SITE INFORMATION

Report Type: Work Plan

2RP-490

General Site Information:		
Site:	Ruthie Fee #1	
Company:	COG Operating LLC	
Section, Township and Range	Unit M - Sec 10 - T22S - R27E	
Lease Number:	30-015-33403	
County:	Eddy County	
GPS:	32.40284° N	104.18361° W
Surface Owner:	Private	
Mineral Owner:		
Directions:	In Carlsbad, NM at the intersection of Hwy 62 and S. Canal Street, travel south on S. Canal St for 1.0 miles, turn left on E. Fiesta Drive, travel 2.2 miles, cross cattle guard and 0.1 mile to location on right.	

RECEIVED
MAR 16 2011
NMOCD ARTESIA

Release Data:	
Date Released:	11/22/2010
Type Release:	Oil
Source of Contamination:	Cow inside tank battery fence
Fluid Released:	17 bbls
Fluids Recovered:	15 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
P.O. Box			
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 631-0348
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		ike.tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	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:	**20**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	100

TETRA TECH

March 1, 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., Ruthie Fee #1 Tank Battery, Unit M, Section 10, Township 22 South, Range 27 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 Ruthie Fee #1 Tank Battery, Unit M, Section 10, Township 22 South, Range 27 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.40284°, W 104.18361°. 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 November 22, 2010, and released approximately seventeen (17) barrels of oil due to a cow entering the tank battery fence and partially opening the circulating discharge valve. Fifteen (15) barrels of standing fluids were recovered from the spill area. The spill initiated from the valve and impacted an area approximately 2' x 30' inside the facility firewall. The initial C-141 form is enclosed in Appendix A.

Groundwater

According to the New Mexico Office of the State Engineer water report, a water well was located in Section 10 with a recorded depth to groundwater of 40' below surface. Wells within the adjacent Sections recorded depths to groundwater ranging from 18' to 70' below surface. The water report data is shown in Appendix B.

Tetra Tech
1910 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432 682 3946 www.tetratech.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 100 mg/kg.

Soil Assessment and Analytical Results

On December 27, 2010, Tetra Tech personnel inspected and sampled the spill area. Based on the area, one (1) auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. All samples were analyzed for TPH analysis by EPA method 8015 modified and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, the sample from 0-1' exceeded the RRAL for TPH and the deeper sample at 1.0'-1.5' was below the RRAL. Chlorides showed concentrations of <200 mg/kg at 0-1.0' and 223 mg/kg at 1.0-1.5' below surface.

Work Plan

In order to remediate the site, COG proposes to excavate the impacted soils. The proposed excavation depth is approximately 1.0' below surface as highlighted in Table 1. Since no BTEX analysis was performed, a confirmation sample for BTEX will be collected after the excavation. All excavated material will be transported to proper disposal. Once excavation is complete, the site will be backfilled with clean material. Upon completion, a final report will be submitted to the NMOCD.

