/kg (1-1.5') and 3,790 mg/kg (0-1'), respectively. Deeper samples could not be collected due to a dense caliche formation. The chloride impact was not vertically defined.

To delineate the impact, an air rotary drilling rig was utilized to collect deeper samples. On March 25, 2011, Tetra Tech personnel supervised the installation of soil borings. A total of five (5) soil borings (SB-1 through SB-5) were installed to assess the soils. Copies of

laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3.

Referring to Table 1, the deepest impact was detected in the area of SB-1 at the facility. The chloride concentrations significantly declined with depth at 50' below surface. The remaining auger holes showed a shallow impact to the soils and declined with depth. The areas of SB-2, SB-4 and SB-5 declined at an approximate depth of 5.0' to 7.0' and SB-3 showed a shallow impact to soil at 1.0' below surface.

Work Plan

Due to the proximity of the tanks, lines and triplex pump, deeper excavation in the area of SB-1 is not practical for safely concerns. In the area of SB-1, COG proposes to remove the impacted soil in accessible areas to a depth of approximately 1.0' to 3.0' below surface to remove a large amount of higher impacted soils and defer the remaining impact until abandonment of the facility. Once excavated to the appropriate depth, clay material will be placed in the bottom of the excavation (6" to 1.0' thick) and compacted to cap the remaining impact and limit vertical penetration of both rainwater and any future surface impact. With limited excavation and capping, COG is attempting to limit future residual environmental concerns at the site.

The remaining areas SB-2, SB-4 and SB-5 will be excavated to a depth of 5.0' to 7.0' and SB-3 of 1.0' below surface. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil. The proposed excavation depths are highlighted (green) in Table 1 and shown on Figure 4.

Based on the site formation, the proposed excavation areas or depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines 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.

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
Project Manager

cc: Pat Ellis – COG
cc: Jim Amos – BLM

CONCHO

Figure 1
Prohibition Federal #2
Topo Map 1:400,000

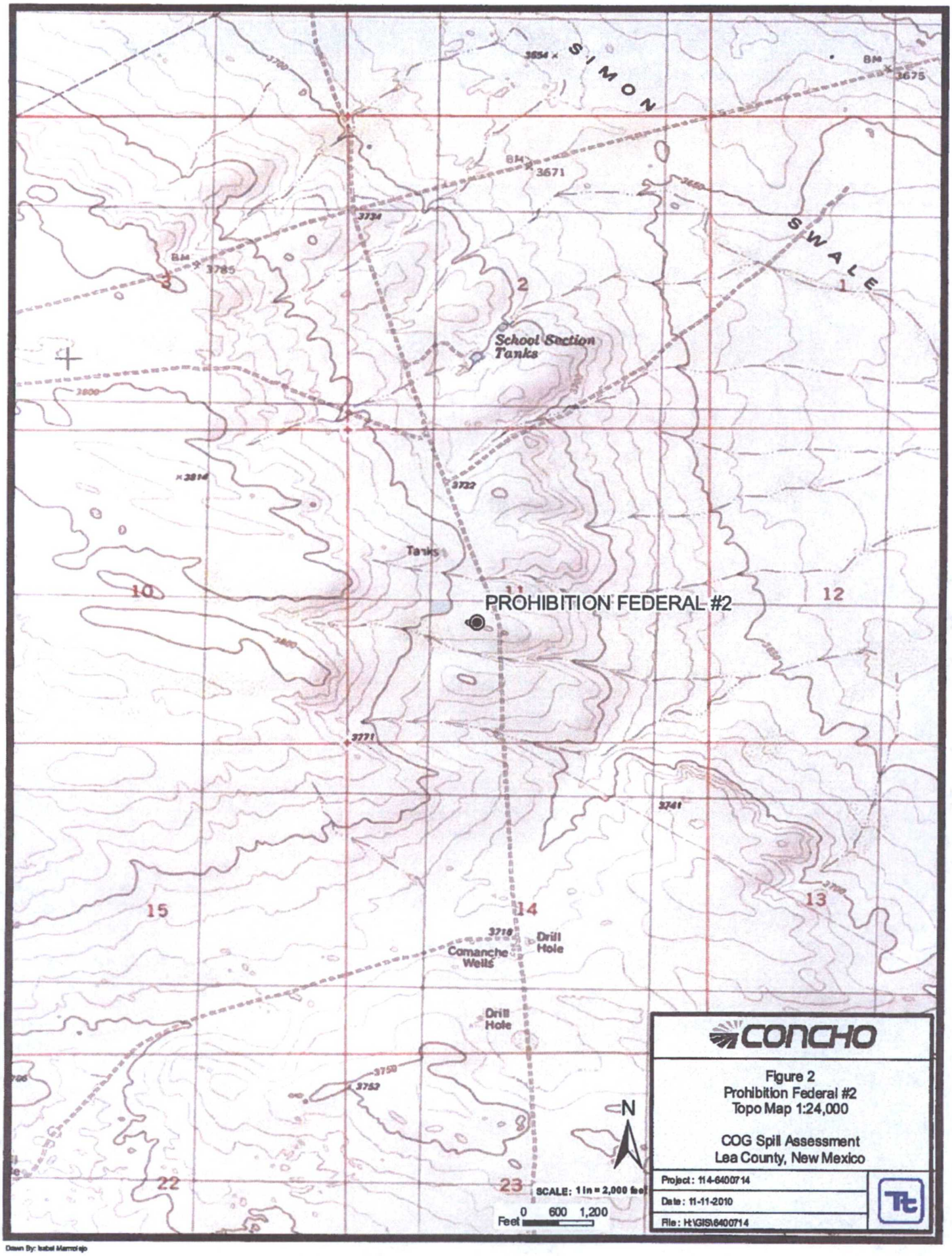
COG Spill Assessment
Lea County, New Mexico

