

# SITE INFORMATION

## Report Type: Work Plan

General Site Information:	
Site:	Chicken Hawk State #1 Tank Battery
Company:	COG Operating LLC
Section, Township and Range	Unit A Section 15 T-25S R-28E
Lease Number:	30-015-33682
County:	Eddy County
GPS:	32.13693° N 104.06772° W
Surface Owner:	State
Mineral Owner:	
Directions:	From the Malaga post office, travel south on 285 6.7 miles, left on lease road, travel 0.8 miles to tank battery.

Release Data:	
Date Released:	7/8/2011
Type Release:	Produced Water
Source of Contamination:	Tank Over flow
Fluid Released:	480 bbls
Fluids Recovered:	460 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavaréz
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.Tavaréz@tetrattech.com

Ranking Criteria		
<b>Depth to Groundwater:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<50 ft	20	20
50-99 ft	10	
>100 ft.	0	
<b>Wellhead Protection:</b>	<b>Ranking Score</b>	<b>Site Data</b>
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
<b>Surface Body of Water:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
<b>Total Ranking Score:</b>	<b>20</b>	

Acceptable Soil RRAL (mg/kg)		
<b>Benzene</b>	<b>Total BTEX</b>	<b>TPH</b>
10	50	100



TETRA TECH

September 29, 2011

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., Chicken Hawk State #1, Unit A, Section 15, Township 25 South, Range 28 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 Chicken Hawk State #1, Unit A, Section 15, Township 25 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.13693°, W 104.06772°. 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 July 8, 2011, and released approximately 480 barrels of produced fluids due to an influx of production to the tank battery. Approximately 460 barrels of fluid were recovered from the spill area. The spill initiated at the tank battery impacting an area approximately 30' x 160' inside the facility firewalls. The spill breached the firewall and migrated south impacting an area approximately 360' x 1'-5' wide along a native dry wash. The initial Form C-141 is enclosed in Appendix A.

### **Groundwater**

According to the NMOCD groundwater map, one well is located in Section 15, with a reported depth to water of 48' below surface. Based on these findings, groundwater in this area is less than 50' below surface. The groundwater data is shown in Appendix A.

Tetra Tech

100 North 10th Street, Suite 1000, Denver, CO 80202

Tel: 303.733.1500 Fax: 303.733.1505 [www.tetra-tech.com](http://www.tetra-tech.com)



### **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 100 mg/kg.

### **Soil Assessment**

Prior to sampling, COG removed approximately 2' of impacted material from around the tanks inside the facility. Additionally, COG performed a surface scrape 3"-6" along the spill footprint. On August 11, 2011, Tetra Tech personnel inspected the site. Due to the surface geology (dense rock) of the area, hand auger samples could not be installed to assess the spill. In order to collect samples along the spill path, an air rotary drilling rig was utilized.

On August 17-18, 2011, Tetra Tech supervised the installation of nine (9) boreholes (BH-1 through BH-9) utilizing an air rotary drilling rig. Samples were collected to approximate depths of 15' to 30' below surface. Samples were placed in laboratory provided containers and submitted for laboratory analysis. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 4.

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 sampling results are summarized in Table 1. The bore hole locations are shown on Figure 3.

### **Analytical Results**

Referring to Table 1, the sample from BH-1 exceeded the RRAL for total BTEX at 0-1' of 116.7 mg/kg and was not defined. All the boreholes exceeded the RRAL for TPH of 100 mg/kg, with the exception of BH-8. Borehole (BH-7) showed a TPH of 1,305 mg/kg at 5.0' and was not vertically defined. Boreholes (BH-6 and BH-9) declined below the RRAL at



approximately 3.0' to 5.0'. In addition, the areas of BH-1, BH-4 and BH-5 declined below the RRAL at 7.0' and (BH-2 and BH-3) at 10.0' below surface. Borehole (BH-7) did show a TPH of 241 mg/kg at 20' below surface, which appear to be cross-contaminated with the upper soils.

The chloride impact shows a shallow impact to the subsurface soils. The areas of BH-1, BH-4, BH-5, BH-7, BH-8 exhibited elevated chloride concentrations at 0-1' ranging from 1,360 mg/kg to 9,990 mg/kg, which significantly declined with depth at 3.0' below surface. Boreholes (BH-3 and BH-9) showed a deeper impact to the soils from 0-1' to 5.0', but declined at 7.0' below surface. The remaining boreholes (BH-2 and BH-6) did not show a significant chloride impact to soils.

### **Work Plan**

COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. In order to remove the hydrocarbon and elevated chloride concentrations, the proposed excavations will range from approximately 1.0' to 7.0' below surface. At the tank battery area, the deepest impact was encountered in the areas of BH-1, BH-2 and BH-3, with proposed excavation depths of 5.0' to 7.0' below surface, if accessible. Due to the proximity of the tanks, lines and equipment, the excavation depths may not be achieved at the tank battery. Based on the results, the hydrocarbon impact left in place would naturally attenuate and deferred the impact until abandonment.

The areas of BH-4, BH-5, BH-7 and BH-9 will be excavated approximately 5.0' to 7.0' below surface and (BH-6 and BH-8) will be to depths of approximately 1.0' to 3.0' below surface.

A confirmation sample for BTEX will be collected from the area of BH-1 and TPH in the area of BH-7 to confirm the removal of soil exceeding the RRAL. Once excavated to the appropriate depths, the excavations will be backfilled with clean soil.

If deeper impact is encountered or the proposed excavation depths are not achieved, due to wall cave ins and safety concerns for onsite personnel, the soil will be excavated to the maximum extent practicable. As such, Tetra Tech will contact you to discuss the issues and proposed recommendations for the site.



**TETRA TECH**

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 Tavaréz  
Project Management