TETRA TECH

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 Tavarez
Project Manager

cc: Pat Ellis – COG

FIGURES

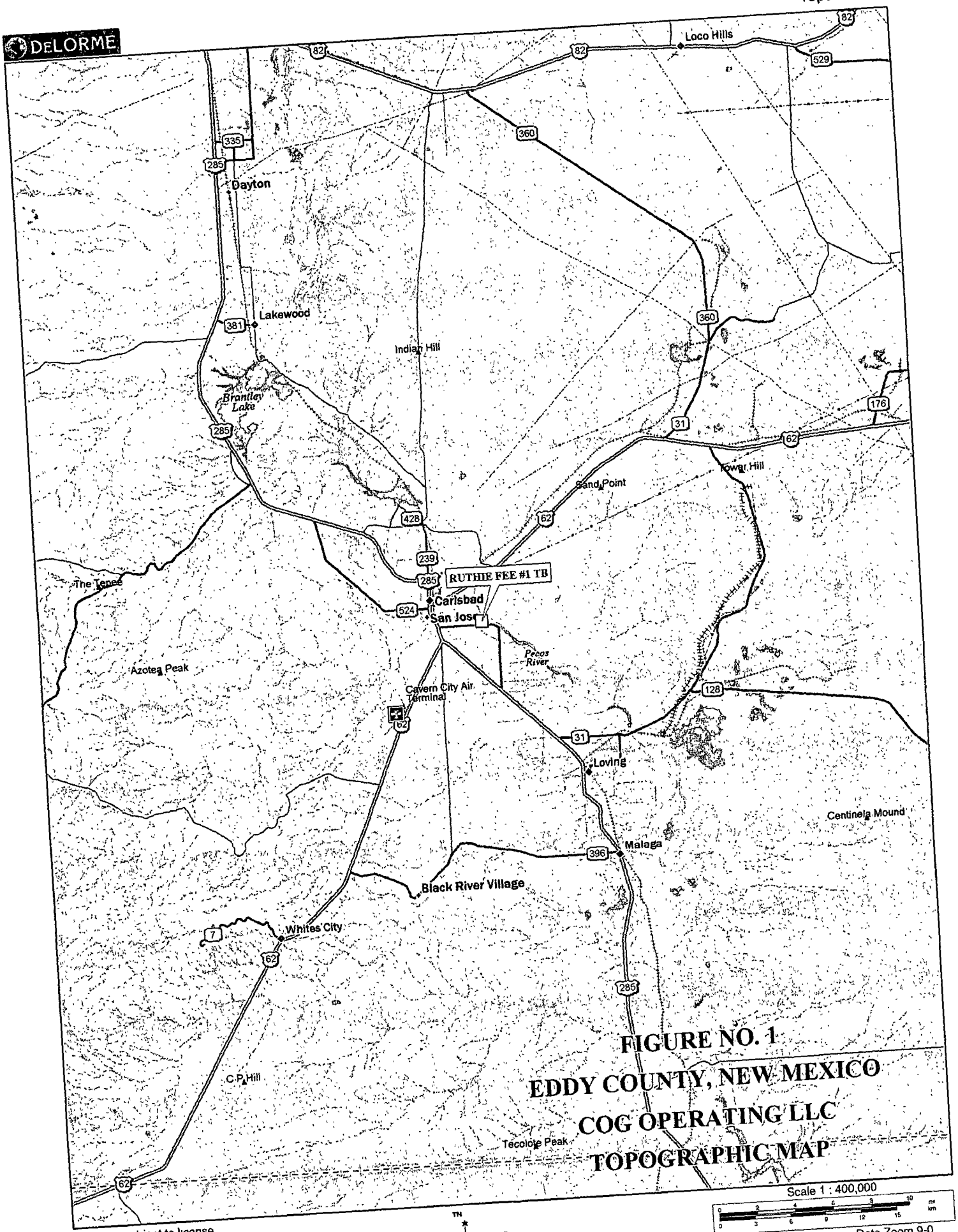


FIGURE NO. 1