Project: 114-6400714

Date: 11-11-2010

File: H:\GIS\6400714

Down By: Isabel Marmolejo



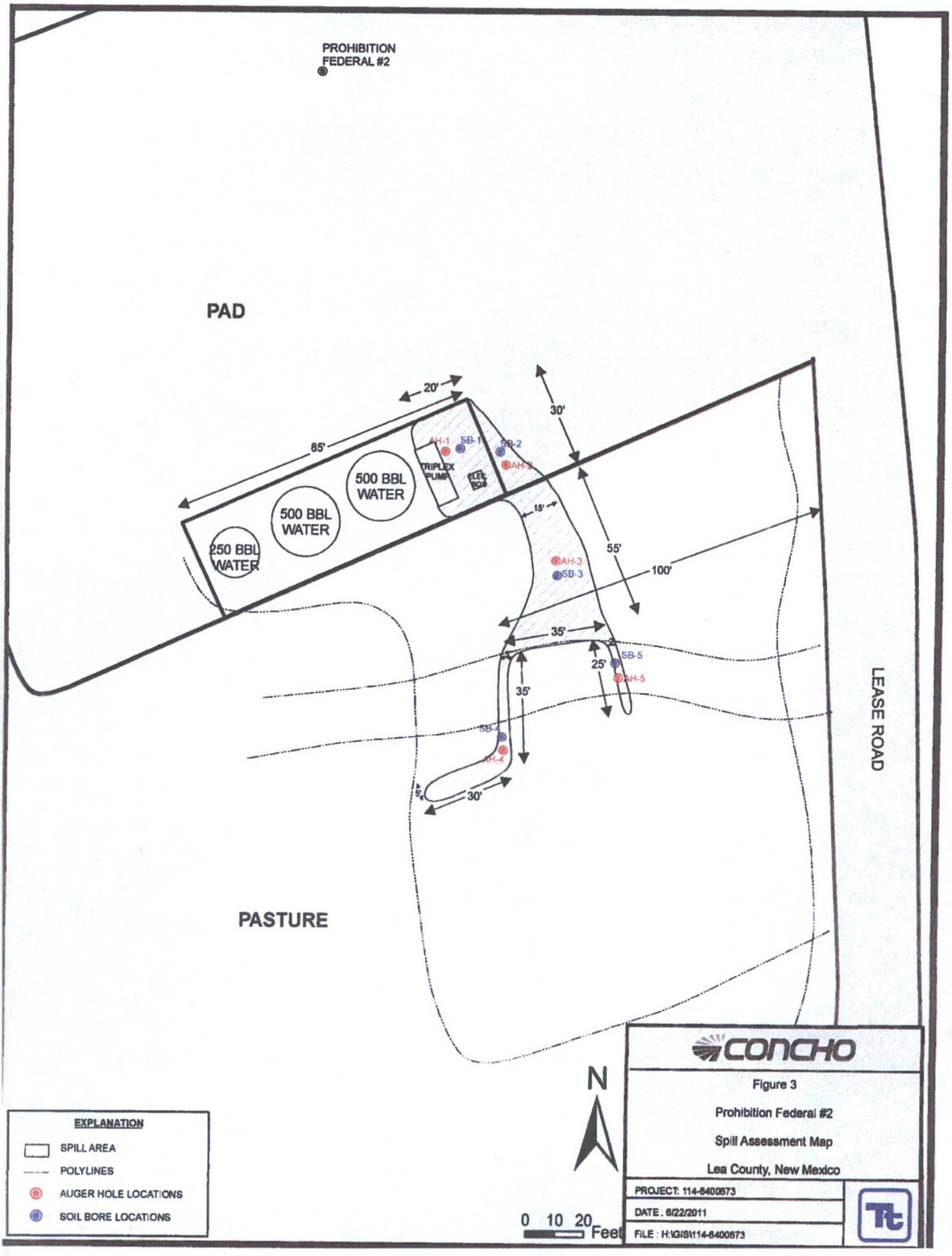
CONCHO

Figure 2
Prohibition Federal #2
Topo Map 1:24,000

COG Spill Assessment
Lea County, New Mexico

Project: 114-6400714	
Date: 11-11-2010	
File: H:\GIS\6400714	

Drawn By: Isabel Marmolejo


PROHIBITION
FEDERAL #2
PAD
20'
85'
500 BBL
WATER
500 BBL
WATER
250 BBL
WATER
TRIPLEX
PUMP
ELEC.
BOX
AH-1
SB-1
SB-2
AH-2
30'
15'
55'
100'
AH-3
SB-3
35'
SB-5
25'
AH-5
35'
SB-4
AH-4
5'
30'
PASTURE
LEASE ROAD
EXPLANATION
SPILL AREA
POLYLINES
AUGER HOLE LOCATIONS
SOIL BORE LOCATIONS
N
0 10 20 Feet
CONCHO
Figure 3
Prohibition Federal #2
Spill Assessment Map
Lea County, New Mexico
PROJECT: 114-6400673
DATE . 6/22/2011
FILE : H:\GIS\114-6400673