cc: Pat Ellis – COG

## Figures

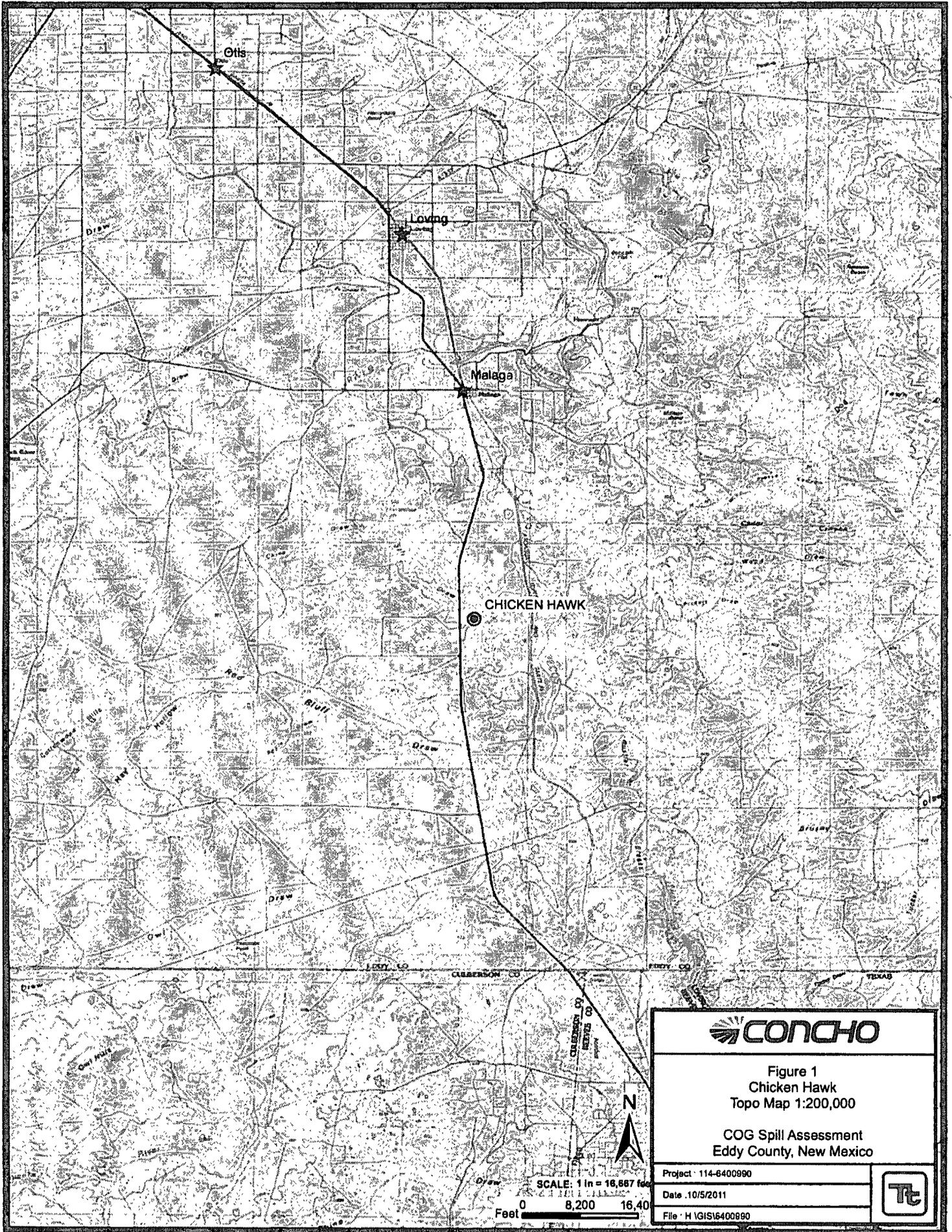


Figure 1  
Chicken Hawk  
Topo Map 1:200,000

COG Spill Assessment  
Eddy County, New Mexico

Project: 114-6400890

Date: 10/5/2011

File: H\GIS\16400890

SCALE: 1 in = 16,667 feet

0 8,200 16,400  
Feet



## Bratcher, Mike, EMNRD

---

**From:** Tavarez, Ike [Ike.Tavarez@tetrattech.com]  
**Sent:** Wednesday, March 14, 2012 4:22 PM  
**To:** Bratcher, Mike, EMNRD  
**Cc:** Pat Ellis; Joshua Russo  
**Subject:** COG - Chicken Hawk State #1 Tank Battery - Excavation Approval Request  
**Attachments:** COG - Chicken Hawk State #1 TB - Work Plan .pdf; COG - Chicken Hawk TB - Excavation Data .pdf

Mike,

We have completed the excavation at the COG - Chicken Hawk Tank Battery. I have attached the submitted work plan for your review, if needed. The impacted soil and rock were excavated with a track hoe and deeper excavation could not be achieved, due to a dense limestone layer in the area. The areas of BH-1, BH-2 and BH-7 proposed excavation depths were not achieved as stated in the work plan. Once excavated, Tetra Tech collected confirmation samples from these areas. Table 1 (Excavation Data) shows TPH below the RRAL in the areas of BH-1 (CS-1) and BH-2 (CS-2).

However, the area of BH-7 (CS-7) exceeded the TPH RRAL of 1,765 mg/kg and deeper excavation cannot be performed in this area. Based on the limited area and dense formation, COG would like to backfill the excavation and closeout the project, if approved. Call me if we need to discuss, thanks

Ike Tavarez, PG | Senior Project Manager

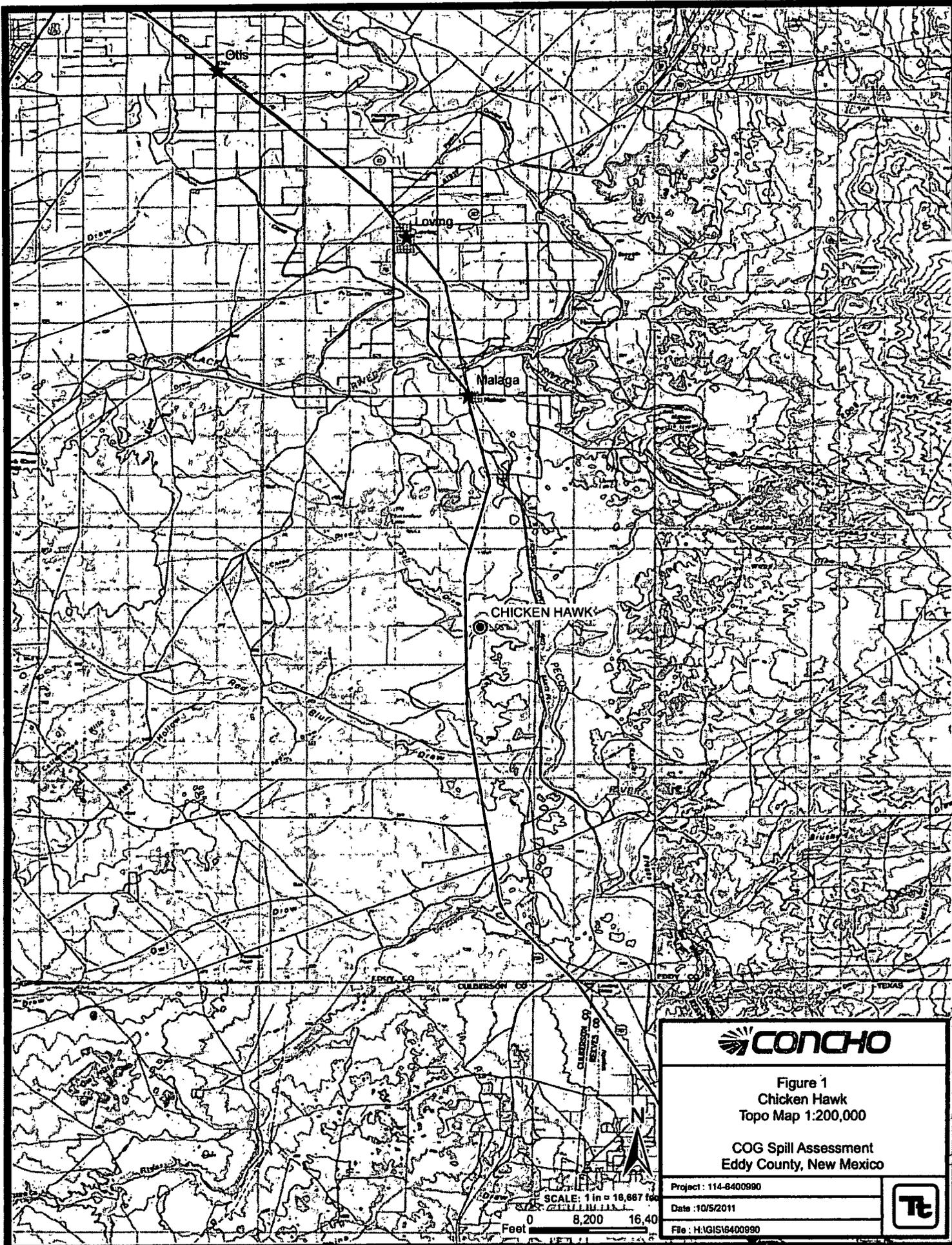
Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