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

TOPOGRAPHIC MAP

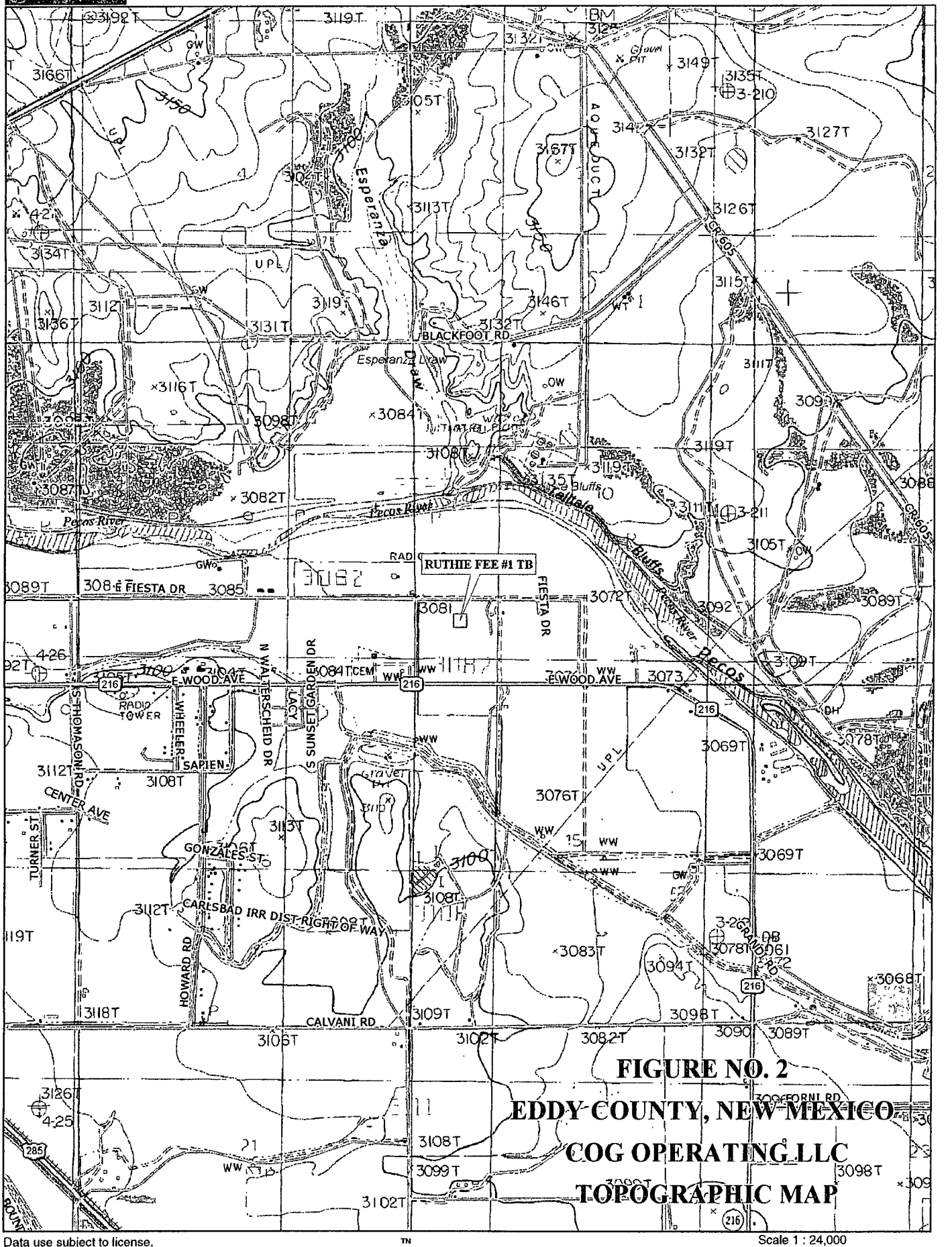


FIGURE NO. 2

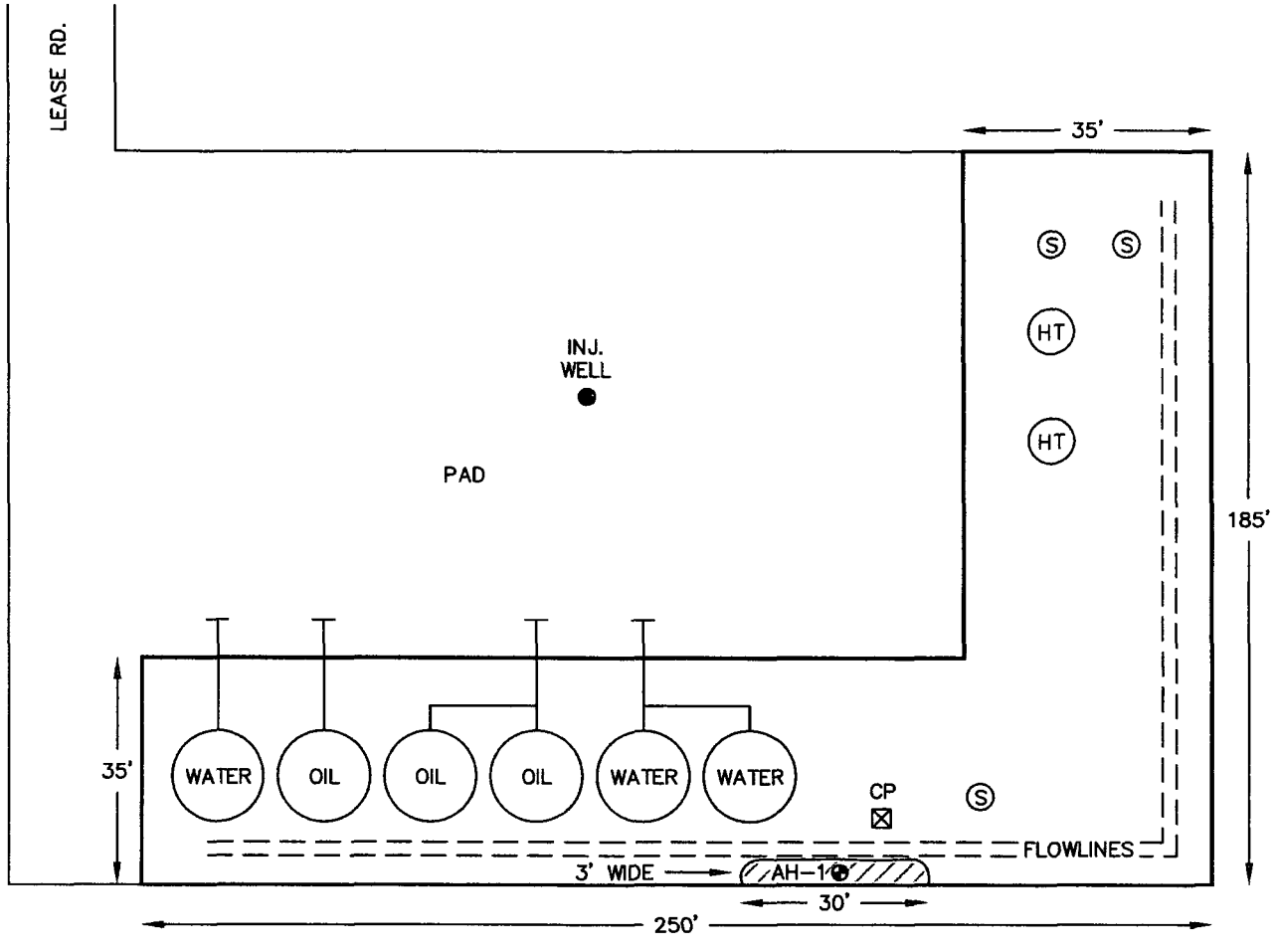
EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