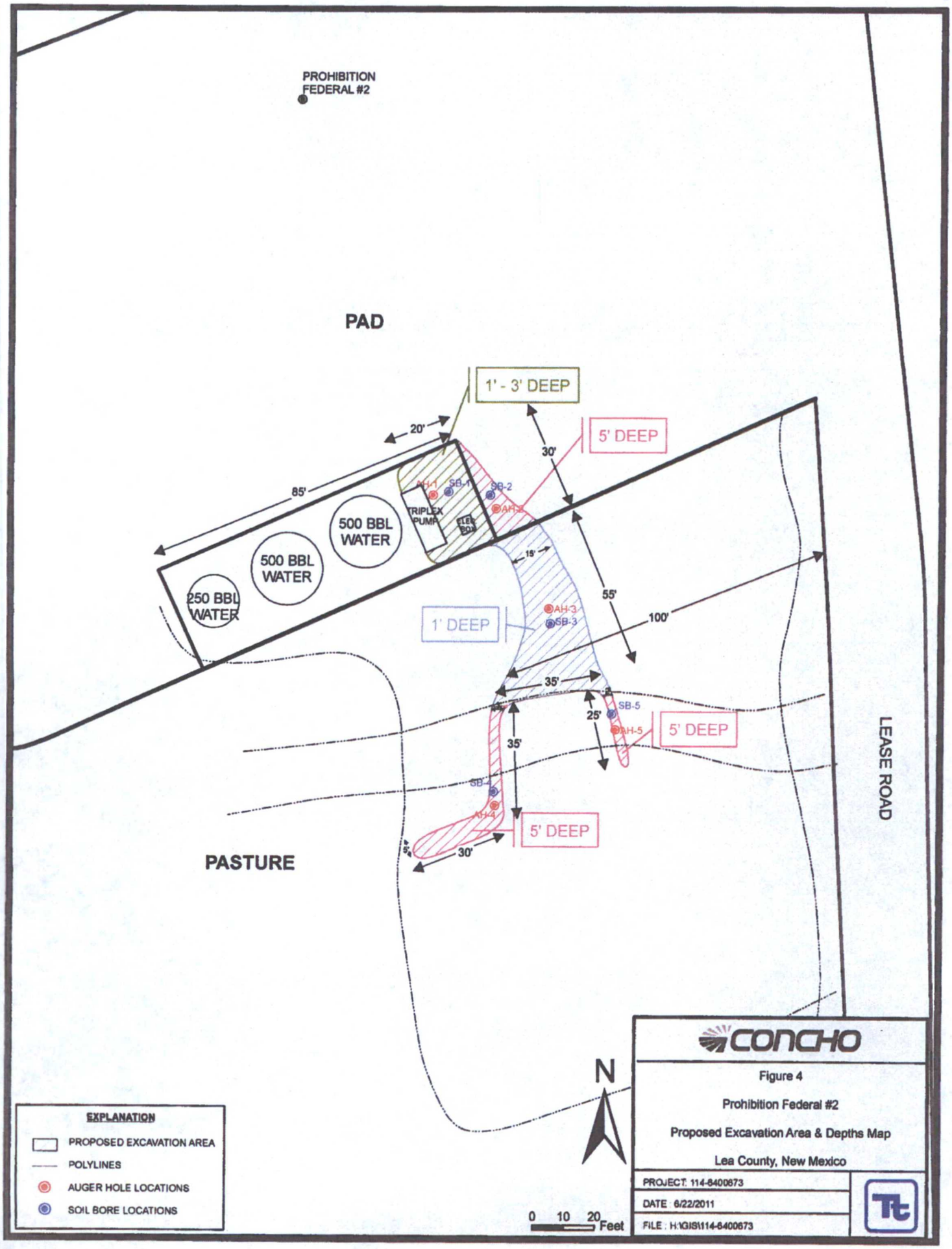

PROHIBITION FEDERAL #2
PAD
1' - 3' DEEP
5' DEEP
20'
30'
85'
AH-1
SB-1
SB-2
AH-2
TRIPLEX PUMP
ELEC BOX
500 BBL WATER
500 BBL WATER
250 BBL WATER
15'
55'
100'
1' DEEP
AH-3
SB-3
35'
25'
SB-5
AH-5
5' DEEP
35'
SB-4
AH-4
5' DEEP
5'
30'
PASTURE
LEASE ROAD
EXPLANATION
PROPOSED EXCAVATION AREA
POLYLINES
AUGER HOLE LOCATIONS
SOIL BORE LOCATIONS
N
0 10 20 Feet
CONCHO
Figure 4
Prohibition Federal #2
Proposed Excavation Area & Depths Map
Lea County, New Mexico
PROJECT: 114-8400673
DATE: 6/22/2011
FILE: H:\GIS\114-8400673

Table 1
COG Operating LLC.
PROHIBITION FEDERAL #2 SWD
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	9/9/2010	0-1'		X		15.7	120	135.7	<0.0200	<0.0200	<0.0200	0.118	10,300
	"	1-1.5'		X		-	-	-	-	-	-	-	5,640
	"	2-2.5'		X		-	-	-	-	-	-	-	17,300
SB-1	3/24/2011	0-2'		X		-	-	-	-	-	-	-	8,290
	"	3'		X		-	-	-	-	-	-	-	12,200
	"	5'		X		-	-	-	-	-	-	-	14,400
	"	7'		X		-	-	-	-	-	-	-	11,700
	"	10'		X		-	-	-	-	-	-	-	14,000
	"	15'		X		-	-	-	-	-	-	-	12,600
	"	20'		X		-	-	-	-	-	-	-	6,530
	"	25'		X		-	-	-	-	-	-	-	17,400
	"	30'		X		-	-	-	-	-	-	-	8,540
	"	40'		X		-	-	-	-	-	-	-	2,970
	"	50'		X		-	-	-	-	-	-	-	<200
	"	60'		X		-	-	-	-	-	-	-	251
	"	70'		X		-	-	-	-	-	-	-	208