[Ike.Tavarez@tetrattech.com](mailto:Ike.Tavarez@tetrattech.com)

Tetra Tech | Complex World, Clear Solutions™

1910 North Big Spring | Midland, TX 79705 | [www.tetrattech.com](http://www.tetrattech.com)

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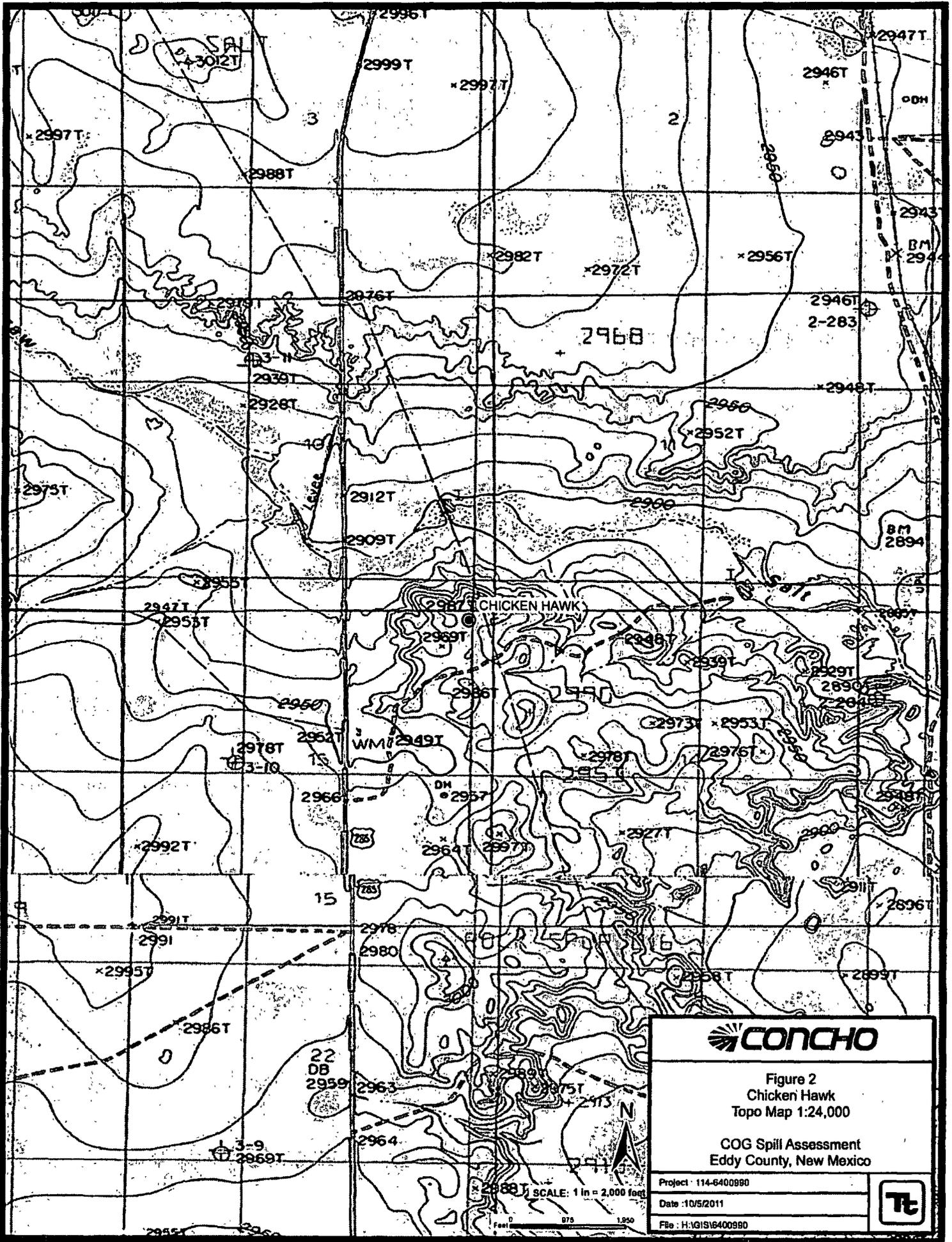


Figure 2  
Chicken Hawk  
Topo Map 1:24,000

COG Spill Assessment  
Eddy County, New Mexico

Project: 114-6400980

Date: 10/5/2011

File: H:\GIS\6400980



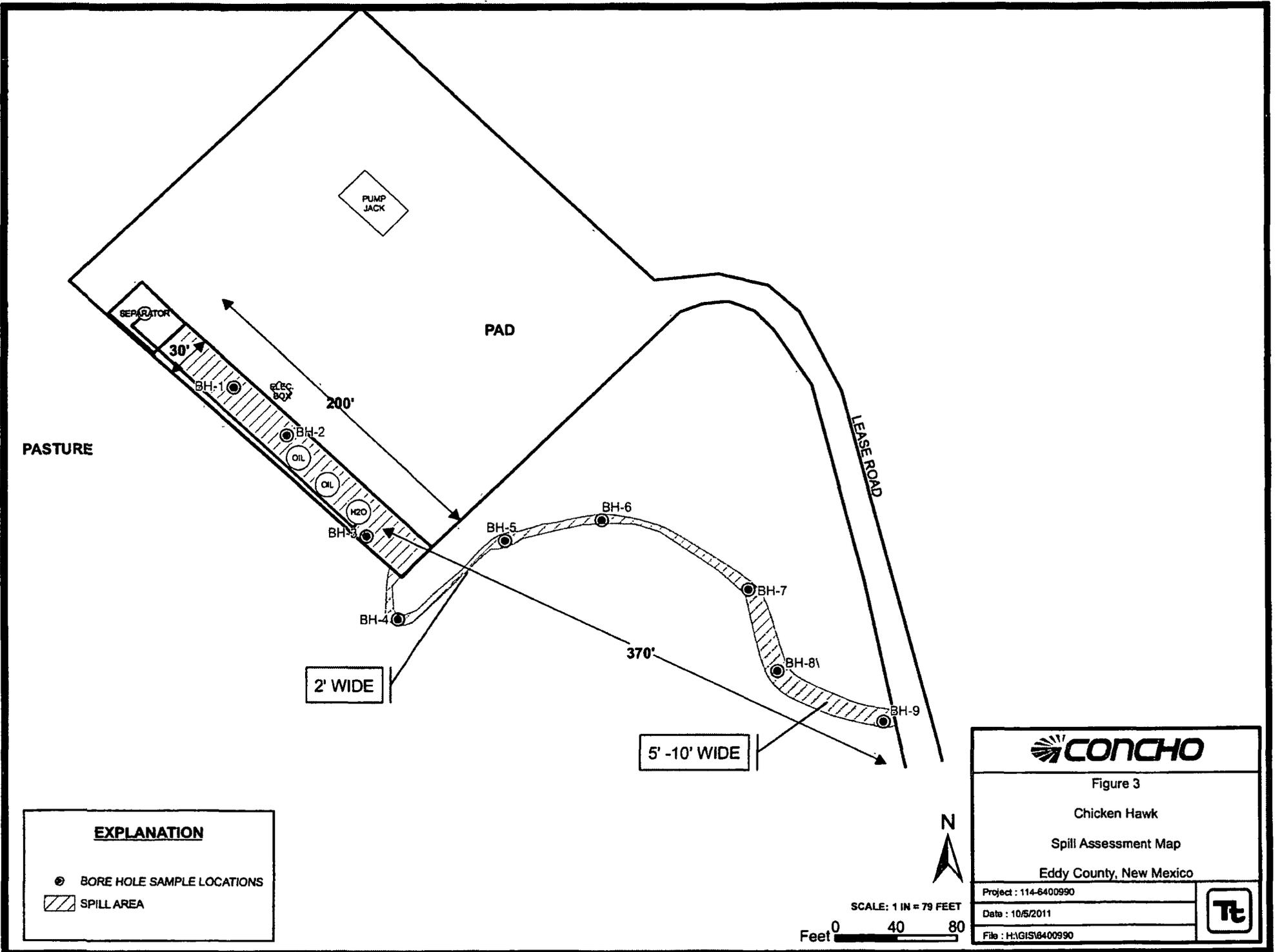
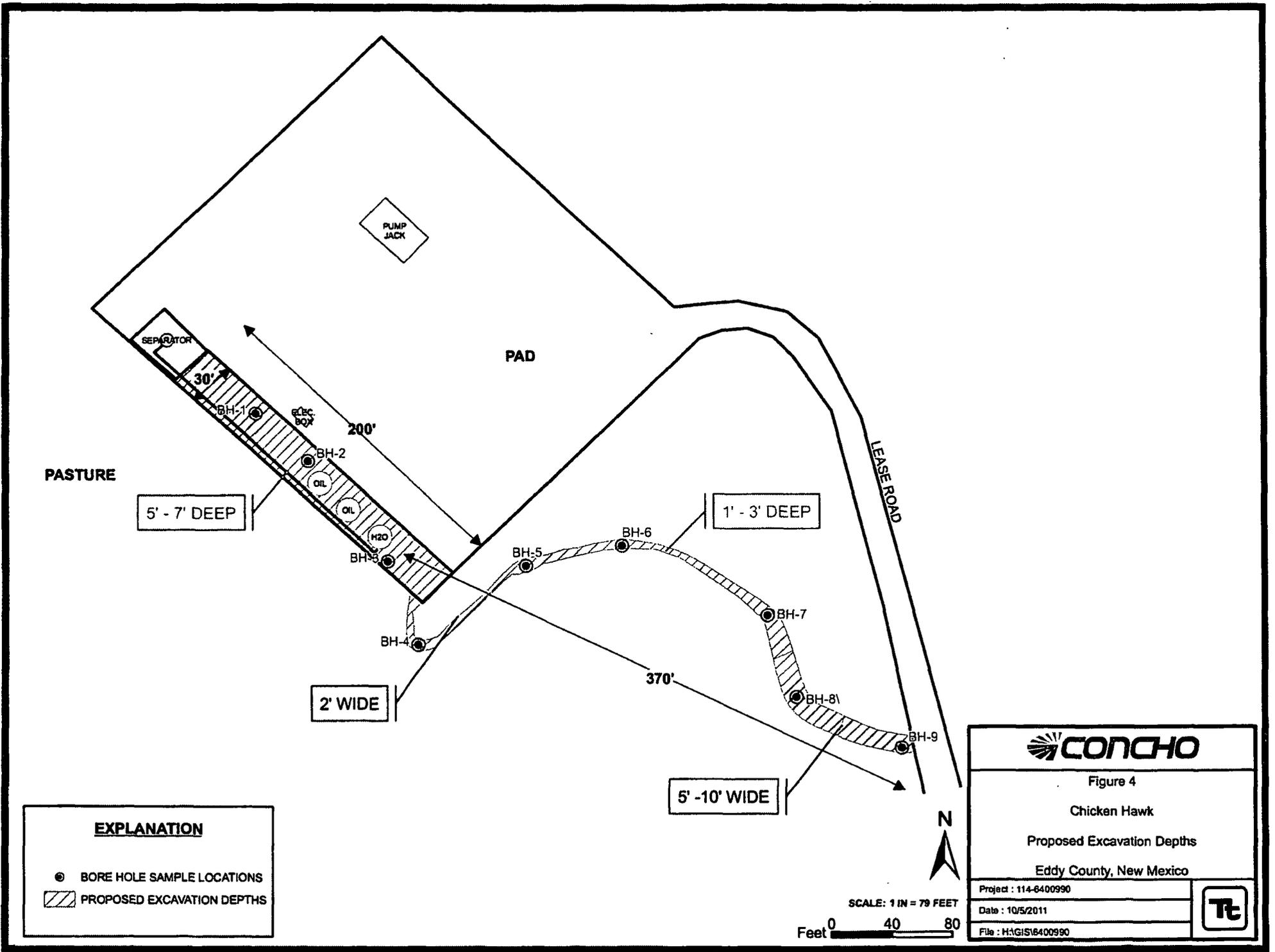


Figure 3	
Chicken Hawk	
Spill Assessment Map	
Eddy County, New Mexico	
Project : 114-6400990	
Date : 10/5/2011	
File : H:\GIS\6400990	