TOPOGRAPHIC MAP

TN
MN (7.9°E)

Scale 1 : 24,000
1" = 2,000.0 ft
Data Zoom 13-0



SPILL AREA
SAMPLE LOCATIONS

NOT TO SCALE

FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

RUTHIE FEE #1 TB

DATE: 12/27/10
DWN. BY: JJ
FILE: H:\COG\84007782_RUTHIE FEE #1 TB

TETRA TECH, INC.
MIDLAND, TEXAS

TABLE

Table 1
COG Operating LLC.
Ruthie Fee #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)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	12/27/2010	0-1'		X		2,030	1,840	3,870	-	-	-	-	<200
		1-1.5'		X		2.44	<50.0	<50.0	-	-	-	-	223

BEB Below Excavation Bottom

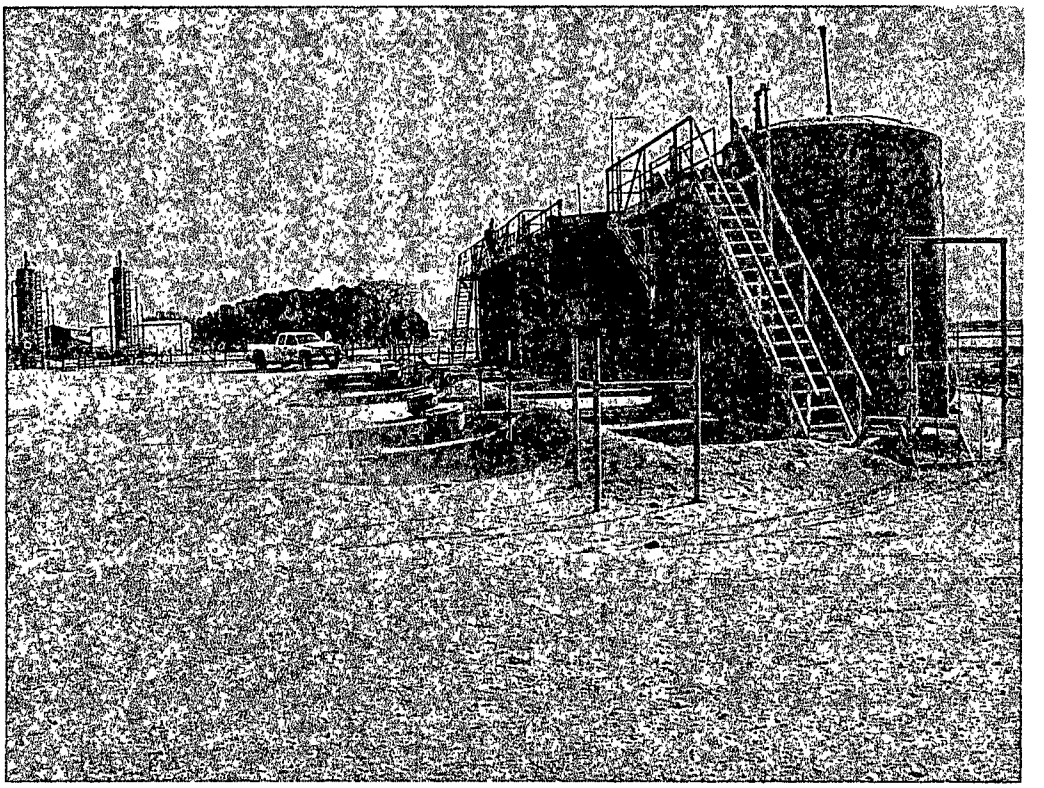
(--) Not Analyzed

▭ Proposed excavation depth

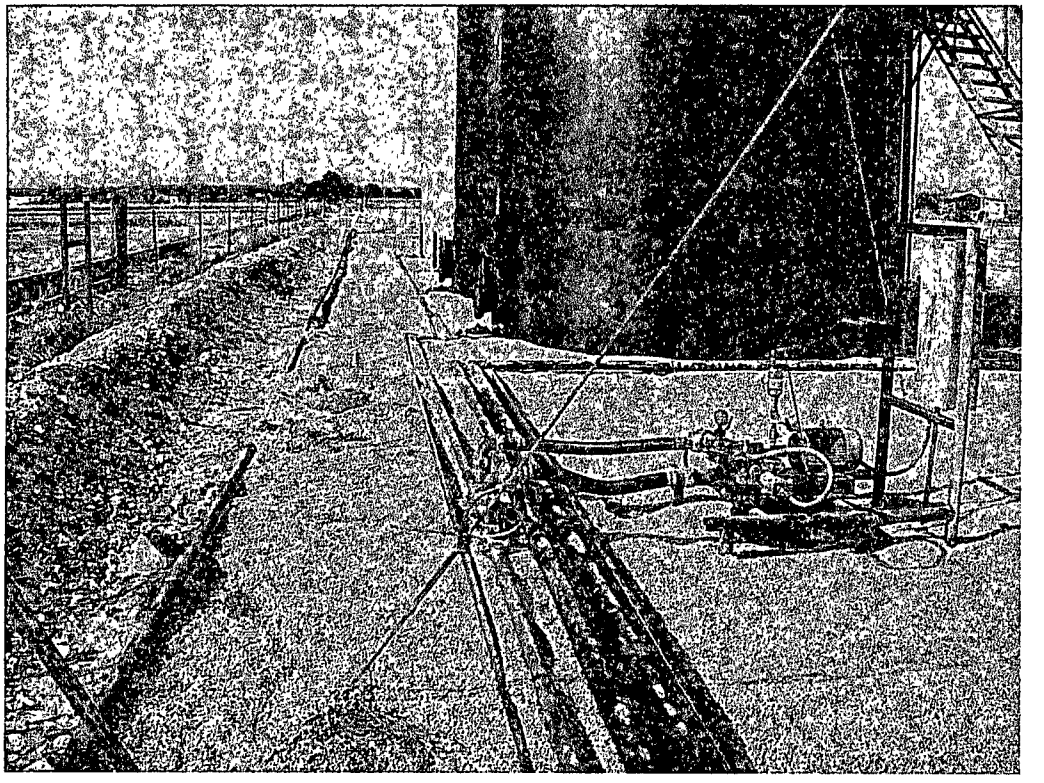
PHOTOGRAPHS

COG Operating LLC
Ruthie Fee #1 Tank Battery
Eddy County, New Mexico

TETRA TECH



View east – Ruthie Fee Tank Battery 12/27/11



View west – Near source and AH-1 12/27/11

APPENDIX A

Water Well Data
Average Depth to Groundwater (ft)
COG - Ruthie Fee #1
Eddy County, New Mexico

21 South 26 East

6	5 **65**	4	3	2	1 **89**
7 **66**	8 **170**	9	10 **115**	11	12
18	17 **178 35**	16 **65**	15	14	13
19	20 **210**	21	22	23 **34**	24
30 **115**	29	28	27	26	25 **40**
31	32 **164**	33 **120**	34	35	36 **26**

21 South 27 East

6 **175**	5 **350**	4	3	2	1 **186**
7	8	9 **78**	10	11	12
18	17	16	15	14	13
19 **36 27**	20	21 **75**	22	23	24
30	29 **31 30**	28 **40** **46**	27	26 **70 32**	25
31 **17**	32 **15**	33	34	35 **30**	36

21 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17 **37**	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 26 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

22 South 27 East

6	5	4	3	2 **30**	1
7	8	9 **40 18**	10 **40**	11	12
18	17	16 **70 32**	15 **48 22**	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 28 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

23 South 26 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

23 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

23 South 28 East

6 **16.5**	5	4	3	2	1
7 **26.5**	8	9	10	11 **30.5**	12 **20**
18 **63**	17	16	15 **14**	14	13 **12** **33**
19	20 **56**	21	22 **39**	23	24 **36**
30	29 **28.7**	28	27	26	25 **44**
31	32	33	34	35	36

New Mexico State Engineers Well Reports
USGS Well Reports
Geology and Groundwater Conditions in Southern Eddy, County, NM
SITE Location

