

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Brigham H South Tank Battery				
Company:	COG Operating LLC				
Section, Township and Range	Unit C	Sec. 28	T-17-S	R-30-E	
Lease Number:	API-30-015-50473				
County:	Eddy County				
GPS:	32.81208° N			103.97825° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	In Loco Hills at intersection of Hagerman Cutoff and Hwy 82, travel south on Hagerman Cutoff 0.3 miles, turn left east 0.5 miles to location on left.				

Release Data:

Date Released:	5/16/2012
Type Release:	Oil
Source of Contamination:	Circulating pump seal failure
Fluid Released:	13 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@tetrattech.com

Ranking Criteria:

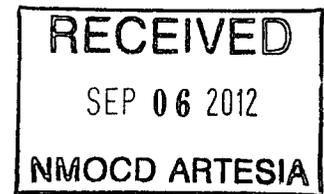
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0
Wellhead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>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 6, 2012

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

Re: Assessment and Work Plan for the COG Operating LLC., Brigham H South Tank Battery Located in Unit C, Section 28, 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 Brigham H South Tank Battery Located in Unit C, Section 28, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81208°, W 103.97825°. 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 May 16, 2012, and released approximately thirteen (13) barrels (bbls) of oil due to a seal failure on a circulating pump. COG personnel replaced the defective seal. Approximately ten (10) bbls of free fluids were recovered from the spill area.

The spill initiated from the circulating pump on the west side of the tank battery. The spill remained inside the facility berms impacting along the north, west and south edge of the facility. The spill measures approximately 4' x 95' (south edge), 3' x 55' (north edge), and source area 25'x15'. The footprint of the spill is shown on Figure 3. The initial Form C-141 is enclosed in Appendix A.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com



Groundwater

No wells were located in Section 28. According to the NMOCD groundwater map, depth to groundwater in this area is approximately 275' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment

Prior to sampling, COG removed approximately 3"- 6" from the spill area. On July 3, 2012, Tetra Tech personnel inspected and sampled the spill area. 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. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, auger holes (AH-1, AH-3, and AH-4) were below the RRAL for TPH and BTEX. The remaining auger holes (AH-2, AH-5 and AH-6) at 0-1' exceeded the RRAL for TPH and BTEX. Auger hole (AH-5) was vertically defined, declining below the RRAL of 4,823 mg/kg. AH-2 and AH-6 were not vertically defined. In addition, the spill area did not show a significant chloride impact to the soils. The area of AH-4 showed an elevated chloride of 4,320 mg/kg at 0-1', which was not vertically defined.



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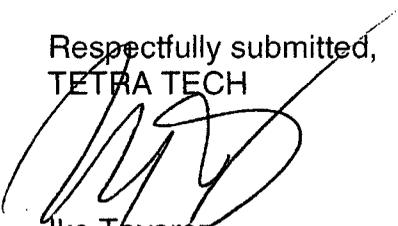
Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown in Figure 4. The areas of auger holes (AH-2, AH-4, AH-5, and AH-6) will be excavated to a depth of approximately 1.0 to 2.0' below surface. Once excavated to the appropriate depths, confirmation samples will be collected in the areas of AH-2 and AH-6 for TPH and BTEX. In addition, a backhoe trench will be installed in the area of AH-4 to define the chloride impact in the area and field screened for chlorides. Based on the results, the impacted soil will be excavated to the appropriate depths. The excavated soil will be transported to proper disposal. The excavated area will be backfilled with clean material.

Due to the location of the spill, the proposed excavation depths and areas may not be achieved due to a shallow dense caliche layer, oil and gas equipment, electrical, structures or lines which may not be feasible or practicable to be removed due to safety 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. If deeper impact is encountered and excavation cannot be achieved, the impacted soil will be capped with either 40 mil liner or clay material at 3.0' to 4.0' below surface and backfilled with soil to grade.