Drawn By: Isabel Merrially



## Tables

**Table 1**  
**COG Operating LLC.**  
**Chicken Hawk State #1**  
**Eddy 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)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
BH-1	8/17/2011	0-1'	2'	X		3,320	4,640	7,960	1.92	15.8	20.0	79.0	116.72	2,910
	"	3'	2'	X		474	1,440	1,914	-	-	-	-	-	571
	"	5'	2'	X		294	1,460	1,754	-	-	-	-	-	352
	"	7'	2'	X		18.4	<50.0	18.4	-	-	-	-	-	<200
	"	10'	2'	X		5.72	<50.0	5.72	-	-	-	-	-	<200
	"	15'	2'	X		<2.00	<50.0	<50.0	-	-	-	-	-	<200
BH-2	8/17/2011	0-1'	2'	X		864	839	1,703	-	-	-	-	-	612
	"	3'	2'	X		407	1,250	1,657	-	-	-	-	-	642
	"	5'	2'	X		136	857	993	-	-	-	-	-	520
	"	7'	2'	X		119	404	523	-	-	-	-	-	204
	"	10'	2'	X		8.79	<50.0	8.79	-	-	-	-	-	<200
BH-3	8/17/2011	0-1'	2'	X		1,350	6,110	7,460	<1.00	<1.00	<1.00	17.8	17.8	7,960
	"	3'	2'	X		728	3,170	3,898	-	-	-	-	-	3,410
	"	5'	2'	X		1,330	2,130	3,460	-	-	-	-	-	2,880
	"	7'	2'	X		192	478	670	-	-	-	-	-	762
	"	10'	2'	X		12.2	<50.0	12.2	-	-	-	-	-	445
	"	15'	2'	X		<2.00	<50.0	<50.0	-	-	-	-	-	630
	"	20'	2'	X		19.4	222	241.4	-	-	-	-	-	413
BH-4	8/17/2011	0-1'	-	X		2,110	15,800	17,910	<1.00	<1.00	4.22	19.6	23.82	9,990
	"	3'	-	X		541	1,960	2,501	-	-	-	-	-	1,590
	"	5'	-	X		49.4	458	507.4	-	-	-	-	-	326
	"	7'	-	X		6.74	72.9	79.64	-	-	-	-	-	<200
	"	10'	-	X		<2.00	<50.0	<50.0	-	-	-	-	-	<200

**Table 1**  
**COG Operating LLC.**  
**Chicken Hawk State #1**  
**Eddy 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)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total						
BH-5	8/17/2011	0-1'	-	X		2,320	22,700	25,020	<1.00	2.51	6.05	18.5	27.06	1,360
		3'	-	X		914	7,840	8,754	-	-	-	-	-	621
		5'	-	X		61.9	661	722.9	-	-	-	-	-	<200
		7'	-	X		2.63	<50.0	<50.0	-	-	-	-	-	<200
BH-6	8/17/2011	0-1'	-	X		126	667	793	-	-	-	-	-	363
		3'	-	X		<2.00	<50.0	<50.0	-	-	-	-	-	<200
		5'	-	X		-	-	-	-	-	-	-	-	<200
		7'	-	X		-	-	-	-	-	-	-	-	<200
BH-7	8/17/2011	0-1'	-	X		350	2,670	3,020	-	-	-	-	-	3,220
		3'	-	X		31.1	968	999.1	-	-	-	-	-	1,160
		5'	-	X		45.3	1,260	1,305.3	-	-	-	-	-	1,330
BH-8	8/17/2011	0-1'	-	X		<2.00	<50.0	<50.0	-	-	-	-	-	4,610
		3'	-	X		-	-	-	-	-	-	-	-	<200
		5'	-	X		-	-	-	-	-	-	-	-	<200
		7'	-	X		-	-	-	-	-	-	-	-	<200
BH-9	8/17/2011	0-1'	-	X		109	656	765	-	-	-	-	-	23,200
		3'	-	X		3.84	179	182.84	-	-	-	-	-	5,020
		5'	-	X		<2.00	<50.0	<50.0	-	-	-	-	-	2,530
		7'	-	X		-	-	-	-	-	-	-	-	1,880
		10'	-	X		-	-	-	-	-	-	-	-	<200

(-) Not Analyzed

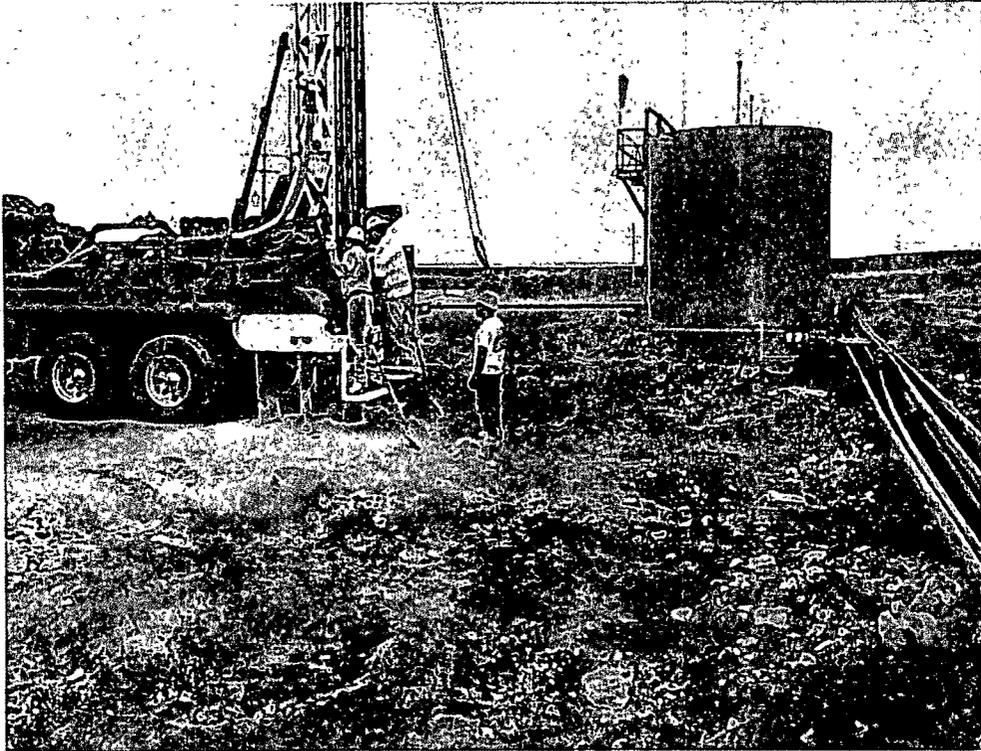
 Proposed Excavation Depths

Photos

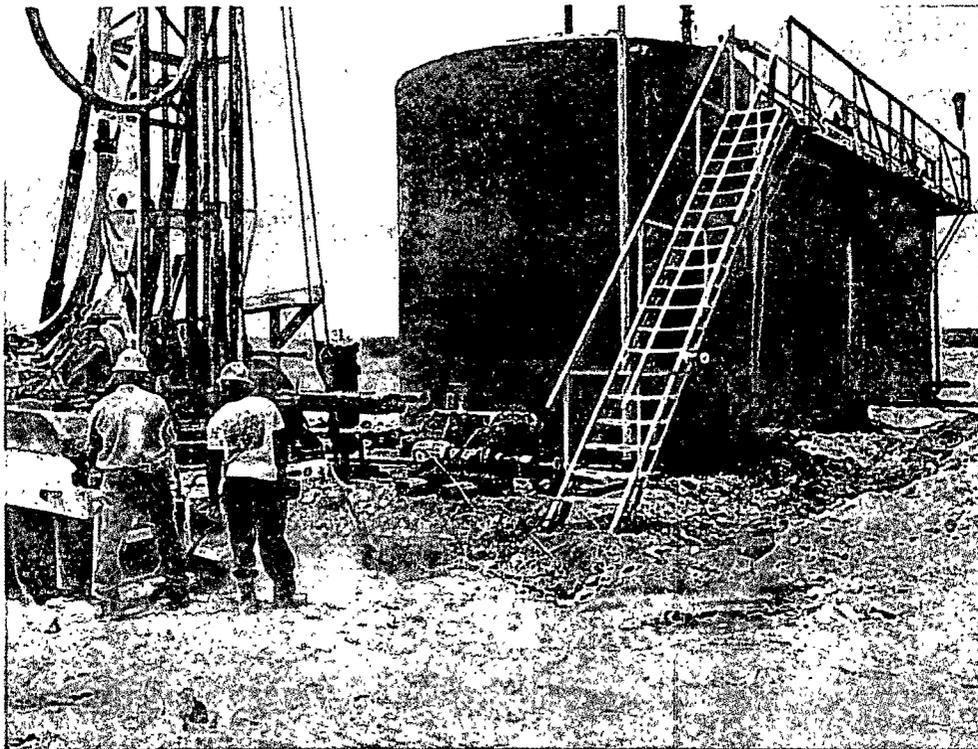
COG Operating LLC  
Chicken Hawk State #1 Tank Battery  
Eddy County, New Mexico  
Site Assessment (drilling): August 17-18, 2011



TETRA TECH



Installation of BH-1 inside tank battery

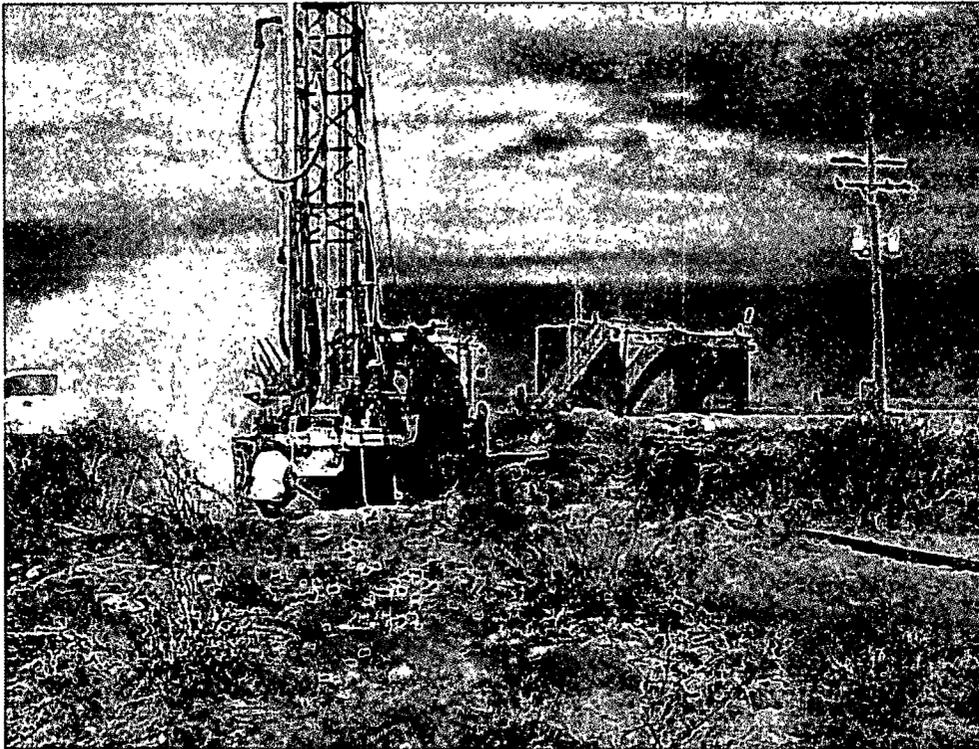


Installation of BH-3 near area spill breached berm

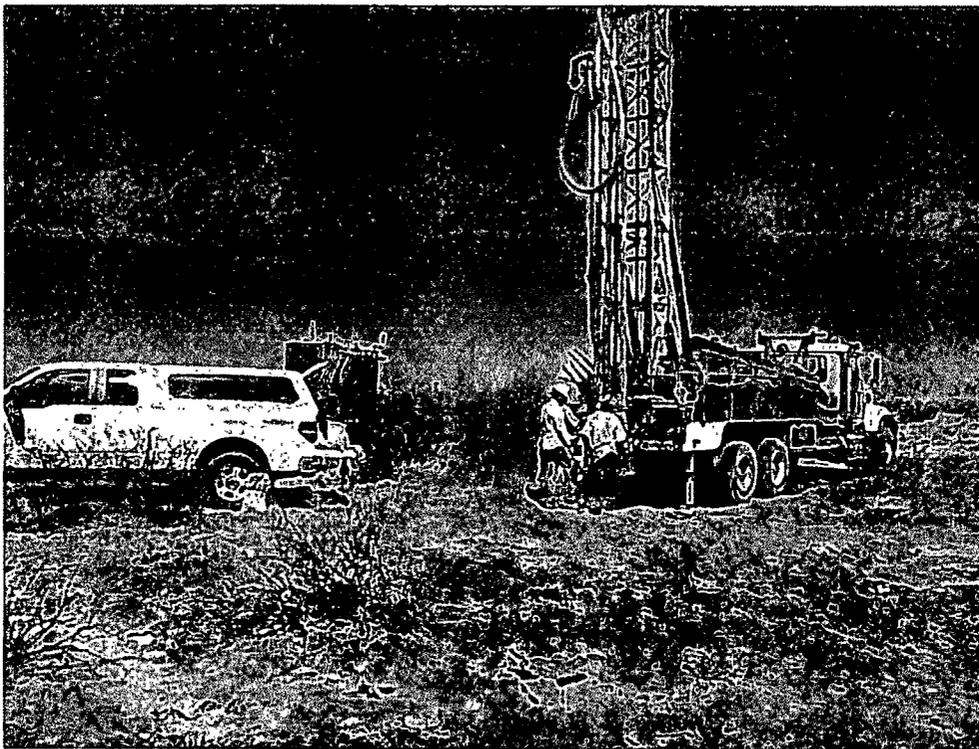
COG Operating LLC  
Chicken Hawk State #1  
Eddy County, New Mexico  
Site Assessment (drilling): August 17-18, 2011



TETRA TECH



Installation of BH-6



Installation of BH-8

0990

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	Chicken Hawk State #1	Facility Type	Tank Battery
Surface Owner	State	Mineral Owner	Lease No. (API#) 30-015-33682

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	15	25S	28E					Eddy

Latitude 32 08.236 Longitude 104 04.079

#### NATURE OF RELEASE

Type of Release	Produced fluid	Volume of Release	480bbbls	Volume Recovered	460bbbls
Source of Release	Tank	Date and Hour of Occurrence	07/08/2011	Date and Hour of Discovery	07/08/2011 11:00 a.m.
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Mike Bratcher---OCD		
By Whom?	Josh Russo	Date and Hour	07/21/2011 8:31 p.m.		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

A flush of production caused an influx of fluid to the battery. The flush of production was due to a well being shut in for workover evaluation, and then being returned into production. Choke back the wells that have been shut in for a prolonged period of time until production returns to normal volumes.

Describe Area Affected and Cleanup Action Taken.\*

Initially 480bbbls of produced fluid was released from the tank and we were able to recover 460bbls with a vacuum truck. We recovered roughly 110bbls of oil and 350bbls of produced water from the release. All free fluid has been recovered. The majority of the release was contained inside the facility walls with some reaching into the adjacent pasture area. Microblaze has been applied to the affected area 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:		<b>OIL CONSERVATION DIVISION</b>	
Printed Name:	Josh Russo	Approved by District Supervisor:	
Title:	HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address:	jrusso@conchoresources.com	Conditions of Approval:	
Date:	07/21/2011	Phone:	432-212-2399
		Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary

## Appendix B

**Water Well Data  
Average Depth to Groundwater (ft)  
COG - Chicken Hawk State #1  
Eddy County, New Mexico**

**24 South 27 East**

6	5	4	3	2	1	
7	8	26	9	10	11	12
18	17	16	15	14	13	
34					31	
19	20	21	22	23	24	
			70			
30	29	28	27	26	25	
31	32	33	34	35	36	

**24 South 28 East**

6	70	5	30	4	30	3	2	55	1	60
7	8	50	9	10	11	12				
18	17	16	15	14	13					
	42	29	18	52	34					
19	20	21	22	23	24					
	48									
30	29	28	27	26	25					
31	32	33	34	35	36					

**24 South 29 East**

6	5	4	3	2	1
7	8	9	10	11	12
160					
18	17	16	15	14	13
		18			
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**25 South 27 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
		19			

**25 South 28 East**

6	5	4	35	3	2	1
7	8	9	10	11	12	
18	17	16	15	48	14	13
				SITE		Pecos River
19	20	21	22	23	24	
	96					
30	29	28	27	26	25	
		90				
31	32	33	34	35	36	
					40	

**25 South 29 East**

6	5	4	3	2	1
7	8	9	10	11	12
40					
18	17	16	15	14	13
			40		
			60		
19	20	21	22	23	24
30	29	28	27	26	25
30					
31	32	33	34	35	36

**26 South 27 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
			50		
30	29	28	27	26	25
31	32	33	34	35	36

**26 South 28 East**

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

**26 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	57	23	24
			69			
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 - Chicken Hawk State #1

## Appendix C

## Summary Report

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

Report Date: August 31, 2011

Work Order: 11082204



Project Location: Eddy Co., NM  
 Project Name: COG/Chicken Hawk State #1  
 Project Number: 114-6400990

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
275072	BH-1 0-1' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275073	BH-1 3' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275074	BH-1 5' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275075	BH-1 7' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275076	BH-1 10' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275077	BH-1 15' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275078	BH-2 0-1' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275079	BH-2 3' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275080	BH-2 5' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275081	BH-2 7' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275082	BH-2 10' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275083	BH-3 0-1' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275084	BH-3 3' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275085	BH-3 5' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275086	BH-3 7' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275087	BH-3 10' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275088	BH-3 15' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275089	BH-3 20' (2' BEB)	soil	2011-08-17	00:00	2011-08-19
275090	BH-4 0-1'	soil	2011-08-17	00:00	2011-08-19
275091	BH-4 3'	soil	2011-08-17	00:00	2011-08-19
275092	BH-4 5'	soil	2011-08-17	00:00	2011-08-19
275093	BH-4 7'	soil	2011-08-17	00:00	2011-08-19
275094	BH-4 10'	soil	2011-08-17	00:00	2011-08-19
275095	BH-5 0-1'	soil	2011-08-18	00:00	2011-08-19
275096	BH-5 3'	soil	2011-08-18	00:00	2011-08-19
275097	BH-5 5'	soil	2011-08-18	00:00	2011-08-19
275098	BH-5 7'	soil	2011-08-18	00:00	2011-08-19
275099	BH-6 0-1'	soil	2011-08-18	00:00	2011-08-19
275100	BH-6 3'	soil	2011-08-18	00:00	2011-08-19
275101	BH-6 5'	soil	2011-08-18	00:00	2011-08-19

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
275102	BH-6 7'	soil	2011-08-18	00:00	2011-08-19
275103	BH-7 0-1'	soil	2011-08-18	00:00	2011-08-19
275104	BH-7 3'	soil	2011-08-18	00:00	2011-08-19
275105	BH-7 5'	soil	2011-08-18	00:00	2011-08-19
275106	BH-8 0-1'	soil	2011-08-18	00:00	2011-08-19
275107	BH-8 3'	soil	2011-08-18	00:00	2011-08-19
275108	BH-8 5'	soil	2011-08-18	00:00	2011-08-19
275109	BH-8 7'	soil	2011-08-18	00:00	2011-08-19
275110	BH-9 0-1'	soil	2011-08-18	00:00	2011-08-19
275111	BH-9 3'	soil	2011-08-18	00:00	2011-08-19
275112	BH-9 5'	soil	2011-08-18	00:00	2011-08-19
275113	BH-9 7'	soil	2011-08-18	00:00	2011-08-19
275114	BH-9 10'	soil	2011-08-18	00:00	2011-08-19