APPENDIX B

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 00021 A		IRR	ED	4	4	4	09	22S	27E	576421	3585150*	196	40	156
C 00021 A	C	IRR	ED	4	4	4	09	22S	27E	576421	3585150*	196	40	156
C 00023		IRR	ED	3	3	3	09	22S	27E	575005	3585137*	90	35	55
C 00023 S		IRR	ED	3	3	3	09	22S	27E	575005	3585137*	90		
C 00043	C	DOL	ED	3	3	3	14	22S	27E	578256	3583557*	120		
C 00092		IRR	ED	4	3	3	09	22S	27E	575205	3585137*	70	40	30
C 00102		IRR	ED	1	3	1	16	22S	27E	575009	3584524*	164	70	94
C 00160	C	DOM	ED	2	3	3	10	22S	27E	576826	3585355*	85	40	45
C 00267	C	DOM	ED	3	1	1	16	22S	27E	575007	3584730*	54	42	12
C 00273	C	DOM	ED	1	2	1	16	22S	27E	575412	3584935*	100		
C 00284	C	DOM	ED		2	1	15	22S	27E	577134	3584856*	130	20	110
C 00403	C	DOM	ED		2	1	16	22S	27E	575513	3584836*	106	34	72
C 00479	C	DOM	ED			3	03	22S	27E	576919	3587082*	200		
C 00576		IRR	ED	3	1	1	15	22S	27E	576628	3584749*	119	184	-65
C 00576	C	IRR	ED	3	1	1	15	22S	27E	576628	3584749*	119	184	-65
C 00576 S		IRR	ED	2	4	1	15	22S	27E	577235	3584550*	172	48	124
C 00576 S	C	IRR	ED	2	4	1	15	22S	27E	577235	3584550*	172	48	124
C 00582	C	PLS	ED	1	3	1	14	22S	27E	578252	3584567*	60		
C 00589	C	IRR	ED	2	4	4	04	22S	27E	576412	3586974*			
C 00589	C	PRO	ED	2	4	4	04	22S	27E	576412	3586974*			
C 00693	C	DOM	ED	2	2	1	16	22S	27E	575612	3584935*	70	34	36
C 00700		IRR	ED	3	3	2	15	22S	27E	577441	3584355*	132		
C 00700	C	IRR	ED	3	3	2	15	22S	27E	577441	3584355*	132		
C 00701	C	DOM	ED		2	1	16	22S	27E	575513	3584836*	65	34	31
C 00744		IRR	ED	3	3	4	10	22S	27E	577437	3585166*	175		
C 00760	C	DOM	ED				16	22S	27E	575717	3584215*	72	44	28
C 01010	C	DOM	ED		4	3	16	22S	27E	575519	3583617*	150		
C 01097	C	DOM	ED	1	1	2	16	22S	27E	575817	3584940*	155	38	117
C 01110	C	DOL	ED	3	1	3	16	22S	27E	575011	3583917*	97		

***UTM location was derived from PLSS - see Help**

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 01407		DOM	ED	3	3	1	16	22S	27E	575009	3584324*	86		
C 01493	C	PRO	ED	2	3	3	09	22S	27E	575205	3585337*	60	18	42
C 01545	C	DOM	ED	1	3	1	16	22S	27E	575009	3584524*	90		
C 01560	C	DOM	ED		2	1	16	22S	27E	575513	3584836*	80	37	43
C 01853	C	DOL	ED		1	2	16	22S	27E	575918	3584841*	55	42	13
C 01861	C	DOL	ED		2	1	16	22S	27E	575513	3584836*	60		
C 02127	C	PRO	ED	3	4	4	02	22S	27E	579458	3586810*	160	30	130
C 02242		IRR	ED	1	1	4	15	22S	27E	577443	3584150*	150	22	128
C 02242	C	IRR	ED	1	1	4	15	22S	27E	577443	3584150*	150	22	128
C 02374	C	DOL	ED		3	4	09	22S	27E	575916	3585247*	54	15	39
C 02379	C	DOL	ED		3	4	09	22S	27E	575916	3585247*	55	20	35
C 02899	C	DOL	ED	1	3	4	09	22S	27E	575815	3585346*	33	22	11
C 03029	C	DOM	ED		3	4	09	22S	27E	575916	3585247*	45	18	27
C 03038	C	DOM	ED	1	3	4	09	22S	27E	575815	3585346*	43	15	28

Average Depth to Water: **44 feet**

Minimum Depth: **15 feet**

Maximum Depth: **184 feet**

Record Count: 43

PLSS Search:

Section(s): 2, 3, 4, 11, 10, 9, 14, 15, 16 **Township:** 22S **Range:** 27E

***UTM location was derived from PLSS - see Help**

APPENDIX C

Summary Report

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

Report Date: January 4, 2011

Work Order: 10122904

Project Location: Eddy Co., NM
Project Name: COG/Ruthie Fee #1
Project Number: 114-6400

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
254343	AH-1 0-1	soil	2010-12-27	00:00	2010-12-28
254344	AH-1 1-1.5	soil	2010-12-27	00:00	2010-12-28