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

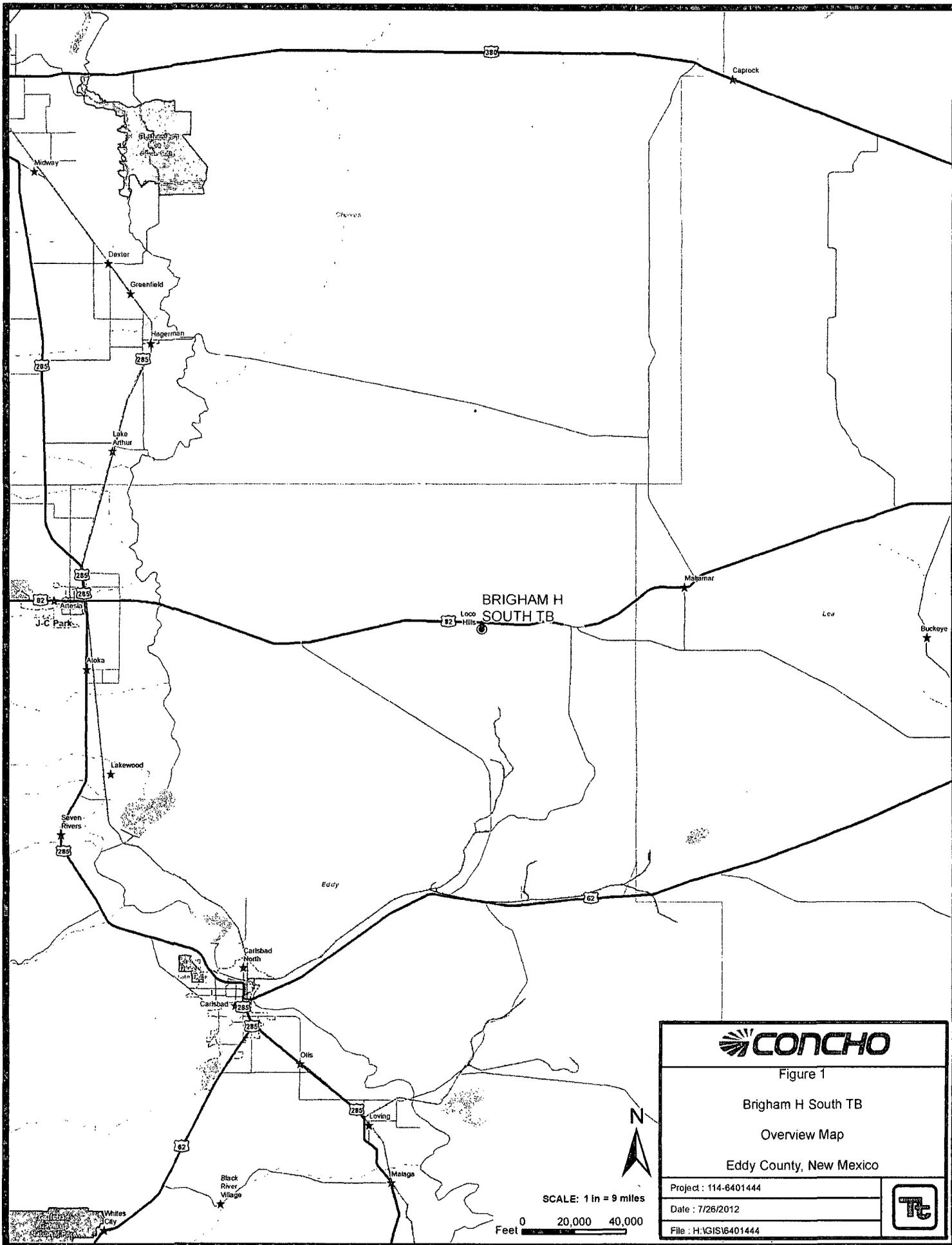
Respectfully submitted,
TETRA TECH



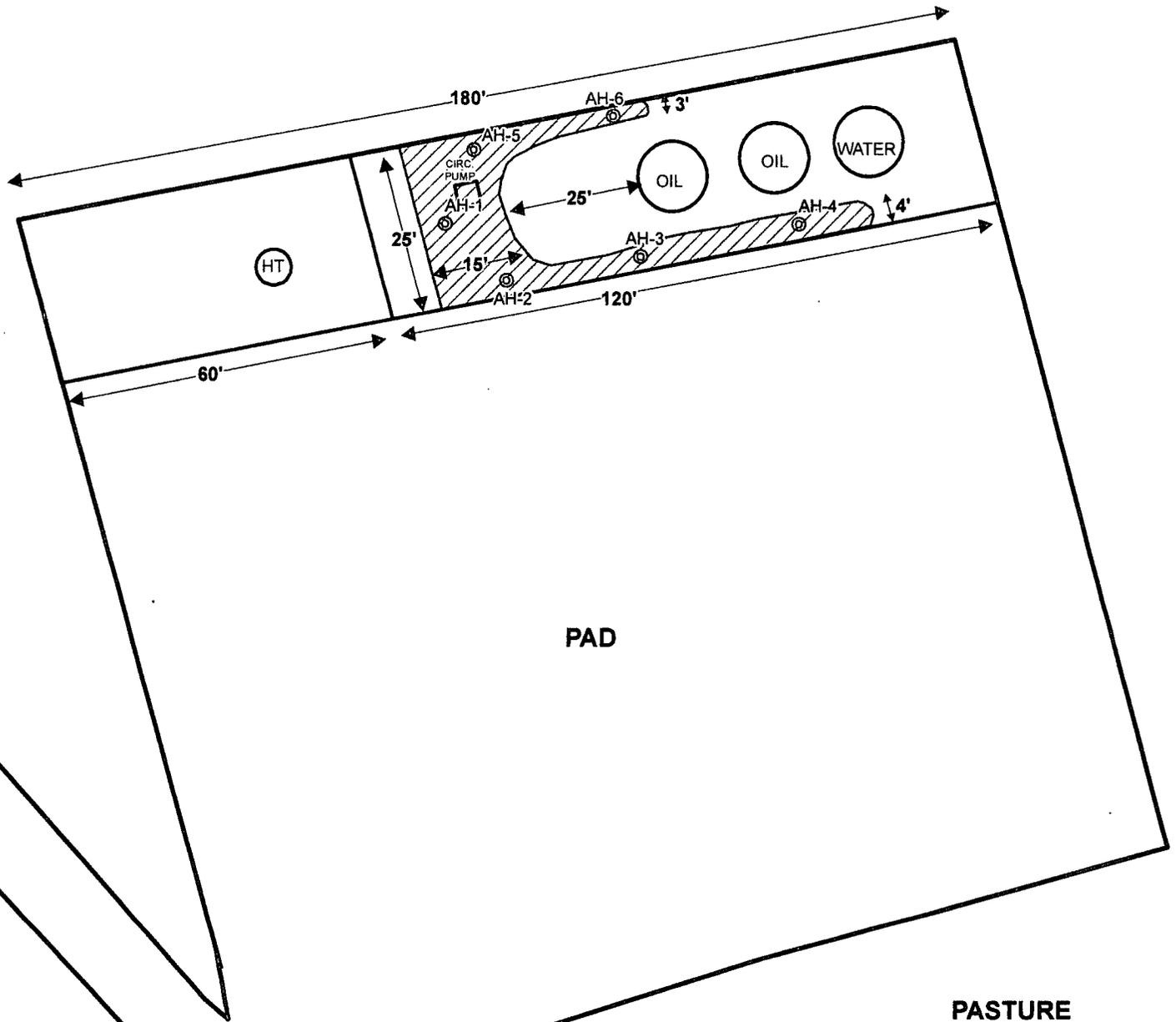
Ike Tavaréz
Senior Project Manager

cc: Pat Ellis – COG
Terry Gregston - BLM

Figures



PASTURE



PASTURE