Sample - Field Code	BTEX				TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)		
275072 - BH-1 0-1' (2' BEB)	1.92	15.8	20.0	79.0	4640	3320 Q*
275073 - BH-1 3' (2' BEB)					1440 Q*	474 Q*,Q*
275074 - BH-1 5' (2' BEB)					1460 Q*	294 Q*,Q*
275075 - BH-1 7' (2' BEB)					<50.0	18.4 Q*,Q*
275076 - BH-1 10' (2' BEB)					<50.0	5.72 Q*,Q*
275077 - BH-1 15' (2' BEB)					<50.0	<2.00 Q*,Q*
275078 - BH-2 0-1' (2' BEB)					839	864 Q*
275079 - BH-2 3' (2' BEB)					1250 Q*,Q*	407 Q*,Q*
275080 - BH-2 5' (2' BEB)					857	136 Q*,Q*
275081 - BH-2 7' (2' BEB)					404	119 Q*,Q*
275082 - BH-2 10' (2' BEB)					<50.0	8.79 Q*,Q*
275083 - BH-3 0-1' (2' BEB)	<1.00	<1.00	<1.00	17.8	6110	1350 Q*
275084 - BH-3 3' (2' BEB)					3170 Q*,Q*	728 Q*,Q*
275085 - BH-3 5' (2' BEB)					2130 Q*,Q*	1330 Q*,Q*
275086 - BH-3 7' (2' BEB)					478	192 Q*,Q*
275087 - BH-3 10' (2' BEB)					<50.0	12.2 Q*,Q*
275088 - BH-3 15' (2' BEB)					<50.0	<2.00 Q*,Q*
275089 - BH-3 20' (2' BEB)					222	19.4 Q*,Q*
275090 - BH-4 0-1'	<1.00	<1.00	4.22	19.6	15800	2110 Q*
275091 - BH-4 3'					1960 Q*,Q*	541 Q*,Q*
275092 - BH-4 5'					458 Q*,Q*	49.4 Q*,Q*
275093 - BH-4 7'					72.9	6.74 Q*,Q*
275094 - BH-4 10'					<50.0	<2.00 Q*,Q*
275095 - BH-5 0-1'	<1.00	2.51	6.05	18.5	22700	2320 Q*
275096 - BH-5 3'					7840 Q*,Q*	914 Q*,Q*
275097 - BH-5 5'					661 Q*,Q*	61.9
275098 - BH-5 7'					<50.0 Q*,Q*	2.63
275099 - BH-6 0-1'					667	126 Q*
275100 - BH-6 3'					<50.0 Q*,Q*	<2.00
275103 - BH-7 0-1'					2670	350 Q*
275104 - BH-7 3'					968 Q*,Q*	31.1
275105 - BH-7 5'					1260	45.3
275106 - BH-8 0-1'					<50.0	<2.00 Q*
275110 - BH-9 0-1'					656	109 Q*

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Sample - Field Code	BTEX				TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)		
275111 - BH-9 3'					179 Qr.Qr	3.84
275112 - BH-9 5'					<50.0	<2.00

**Sample: 275072 - BH-1 0-1' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		2910	mg/Kg	4

**Sample: 275073 - BH-1 3' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		571	mg/Kg	4

**Sample: 275074 - BH-1 5' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		352	mg/Kg	4

**Sample: 275075 - BH-1 7' (2' BEB)**

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

**Sample: 275076 - BH-1 10' (2' BEB)**

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

**Sample: 275077 - BH-1 15' (2' BEB)**

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

**Sample: 275078 - BH-2 0-1' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		612	mg/Kg	4

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**Sample: 275079 - BH-2 3' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		642	mg/Kg	4

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**Sample: 275080 - BH-2 5' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		520	mg/Kg	4

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**Sample: 275081 - BH-2 7' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		204	mg/Kg	4

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**Sample: 275082 - BH-2 10' (2' BEB)**

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

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**Sample: 275083 - BH-3 0-1' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		7960	mg/Kg	4

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**Sample: 275084 - BH-3 3' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		3410	mg/Kg	4

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**Sample: 275085 - BH-3 5' (2' BEB)**

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Param	Flag	Result	Units	RL
Chloride		2880	mg/Kg	4

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**Sample: 275086 - BH-3 7' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		762	mg/Kg	4

**Sample: 275087 - BH-3 10' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		445	mg/Kg	4

**Sample: 275088 - BH-3 15' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		630	mg/Kg	4

**Sample: 275089 - BH-3 20' (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		413	mg/Kg	4

**Sample: 275090 - BH-4 0-1'**

Param	Flag	Result	Units	RL
Chloride		9990	mg/Kg	4

**Sample: 275091 - BH-4 3'**

Param	Flag	Result	Units	RL
Chloride		1590	mg/Kg	4

**Sample: 275092 - BH-4 5'**

Param	Flag	Result	Units	RL
Chloride		326	mg/Kg	4

**Sample: 275093 - BH-4 7'**

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

**Sample: 275094 - BH-4 10'**

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

**Sample: 275095 - BH-5 0-1'**

Param	Flag	Result	Units	RL
Chloride		1360	mg/Kg	4

**Sample: 275096 - BH-5 3'**

Param	Flag	Result	Units	RL
Chloride		621	mg/Kg	4

**Sample: 275097 - BH-5 5'**

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

**Sample: 275098 - BH-5 7'**

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

**Sample: 275099 - BH-6 0-1'**

Param	Flag	Result	Units	RL
Chloride		363	mg/Kg	4

**Sample: 275100 - BH-6 3'**

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

**Sample: 275101 - BH-6 5'**

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

**Sample: 275102 - BH-6 7'**

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

**Sample: 275103 - BH-7 0-1'**

Param	Flag	Result	Units	RL
Chloride		3220	mg/Kg	4

**Sample: 275104 - BH-7 3'**

Param	Flag	Result	Units	RL
Chloride		1160	mg/Kg	4

**Sample: 275105 - BH-7 5'**

Param	Flag	Result	Units	RL
Chloride		1330	mg/Kg	4

**Sample: 275106 - BH-8 0-1'**

Param	Flag	Result	Units	RL
Chloride		4610	mg/Kg	4

**Sample: 275107 - BH-8 3'**

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

**Sample: 275108 - BH-8 5'**

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

**Sample: 275109 - BH-8 7'**

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

**Sample: 275110 - BH-9 0-1'**

Param	Flag	Result	Units	RL
Chloride		23200	mg/Kg	4

**Sample: 275111 - BH-9 3'**

Param	Flag	Result	Units	RL
Chloride		5020	mg/Kg	4

**Sample: 275112 - BH-9 5'**

Param	Flag	Result	Units	RL
Chloride		2530	mg/Kg	4

**Sample: 275113 - BH-9 7'**

Param	Flag	Result	Units	RL
Chloride		1880	mg/Kg	4

**Sample: 275114 - BH-9 10'**

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

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - Chicken Hawk State #1**  
**Eddy County, New Mexico**

**24 South      27 East**

6	5	4	3	2	1
7	8	26	9	10	11
		43	12	13	14
18	17	16	15	14	13
34					31
19	20	21	22	23	24
			70		
30	29	28	27	26	25
31	32	33	34	35	36

**24 South      28 East**

6	70	5	30	4	30	3	2	55	1	60
7	8	50	9	10	11	12				
				17	20	73				
18	17	16	15	14	13					
	42	29	18	52	34					
19	20	21	22	23	24					
		48								
30	29	28	27	26	25					
31	32	33	34	35	36					

**24 South      29 East**

6	5	4	3	2	1
7	8	9	10	11	12
160					
18	17	16	15	14	13
		78			
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

**25 South      27 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
		19			

**25 South      28 East**

6	5	4	35	3	2	1
7	8	9	10	11	12	
18	17	16	15	48	14	13
			SITE			
19	20	21	22	23	24	
	96					
30	29	28	27	26	25	
		90				
31	32	33	34	35	36	
					40	

**25 South      29 East**

6	5	4	3	2	1
7	8	9	10	11	12
40					
18	17	16	15	14	13
			40		
			60		
19	20	21	22	23	24
30	29	28	27	26	25
30					
31	32	33	34	35	36

**26 South      27 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
			50		
30	29	28	27	26	25
31	32	33	34	35	36

**26 South      28 East**

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

**26 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
			57		
			69		
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 - Chicken Hawk State #1