Table 1
COG Operating LLC.
PROHIBITION FEDERAL #2 SWD
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-2	9/9/2010	0-1'		X		2.47	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	8,090
	"	1-1.5'		X		-	-	-	-	-	-	-	1,110
SB-2	3/24/2011	0-1'		X		-	-	-	-	-	-	-	3,140
	"	3'		X		-	-	-	-	-	-	-	4,580
	"	5'		X		-	-	-	-	-	-	-	2,970
	"	7'		X		-	-	-	-	-	-	-	208
	"	10'		X		-	-	-	-	-	-	-	<200
	"	15'		X		-	-	-	-	-	-	-	<200
	"	20'		X		-	-	-	-	-	-	-	<200
AH-3	9/9/2010	0-1'		X		<2.00	142	142	<0.0200	<0.0200	<0.0200	<0.0200	670
SB-3	3/24/2011	0-1'		X		-	-	-	-	-	-	-	2,350
	"	3'		X		-	-	-	-	-	-	-	612
	"	5'		X		-	-	-	-	-	-	-	612
	"	7'		X		-	-	-	-	-	-	-	<200
	"	10'		X		-	-	-	-	-	-	-	<200
	"	15'		X		-	-	-	-	-	-	-	<200
	"	20'		X		-	-	-	-	-	-	-	<200

Table 1
COG Operating LLC.
PROHIBITION FEDERAL #2 SWD
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-4	9/9/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	5,380
	"	1-1.5'		X		-	-	-	-	-	-	-	12,000
SB-5	3/24/2011	0-1'		X		-	-	-	-	-	-	-	3,150
	"	3'		X		-	-	-	-	-	-	-	6,400
	"	5'		X		-	-	-	-	-	-	-	1,360
	"	7'		X		-	-	-	-	-	-	-	<200
	"	10'		X		-	-	-	-	-	-	-	<200
	"	15'		X		-	-	-	-	-	-	-	<200
AH-5	9/9/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	3,790
SB-4	3/24/2011	0-1'		X		-	-	-	-	-	-	-	314
	"	3'		X		-	-	-	-	-	-	-	2,110
	"	5'		X		-	-	-	-	-	-	-	4,520
	"	7'		X		-	-	-	-	-	-	-	<200
	"	10'		X		-	-	-	-	-	-	-	<200
	"	15'		X		-	-	-	-	-	-	-	379
	"	20'		X		-	-	-	-	-	-	-	<200

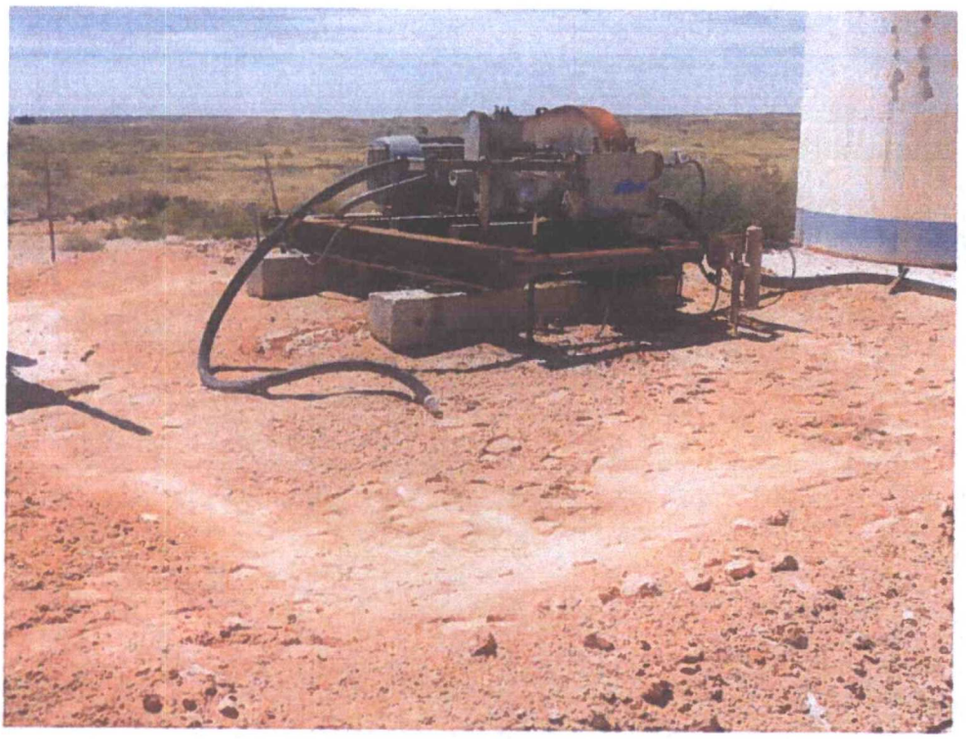
BEB Below Excavation Bottom
(--) Not Analyzed
Proposed Excavated material
Proposed Clay Cap

Table 1
COG Operating LLC.
PROHIBITION FEDERAL #2 SWD
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					

COG Operating LLC
Prohibition Federal Unit #2
SWD
Lea County, New Mexico

TETRA TECH



View South East – AH-1

View South – AH-2

COG Operating LLC
Prohibition Federal Unit #2
SWD
Lea County, New Mexico

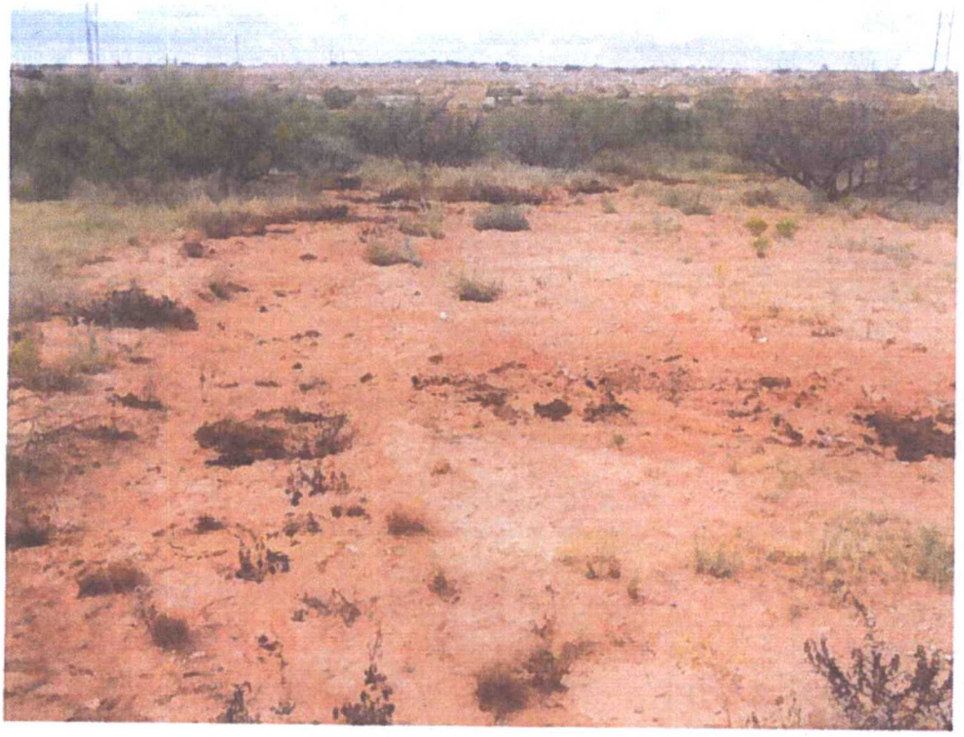
TETRA TECH

View North – AH-3

View South – AH-4

COG Operating LLC
Prohibition Federal Unit #2
SWD
Lea County, New Mexico

TETRA TECH



View South - AH-5

Water Well Data
Average Depth to Groundwater (ft)
COG - Prohibition Federal Unit #2 SWD
Lea County, New Mexico

21 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 830	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South 32 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

21 South 33 East

6	5	4	3	2 79 107
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28 179	27	26
31	32	33	34	35

22 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 448	15	14	13
19	20 47	21	22	23	24
30	29 413	28 444	27	26	25
31	32	33	34	35	36

22 South 32 East

6	5	4	3	2	1
7	8	9	10	11 SITE	12
18	17	16	15	14 382 350	13
19 (S) 280	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 33 East

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

23 South 31 East

6 85	5 354	4 168	3	2	1
7 140	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

23 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 400	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South 33 East

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

New Mexico State Engineers Well Reports
USGS Well Reports
Geology and Groundwater Conditions in Southern Eddy, County, NM
NMOCD - Groundwater Data

Summary Report

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

Report Date: September 27, 2010

Work Order: 10091332

Project Location: Lea Co., NM
Project Name: COG/Prohibition Fed. #2 SWD
Project Number: 114-6400673

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
244451	AH-1 0-1'	soil	2010-09-09	00:00	2010-09-10
244452	AH-1 1-1.5'	soil	2010-09-09	00:00	2010-09-10
244453	AH-1 2-2.5'	soil	2010-09-09	00:00	2010-09-10
244454	AH-2 0-1'	soil	2010-09-09	00:00	2010-09-10
244455	AH-2 1-1.5'	soil	2010-09-09	00:00	2010-09-10
244456	AH-3 0-1'	soil	2010-09-09	00:00	2010-09-10
244457	AH-4 0-1'	soil	2010-09-09	00:00	2010-09-10
244458	AH-4 1-1.5'	soil	2010-09-09	00:00	2010-09-10
244459	AH-5 0-1'	soil	2010-09-09	00:00	2010-09-10

	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)
244451 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	**0.118**	**120**	**15.7**
244454 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	**2.47**
244456 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**142**	<2.00
244457 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
244459 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 244451 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**10300**	mg/Kg	4.00

Sample: 244452 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**5640**	mg/Kg	4.00

Sample: 244453 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**17300**	mg/Kg	4.00

Sample: 244454 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**8090**	mg/Kg	4.00

Sample: 244455 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**1110**	mg/Kg	4.00

Sample: 244456 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**670**	mg/Kg	4.00

Sample: 244457 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**5380**	mg/Kg	4.00

Sample: 244458 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**12000**	mg/Kg	4.00

Sample: 244459 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**3790**	mg/Kg	4.00

Summary Report

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

Report Date: April 5, 2011

Work Order: 11032922

Project Location: Lea Co., NM
Project Name: COG/Prohibition Federal #2
Project Number: 114-6400673

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
262038	SB-1 0-2'	soil	2011-03-24	00:00	2011-03-28
262039	SB-1 3'	soil	2011-03-24	00:00	2011-03-28
262040	SB-1 5'	soil	2011-03-24	00:00	2011-03-28
262041	SB-1 7'	soil	2011-03-24	00:00	2011-03-28
262042	SB-1 10'	soil	2011-03-24	00:00	2011-03-28
262043	SB-1 15'	soil	2011-03-24	00:00	2011-03-28
262044	SB-1 20'	soil	2011-03-24	00:00	2011-03-28
262045	SB-1 25'	soil	2011-03-24	00:00	2011-03-28
262046	SB-1 30'	soil	2011-03-24	00:00	2011-03-28
262047	SB-1 40'	soil	2011-03-24	00:00	2011-03-28
262048	SB-1 50'	soil	2011-03-24	00:00	2011-03-28
262049	SB-1 60'	soil	2011-03-24	00:00	2011-03-28
262050	SB-1 70'	soil	2011-03-24	00:00	2011-03-28
262051	SB-2 0-1'	soil	2011-03-24	00:00	2011-03-28
262052	SB-2 3'	soil	2011-03-24	00:00	2011-03-28
262053	SB-2 5'	soil	2011-03-24	00:00	2011-03-28
262054	SB-2 7'	soil	2011-03-24	00:00	2011-03-28
262055	SB-2 10'	soil	2011-03-24	00:00	2011-03-28
262056	SB-2 15'	soil	2011-03-24	00:00	2011-03-28
262057	SB-2 20'	soil	2011-03-24	00:00	2011-03-28
262058	SB-3 0-1'	soil	2011-03-24	00:00	2011-03-28
262059	SB-3 3'	soil	2011-03-24	00:00	2011-03-28
262060	SB-3 5'	soil	2011-03-24	00:00	2011-03-28
262061	SB-3 7'	soil	2011-03-24	00:00	2011-03-28
262062	SB-3 10'	soil	2011-03-24	00:00	2011-03-28
262063	SB-3 15'	soil	2011-03-24	00:00	2011-03-28
262064	SB-3 20'	soil	2011-03-24	00:00	2011-03-28
262065	SB-4 0-1'	soil	2011-03-25	00:00	2011-03-28
262066	SB-4 3'	soil	2011-03-25	00:00	2011-03-28
262067	SB-4 5'	soil	2011-03-25	00:00	2011-03-28