Sample - Field Code	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
254343 - AH-1 0-1	**1840**	**2030**
254344 - AH-1 1-1.5	<50.0	**2.44**

Sample: 254343 - AH-1 0-1

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

Sample: 254344 - AH-1 1-1.5

Param	Flag	Result	Units	RL
Chloride		**223**	mg/Kg	4.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 **El Paso:** T104704221-08-TX LELAP-02002 **Midland:** T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: January 4, 2011

Work Order: 10122904

Project Location: Eddy Co., NM
Project Name: COG/Ruthie Fee #1
Project Number: 114-6400

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
254343	AH-1 0-1	soil	2010-12-27	00:00	2010-12-28
254344	AH-1 1-1.5	soil	2010-12-27	00:00	2010-12-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Ruthie Fee #1 were received by TraceAnalysis, Inc. on 2010-12-28 and assigned to work order 10122904. Samples for work order 10122904 were received intact at a temperature of 3.3 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	65654	2010-12-29 at 12:25	76591	2010-12-30 at 10:44
TPH DRO - NEW	S 8015 D	65717	2011-12-31 at 10:05	76645	2011-12-31 at 10:05
TPH GRO	S 8015 D	65672	2010-12-30 at 08:51	76608	2010-12-30 at 08:51

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10122904 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 254343 - AH-1 0-1

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76591	Date Analyzed:	2010-12-30	Analyzed By:	AR
Prep Batch:	65654	Sample Preparation:	2010-12-29	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		<200		mg/Kg	50	4.00

Sample: 254343 - AH-1 0-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	76645	Date Analyzed:	2011-12-31	Analyzed By:	kg
Prep Batch:	65717	Sample Preparation:	2011-12-31	Prepared By:	kg

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**1840**		mg/Kg	5	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	[1]	382	mg/Kg	5	100	382	70 - 130

Sample: 254343 - AH-1 0-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	76608	Date Analyzed:	2010-12-30	Analyzed By:	ME
Prep Batch:	65672	Sample Preparation:	2010-12-30	Prepared By:	ME

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**2030**		mg/Kg	10	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		11.0	mg/Kg	10	10.0	110	48.5 - 152
4-Bromofluorobenzene (4-BFB)	[2]	19.9	mg/Kg	10	10.0	199	42 - 159

[1] High surrogate recovery due to peak interference.
[2] High surrogate recovery due to peak interference.

Sample: 254344 - AH-1 1-1.5

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76591	Date Analyzed:	2010-12-30	Analyzed By:	AR
Prep Batch:	65654	Sample Preparation:	2010-12-29	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**223**		mg/Kg	50	4.00

Sample: 254344 - AH-1 1-1.5

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	76645	Date Analyzed:	2011-12-31	Analyzed By:	kg
Prep Batch:	65717	Sample Preparation:	2011-12-31	Prepared By:	kg

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		<50.0		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		111	mg/Kg	1	100	111	70 - 130

Sample: 254344 - AH-1 1-1.5

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	76608	Date Analyzed:	2010-12-30	Analyzed By:	ME
Prep Batch:	65672	Sample Preparation:	2010-12-30	Prepared By:	ME

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**2.44**		mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.42	mg/Kg	1	2.00	121	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.57	mg/Kg	1	2.00	128	42 - 159

Method Blank (1) QC Batch: 76591

QC Batch:	76591	Date Analyzed:	2010-12-30	Analyzed By:	AR
Prep Batch:	65654	QC Preparation:	2010-12-29	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 76608

QC Batch:	76608	Date Analyzed:	2010-12-30	Analyzed By:	ME
Prep Batch:	65672	QC Preparation:	2010-12-30	Prepared By:	ME

Parameter	Flag	MDL Result	Units	RL
GRO		<1.65	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.91	mg/Kg	1	2.00	96	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.96	mg/Kg	1	2.00	98	52.4 - 130

Method Blank (1) QC Batch: 76645

QC Batch:	76645	Date Analyzed:	2011-12-31	Analyzed By:	kg
Prep Batch:	65717	QC Preparation:	2011-12-31	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<14.6	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		108	mg/Kg	1	100	108	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch:	76591	Date Analyzed:	2010-12-30	Analyzed By:	AR
Prep Batch:	65654	QC Preparation:	2010-12-29	Prepared By:	AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.9	mg/Kg	1	100	<2.18	97	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 76608 | Date Analyzed: 2010-12-30 | Analyzed By: ME
Prep Batch: 65672 | QC Preparation: 2010-12-30 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.4	mg/Kg	1	20.0	<1.65	82	69.9 - 95.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.8	mg/Kg	1	20.0	<1.65	84	69.9 - 95.4	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.77	mg/Kg	1	2.00	99	88	61.9 - 142
4-Bromofluorobenzene (4-BFB)	2.11	1.96	mg/Kg	1	2.00	106	98	65.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 76645 | Date Analyzed: 2011-12-31 | Analyzed By: kg
Prep Batch: 65717 | QC Preparation: 2011-12-31 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	258	mg/Kg	1	250	<14.6	103	47.5 - 144.1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	264	mg/Kg	1	250	<14.6	106	47.5 - 144.1	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	113	116	mg/Kg	1	100	113	116	70 - 130