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA



SCALE: 1 IN = 36 FEET



Figure 3

Brigham H South TB

Spill Assessment Map

Eddy County, New Mexico

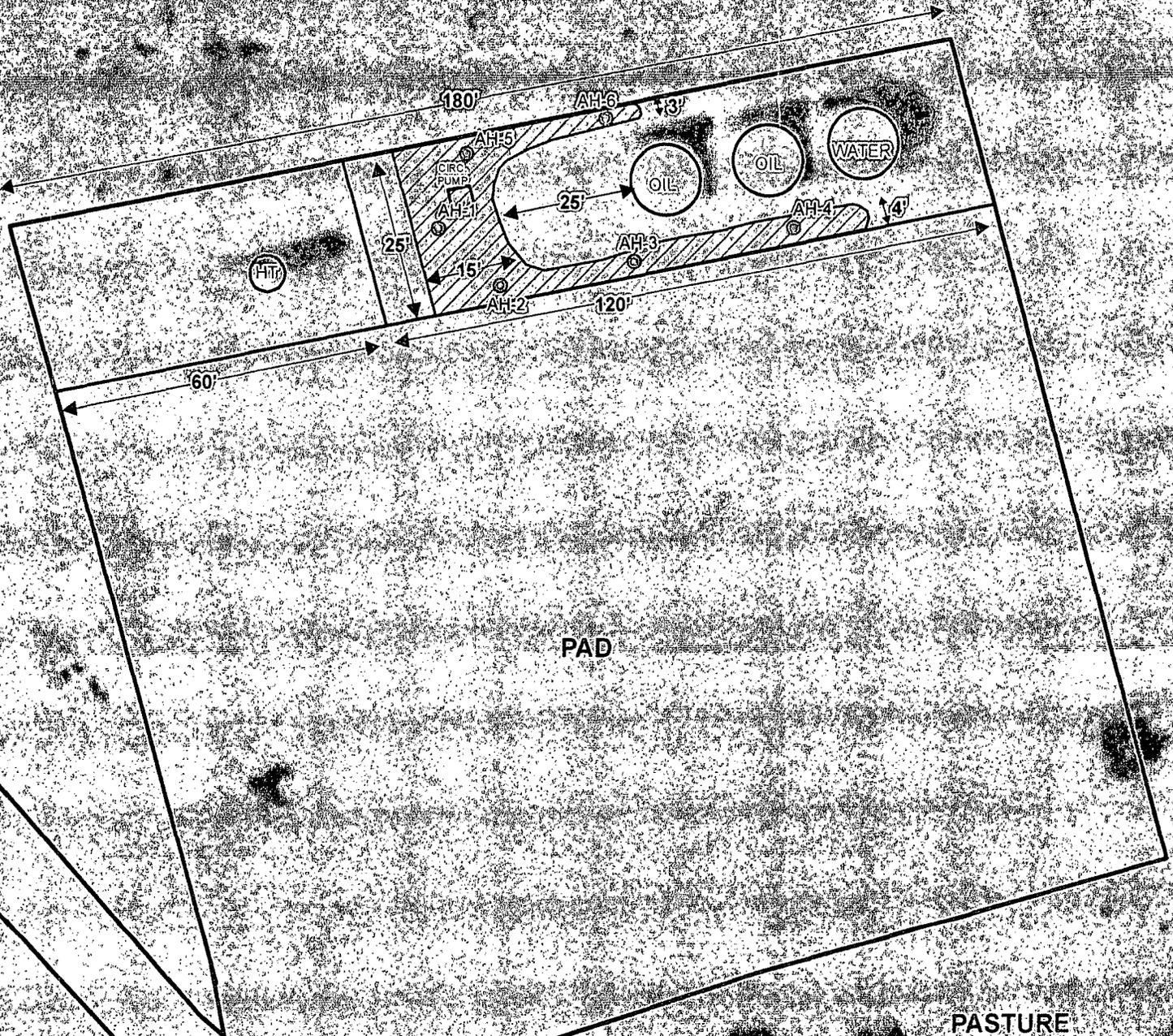
Project : 114-6401444

Date : 7/26/2012

File : H3GIS16401444



PASTURE



PAD

PASTURE

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA



Figure 3

Brigham H South TB

Spill Assessment Map

Eddy County, New Mexico

Project : 114-6401444

Date : 7/26/2012

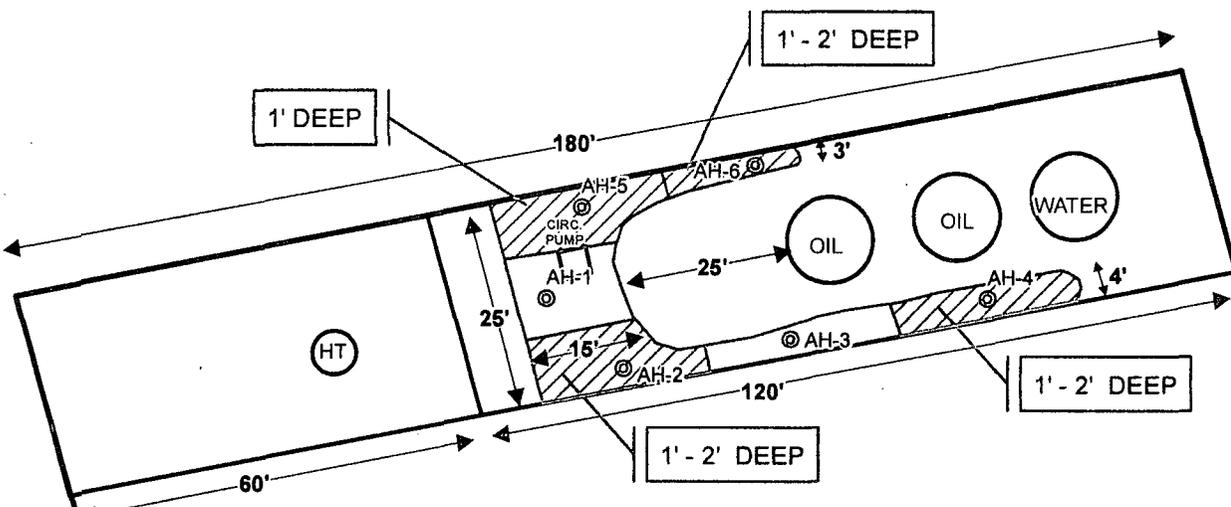
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SCALE: 1 IN = 36 FEET



PASTURE



PAD

PASTURE

EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ▨ PROPOSED EXCAVATION AREA

CONCHO

Figure 4

Brigham H South TB

Proposed Excavation Area & Depths Map

Eddy County, New Mexico

Project : 114-6401444	
Date : 7/26/2012	
File : H:\GIS\6401444	

SCALE: 1 IN = 33 FEET



Tables

Table 1
COG Operating LLC.
Brigham H South Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB 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	0.5	X		21.9	1,590	1,612	0.0231	0.645	0.335	0.507	1.51	99.6
	"	1-1.5	0.5	X		-	-	-	-	-	-	-	-	<20.0
	"	1.5-2	0.5	X		-	-	-	-	-	-	-	-	<20.0
AH-2	7/3/2012	0-1	0.5	X		1,620	4,000	5,620	0.264	22.4	38.1	69.8	131	<20.0
	"	1-1.5	0.5	X		-	-	-	-	-	-	-	-	94.6
AH-3	7/3/2012	0-1	0.5	X		46.6	711	758	0.0609	0.245	0.411	0.713	1.43	632
AH-4	7/3/2012	0-0.5	0.5	X		6.65	72.9	79.6	<0.0200	0.0504	0.0227	0.0236	0.097	4,320
AH-5	7/3/2012	0-1	0.5	X		1,120	10,000	11,120	<0.200	7.82	18.3	32.3	58.4	<20.0
	"	1-1.5	0.5	X		763	4,060	4,823	<0.400	4.10	8.63	16.4	29.1	<20.0
AH-6	7/3/2012	0-1	0.5	X		2,750	4,200	6,950	2.05	8.85	22.9	24.9	58.7	76.0

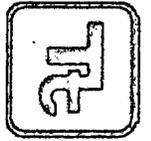
(-) Not Analyzed

(BEB) Below Excavation Bottom

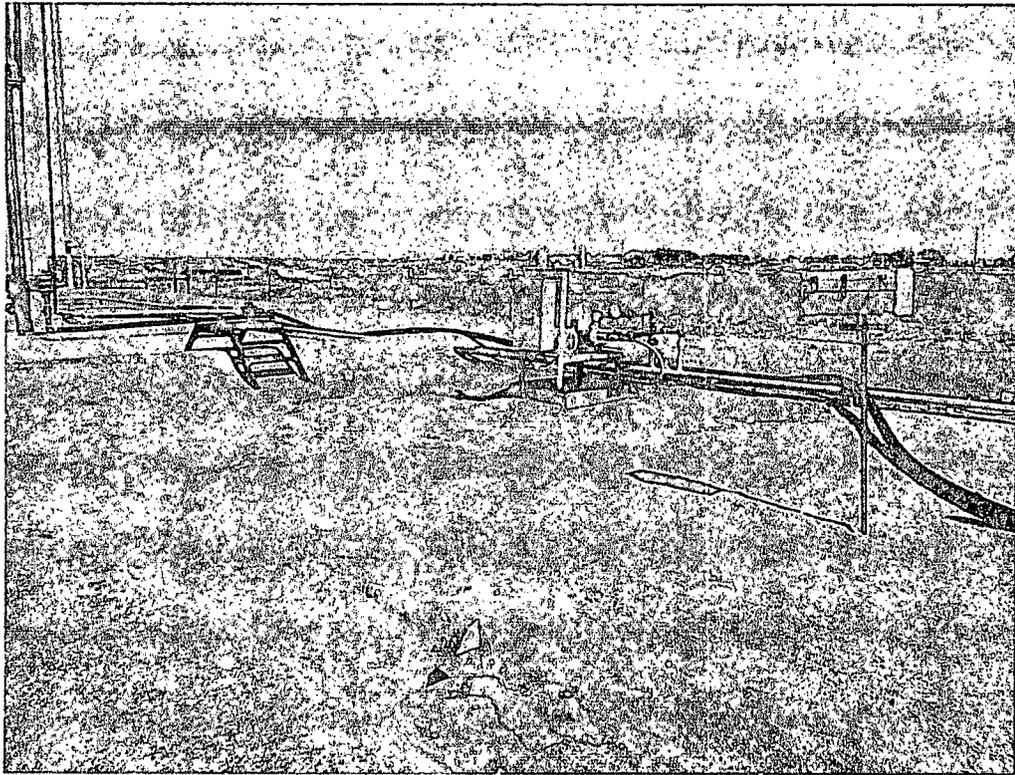
 Proposed Excavation Depths

Photos

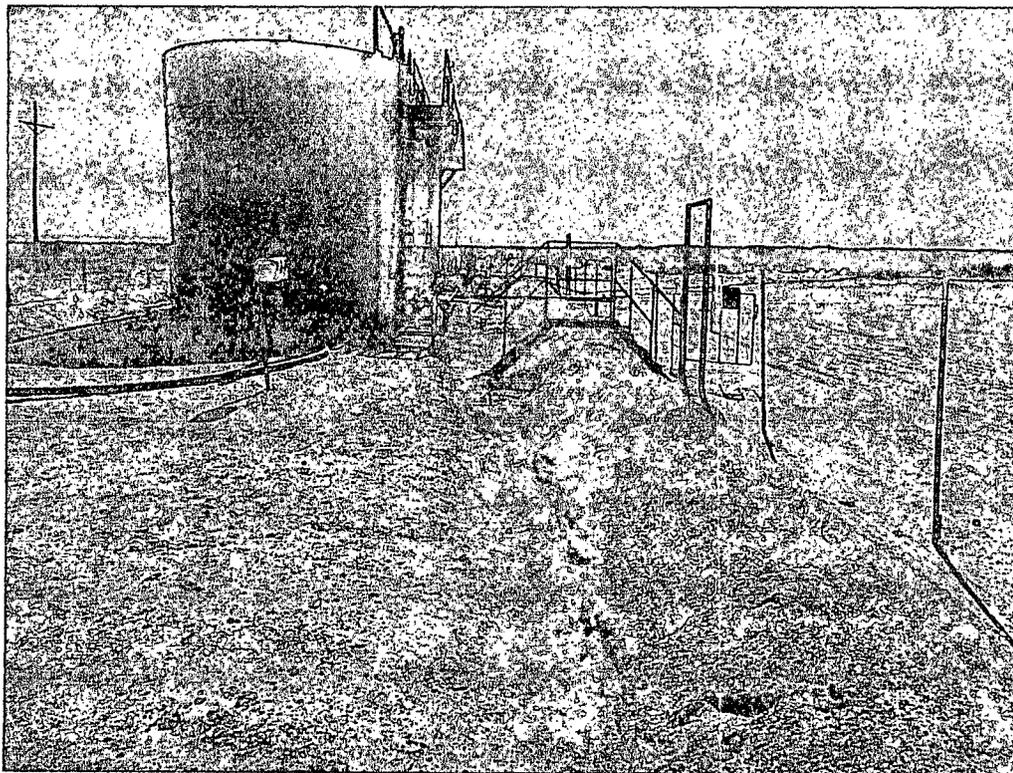
COG Operating LLC
Brigham H South Tank Battery
Eddy County, New Mexico



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View north west – Circulation pump source, near AH-1 and AH-2

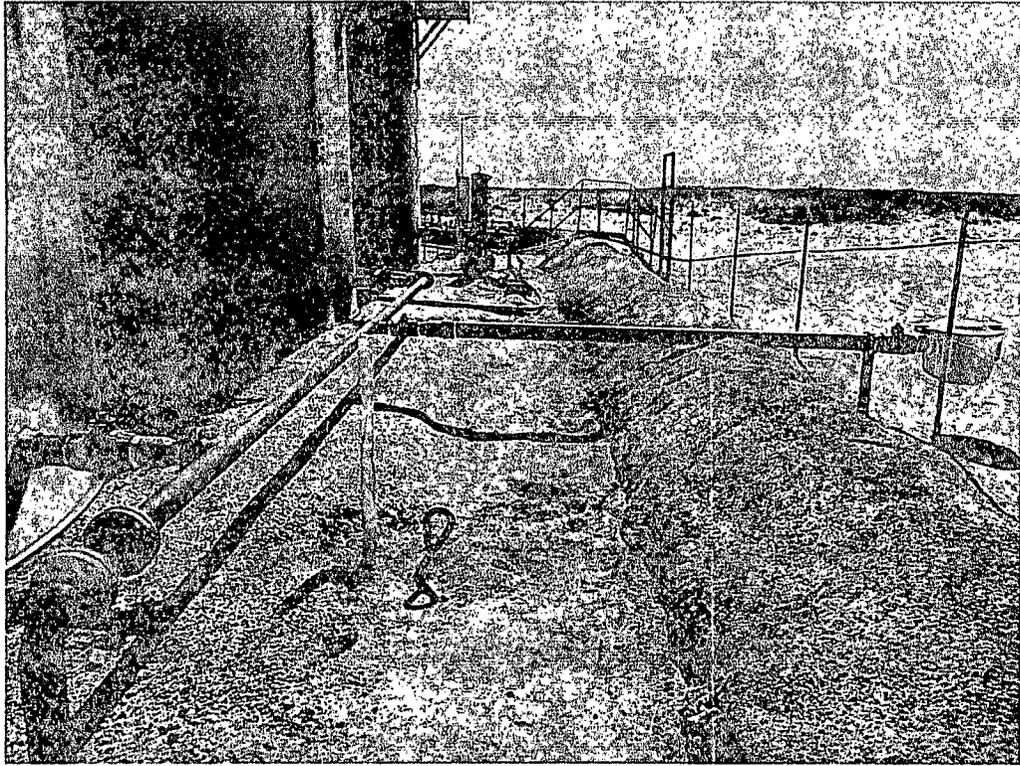


View east – Near AH-2 and AH-3

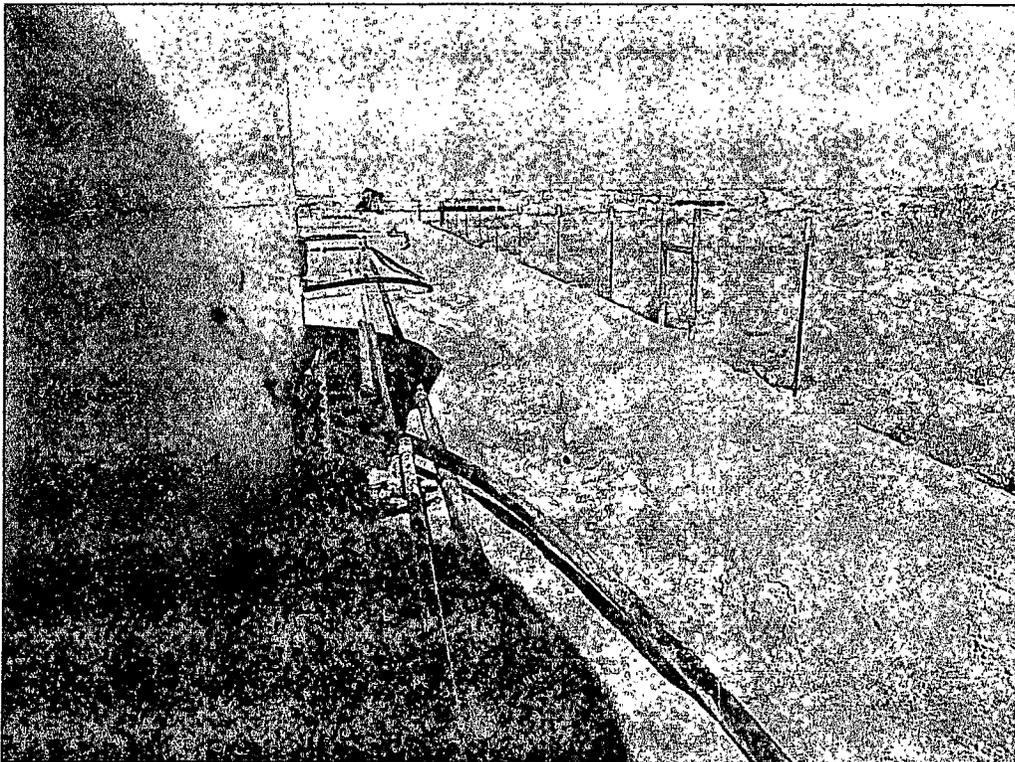
COG Operating LLC
Brigham H South Tank Battery
Eddy County, New Mexico



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View east – front side of battery near AH-4



View west – backside of battery near AH-5 and AH-6

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	Brigham H South Tank Battery	Facility Type	Tank Battery
Surface Owner	Federal	Mineral Owner	
		Lease No. (API#)	30-015-50473
		Closest well location	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	28	17	30E					Eddy

Latitude 32 48.720 Longitude 103 58.685

NATURE OF RELEASE

Type of Release	Oil	Volume of Release	13bbls	Volume Recovered	10bbls
Source of Release	Circulating pump	Date and Hour of Occurrence	05/16/2012	Date and Hour of Discovery	05/16/2012 1:03 p.m.
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
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.*

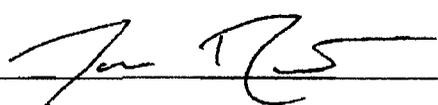
Describe Cause of Problem and Remedial Action Taken.*

The seal on the circulating pump was not working correctly and subsequently caused a release of oil into the facility. The seal inside the pump has been replaced.

Describe Area Affected and Cleanup Action Taken.*

Initially 13bbls of oil was released from the circulating pump and we were able to recover 10bbls with a vacuum truck. All free fluid has been recovered and several inches of the contaminated soil has been removed from the facility and hauled to disposal. 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:	
Date:	06/04/2012	Phone:	432-212-2399
		Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Brigham H South Tank Battery
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	29	28	27	26	25
30	32	33	34	35	36
31					

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
					288
					113
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
290					

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
	208'				
31	32	33	34	35	36
				153	

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
		SITE			
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
			271		

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
					400
					317
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
				281	

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Site Location -Brigham H South Tank Battery

Appendix C

Summary Report

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

Report Date: July 20, 2012

Work Order: 12070519

Project Location: Eddy Co., NM
Project Name: COG/Brigham H South Tank Battery
Project Number: 114-6401444

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
302766	AH-1 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302767	AH-1 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302768	AH-1 1.5-2' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302769	AH-2 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302770	AH-2 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302771	AH-3 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302772	AH-4 0-.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302773	AH-5 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302774	AH-5 1-1.5' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05
302775	AH-6 0-1' (6 in. BEB)	soil	2012-07-03	00:00	2012-07-05

Sample - Field Code	BTEX				MTBE MTBE (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)			
302766 - AH-1 0-1' (6 in. BEB)	0.0231	0.645	0.335	0.507		1590 Qs	21.9 Qs
302769 - AH-2 0-1' (6 in. BEB)	0.264	22.4	38.1	69.8		4000 Qs	1620 Jc,Qs
302771 - AH-3 0-1' (6 in. BEB)	0.0609	0.245	0.411	0.713		711 Qs	46.6 Qs
302772 - AH-4 0-.5' (6 in. BEB)	<0.0200	0.0504	0.0227	0.0236		72.9 Qs	6.65 Qs
302773 - AH-5 0-1' (6 in. BEB)	<0.200 ¹	7.82	18.3	32.3		10000 Qs	1120 Jc,Qs
302774 - AH-5 1-1.5' (6 in. BEB)	<0.400 ²	4.10	8.63	16.4	<0.400	4060 Qs	763
302775 - AH-6 0-1' (6 in. BEB)	2.05	8.85	22.9	24.9		4200 Qs	2750 ³ Qs

Sample: 302766 - AH-1 0-1' (6 in. BEB)

continued ...

¹Dilution due to excessive hydrocarbons.

²Dilution due to excessive hydrocarbons.

³Sample weighed out of 48-hr preservation time.

sample 302766 continued ...

Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		99.6	mg/Kg	4

Sample: 302767 - AH-1 1-1.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 302768 - AH-1 1.5-2' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 302769 - AH-2 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 302770 - AH-2 1-1.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		94.6	mg/Kg	4

Sample: 302771 - AH-3 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		632	mg/Kg	4

Sample: 302772 - AH-4 0-.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		4320	mg/Kg	4

Sample: 302773 - AH-5 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 302774 - AH-5 1-1.5' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Sample: 302775 - AH-6 0-1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		76.0	mg/Kg	4