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
262068	SB-4 7'	soil	2011-03-25	00:00	2011-03-28
262069	SB-4 10'	soil	2011-03-25	00:00	2011-03-28
262070	SB-4 15'	soil	2011-03-25	00:00	2011-03-28
262071	SB-4 20'	soil	2011-03-25	00:00	2011-03-28
262072	SB-5 0-1'	soil	2011-03-25	00:00	2011-03-28
262073	SB-5 3'	soil	2011-03-25	00:00	2011-03-28
262074	SB-5 5'	soil	2011-03-25	00:00	2011-03-28
262075	SB-5 7'	soil	2011-03-25	00:00	2011-03-28
262076	SB-5 10'	soil	2011-03-25	00:00	2011-03-28
262077	SB-5 15'	soil	2011-03-25	00:00	2011-03-28

Sample: 262038 - SB-1 0-2'

Param	Flag	Result	Units	RL
Chloride		**8290**	mg/Kg	4.00

Sample: 262039 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		**12200**	mg/Kg	4.00

Sample: 262040 - SB-1 5'

Param	Flag	Result	Units	RL
Chloride		**14400**	mg/Kg	4.00

Sample: 262041 - SB-1 7'

Param	Flag	Result	Units	RL
Chloride		**11700**	mg/Kg	4.00

Sample: 262042 - SB-1 10'

Param	Flag	Result	Units	RL
Chloride		**14000**	mg/Kg	4.00

Sample: 262043 - SB-1 15'

Param	Flag	Result	Units	RL
Chloride		**12600**	mg/Kg	4.00

Sample: 262044 - SB-1 20'

Param	Flag	Result	Units	RL
Chloride		**6530**	mg/Kg	4.00

Sample: 262045 - SB-1 25'

Param	Flag	Result	Units	RL
Chloride		**17400**	mg/Kg	4.00

Sample: 262046 - SB-1 30'

Param	Flag	Result	Units	RL
Chloride		**8540**	mg/Kg	4.00

Sample: 262047 - SB-1 40'

Param	Flag	Result	Units	RL
Chloride		**2970**	mg/Kg	4.00

Sample: 262048 - SB-1 50'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262049 - SB-1 60'

Param	Flag	Result	Units	RL
Chloride		**251**	mg/Kg	4.00

Sample: 262050 - SB-1 70'

Param	Flag	Result	Units	RL
Chloride		**208**	mg/Kg	4.00

Sample: 262051 - SB-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**3140**	mg/Kg	4.00

Sample: 262052 - SB-2 3'

Param	Flag	Result	Units	RL
Chloride		**4580**	mg/Kg	4.00

Sample: 262053 - SB-2 5'

Param	Flag	Result	Units	RL
Chloride		**2970**	mg/Kg	4.00

Sample: 262054 - SB-2 7'

Param	Flag	Result	Units	RL
Chloride		**208**	mg/Kg	4.00

Sample: 262055 - SB-2 10'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262056 - SB-2 15'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262057 - SB-2 20'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262058 - SB-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2350**	mg/Kg	4.00

Sample: 262059 - SB-3 3'

Param	Flag	Result	Units	RL
Chloride		**612**	mg/Kg	4.00

Sample: 262060 - SB-3 5'

Param	Flag	Result	Units	RL
Chloride		**612**	mg/Kg	4.00

Sample: 262061 - SB-3 7'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262062 - SB-3 10'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262063 - SB-3 15'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262064 - SB-3 20'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262065 - SB-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**314**	mg/Kg	4.00

Sample: 262066 - SB-4 3'

Param	Flag	Result	Units	RL
Chloride		**2110**	mg/Kg	4.00

Sample: 262067 - SB-4 5'

Param	Flag	Result	Units	RL
Chloride		**4520**	mg/Kg	4.00

Sample: 262068 - SB-4 7'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262069 - SB-4 10'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262070 - SB-4 15'

Param	Flag	Result	Units	RL
Chloride		**379**	mg/Kg	4.00

Sample: 262071 - SB-4 20'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262072 - SB-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**3150**	mg/Kg	4.00

Sample: 262073 - SB-5 3'

Param	Flag	Result	Units	RL
Chloride		**6400**	mg/Kg	4.00

Sample: 262074 - SB-5 5'

Param	Flag	Result	Units	RL
Chloride		**1360**	mg/Kg	4.00

Sample: 262075 - SB-5 7'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262076 - SB-5 10'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 262077 - SB-5 15'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00