Matrix Spike (MS-1) Spiked Sample: 254344

QC Batch: 76591 | Date Analyzed: 2010-12-30 | Analyzed By: AR
Prep Batch: 65654 | QC Preparation: 2010-12-29 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10100	mg/Kg	100	10000	223	99	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10400	mg/Kg	100	10000	223	102	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 254344

QC Batch: 76608 | Date Analyzed: 2010-12-30 | Analyzed By: ME
Prep Batch: 65672 | QC Preparation: 2010-12-30 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO [3]	31.1	mg/Kg	1	20.0	2.4373	143	61.8 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO [4]	26.0	mg/Kg	1	20.0	2.4373	118	61.8 - 114	18	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.40	2.35	mg/Kg	1	2	120	118	50 - 162
4-Bromofluorobenzene (4-BFB)	2.75	2.70	mg/Kg	1	2	138	135	50 - 162

[3] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[4] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Matrix Spike (MS-1) Spiked Sample: 254344

QC Batch: 76645 | Date Analyzed: 2011-12-31 | Analyzed By: kg
Prep Batch: 65717 | QC Preparation: 2011-12-31 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	249	mg/Kg	1	250	<14.6	100	11.7 - 152.3

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	253	mg/Kg	1	250	<14.6	101	11.7 - 152.3	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	128	130	mg/Kg	1	100	128	130	70 - 130

Standard (ICV-1)

QC Batch: 76591 | Date Analyzed: 2010-12-30 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-12-30

Standard (CCV-1)

QC Batch: 76591 | Date Analyzed: 2010-12-30 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.8	98	85 - 115	2010-12-30

Standard (CCV-1)

QC Batch: 76608 | Date Analyzed: 2010-12-30 | Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.19	119	80 - 120	2010-12-30

Standard (CCV-2)

QC Batch: 76608 Date Analyzed: 2010-12-30 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.09	109	80 - 120	2010-12-30

Standard (CCV-1)

QC Batch: 76645 Date Analyzed: 2011-12-31 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	241	96	80 - 120	2011-12-31

Standard (CCV-2)

QC Batch: 76645 Date Analyzed: 2011-12-31 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	267	107	80 - 120	2011-12-31

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:	SITE MANAGER:
COG	Ike Tavarez

PROJECT NO.:	PROJECT NAME:
114-6400	COG / Ruthie Fee #1 Eddy, NM

LAB I.D. NUMBER	DATE 2010	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TX1005 (Ext. to C35)	TPH 8015 MOD	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
254343	12/27		S		X	AH-1 0-1	1				X			X												X				
344	12/27		S		X	AH1 1-1.5	1				X			X												X				

RELINQUISHED BY: (Signature)	Date: 12/28/10 Time: 0942	RECEIVED BY: (Signature)	Date: 12/28/10 Time: 15:47	SAMPLED BY: (Print & Initial) Kalsus Grubbs Jr	Date: 12/27/10 Time: 1330
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #: OTHER:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:		

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: Manda PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.3°c intact

REMARKS: All tests Midland

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

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	Ruthie Fee #1	Facility Type	Tank Battery

Surface Owner Private	Mineral Owner	Lease No. (API#) 30-015-33403

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	10	22S	27E					Eddy

Latitude 32 24.170 **Longitude** 104 11.024

NATURE OF RELEASE

Type of Release Oil	Volume of Release 17bbls	Volume Recovered 15bbls
Source of Release Circulating pump discharge valve	Date and Hour of Occurrence 11/22/2010	Date and Hour of Discovery 11/22/2010 11:00 p.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.*

A cow got inside the Tank Battery fence and rubbed the circulating pump discharge valve partially open. The valve has been closed.

Describe Area Affected and Cleanup Action Taken.*

Initially 17bbls of oil was released from the discharge valve of the circulating pump and we were able to recover 15bbls with a vacuum truck. All released fluids were contained inside the dike walls of the facility. The dimensions of the spill area were 2' x 30' within the facility. (The closest well location to the release is the Ruthie Fee #1, Unit M, Sec. 10-T22S-R27E, 1026' FSL & 660' FWL, Eddy County NM, (API#) 30-015-33403). 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 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: 12/03/2010 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary