

SITE INFORMATION

Report Type: Work Plan 2RP-3927

General Site Information:

Site:	Blue Thunder 4 Federal #1				
Company:	COG Operating LLC				
Section, Township and Range	Unit M	Sec. 04	T 19S	R 31E	
Lease Number:	API No. 30-015-34125				
County:	Eddy County				
GPS:	32.684022° N			103.881225° W	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of 126A (Maljamar Rd) and Lusk Plant Rd. in rural Eddy County, turn west on Lusk Rd for approximately 6.20 mi, turn west onto lease road for 0.4 miles, turn south for 0.6 mi to location.				

Release Data:

Date Released:	9/23/2016	
Type Release:	Oil	
Source of Contamination:	Tank Overflow	
Fluid Released:	6 bbls	
Fluids Recovered:	0 bbls	

Official Communication:

Name:	Robert McNeil	Ike Tavarez
Company:	COG Operating, LLC	Tetra Tech
Address:	One Concho Center 600 W. Illinois Ave.	4000 N. Big Spring Ste 401
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 687-8110
Fax:	(432) 684-7137	
Email:	rmcneil@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	175'-200'
WellHead Protection:		
Water Source	Ranking Score	Site Data
<1,000 ft., Private <200 ft.	20	
>1,000 ft., Private >200 ft.	0	0
Surface Body of Water:		
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



April 21, 2017

Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., Blue Thunder 4 Federal #1, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico. 2RP-3927

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG), to prepare a work plan based on the assessment performed by COG at the Blue Thunder 4 Federal #1, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.684022°, W 103.881225°. 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 September 23, 2016, and released approximately six (6) barrels of oil due to a tank overflow caused by a dump valve failure. None of the fluids were recovered. The spill is located within the bermed facility and measures approximately 15' x 25'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 04 on the New Mexico Office of the State Engineer's (NMOSE) database. However, the nearest well listed on the NMOSE data base is located in Section 19 with a reported depth of approximately 180' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area between 175' and 200' below surface. The groundwater data is shown in Appendix B.

Tetra Tech

4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com

Regulatory

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

Soil Assessment and Analytical Results

Prior to sampling the location, COG personnel performed a surficial scrape of the impacted area in order to prevent vertical migration of the impact. On December 19, 2016, COG personnel returned to the site to evaluate and sample the release area. Using a backhoe, one (1) trench (T-1) was installed to a total depth of 4.0' below surface within the release footprint, which measured approximately 15'x25'. 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 the laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The trench location is shown in Figure 3.

Referring to Table 1, none of the samples showed chloride concentrations above 32.0 mg/kg and were not significant in the subsurface soil. Additionally, the benzene and total BTEX concentrations were below the RRAL's in all collected samples. However, the sample collected at surface detected a total TPH concentration of 9,690 mg/kg, which exceeds the 5,000 mg/kg RRAL. However, the TPH concentration declined with depth to below the laboratory reporting limits at 1.0' below surface.

Work Plan

Based on the laboratory results, COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of trench (T-1) will be excavated to a depth of approximately 1.0' below surface to remove the elevated TPH concentrations in the shallow soils. Once excavated to the appropriate depth, the area will be backfilled with clean material to surface grade. All of the removed material will be transported offsite for proper disposal.

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 safety concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.



Upon completion, a final report detailing the remediation activities 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

A handwritten signature in blue ink that reads 'Clair Gonzales'.

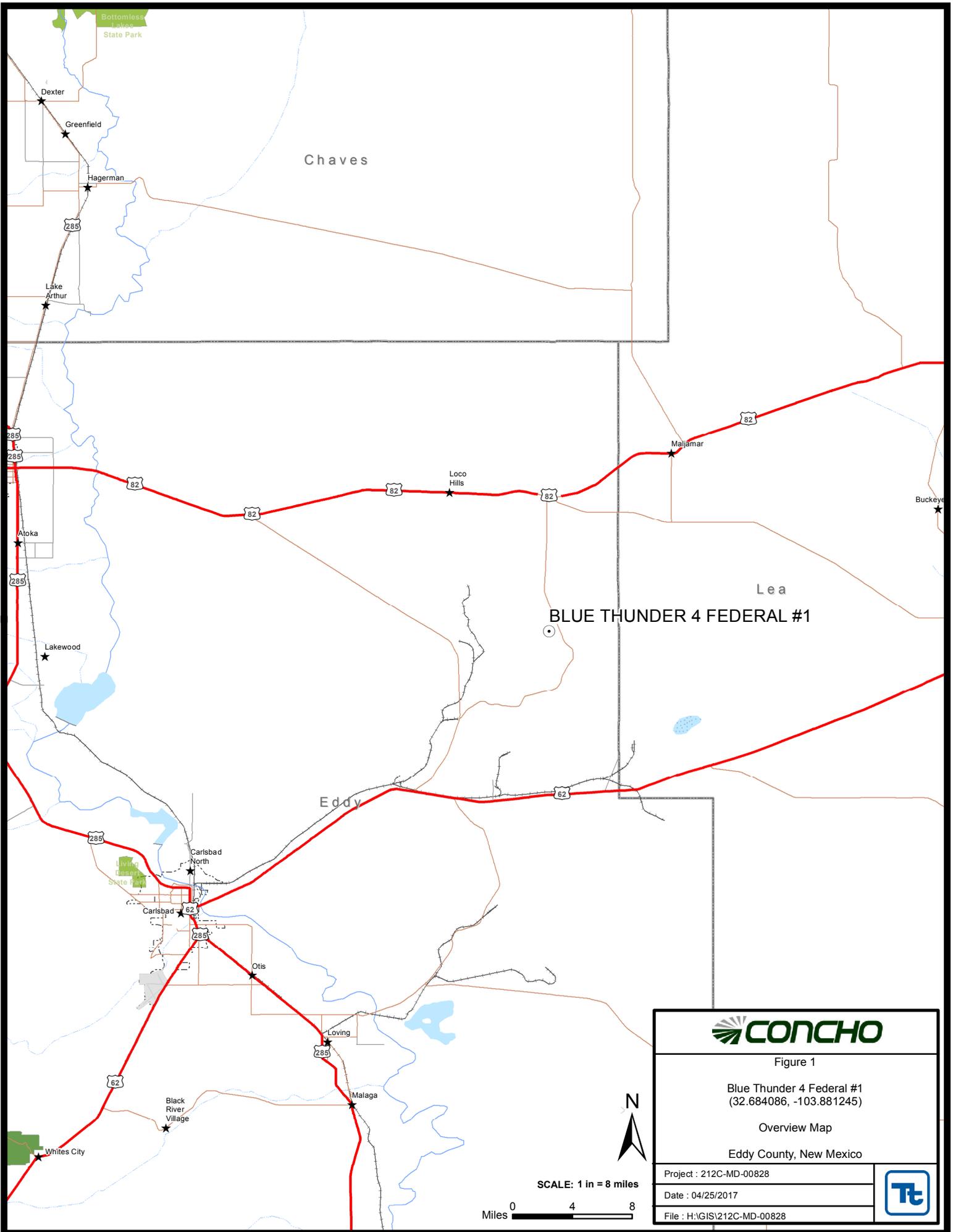
Clair Gonzales,
Geologist I

A handwritten signature in blue ink that reads 'Ike Tavarez'.

Ike Tavarez,
Senior Project Manager, P.G.

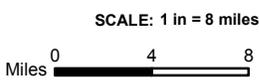
cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell - COG
Shelly Tucker – BLM

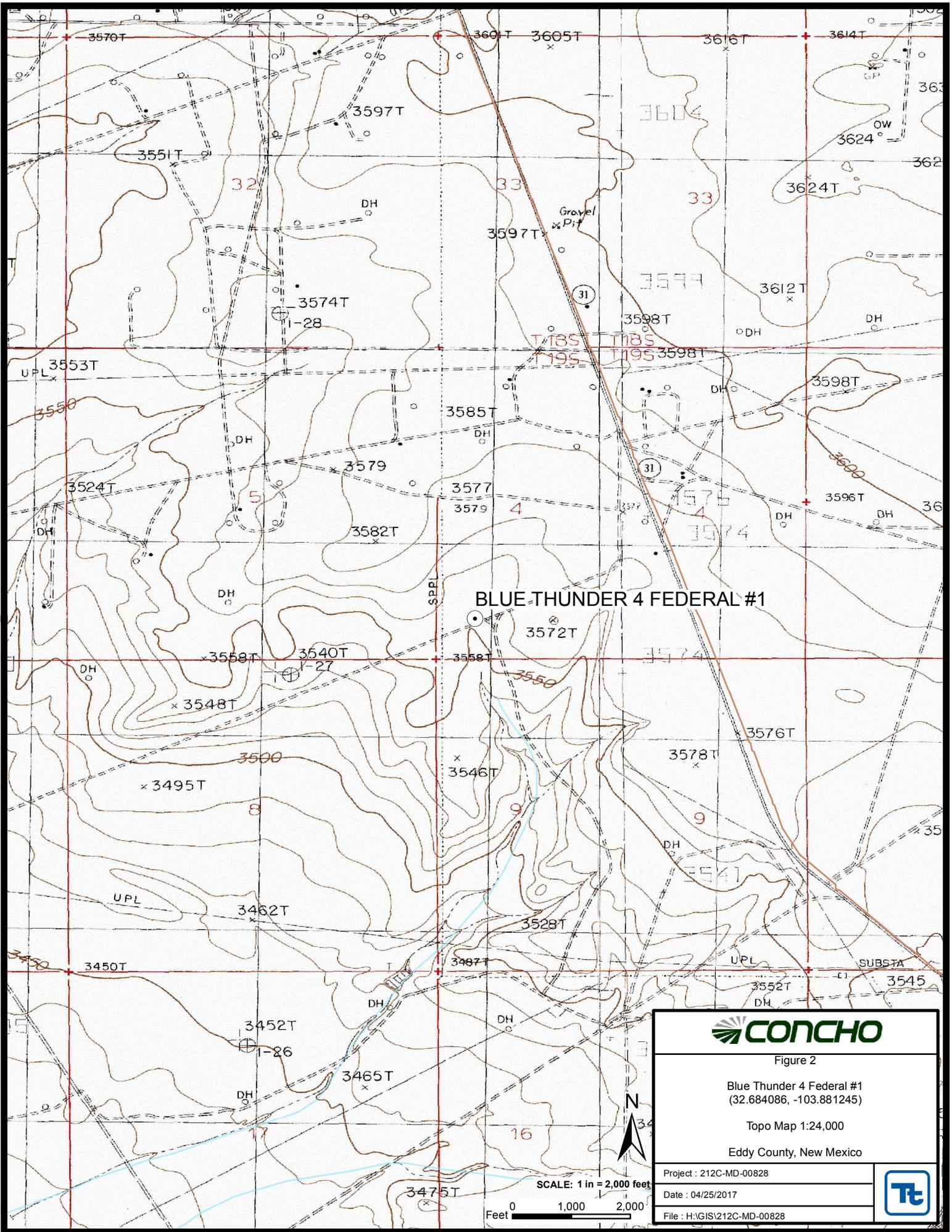
Figures



BLUE THUNDER 4 FEDERAL #1

Figure 1	
Blue Thunder 4 Federal #1 (32.684086, -103.881245)	
Overview Map	
Eddy County, New Mexico	
Project : 212C-MD-00828	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00828	







SPILL AREA APPROX.
15'x30'

T-1

EXPLANATION

 TRENCH SAMPLE LOCATIONS
 SPILL AREA

CONCHO

Figure 3

Blue Thunder 4 Federal #1
(32.684086, -103.881245)

Spill Assessment Map

Eddy County, New Mexico

Project : 212C-MD-00828	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00828	

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, AEX, Getmapp, User Community, Esri, HERE, DeLorme, Intermap, Inc., SwireHightech, SwissVO, Aerotech, IGN

SCALE: 1 IN = 50 FEET

Feet 0 25 50





SPILL AREA APPOX.
15'x30'

T-1

1' DEEP BELOW SURFACE

EXPLANATION

-  TRENCH SAMPLE LOCATIONS
-  PROPOSED EXCAVATION AREA



Figure 4

Blue Thunder 4 Federal #1
(32.684086, -103.881245)

Proposed Excavation Area & Depths Map

Eddy County, New Mexico

Project : 212C-MD-00828	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00828	



Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, AEX, Getmapp, User Community, Esri, HERE, DeLorme, and the GIS user community

SCALE: 1 IN = 50 FEET

Feet 0 25 50

Tables

Table 1
COG Operating LLC.
Blue Thunder 4 Federal #1
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
T-1	12/19/2016	Surface	X		760	8,930	9,690	<0.050	0.111	<0.050	1.76	1.87	32.0
	"	1	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	<16.0
	"	2	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	<16.0
	"	3	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	32.0
	"	4	X		<10.0	<10.0	<10.0	<0.50	<0.50	<0.50	<0.150	<0.300	16.0



Proposed Excavation Depths

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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

Form C-141
Revised August 8, 2011

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

Initial Report Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: BLUE THUNDER 4 FEDERAL #001	Facility Type: Battery
Surface Owner: Federal	Mineral Owner: Federal
API No. 30-015-34125	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	04	19S	31E	810	South	660	West	Eddy

Latitude Longitude

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 6 bbls Oil	Volume Recovered: 0 bbls Oil
Source of Release: Tank Overflow	Date and Hour of Occurrence: 9/23/2016 Unknown	Date and Hour of Discovery: 9/23/2016 9:00 AM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input 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.*
This release was caused when the dump valve failed to close allowing excess gas to transfer to the fiberglass tank. The dump valve is being replaced and the dump line will be re-routed to a larger steel tank.

Describe Area Affected and Cleanup Action Taken.*
This release remained within the dirt berm and on the location. The impacted areas of the location were scraped and the contaminated soils removed to eliminate further impact. Concho will have the spill site sampled 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: Dakota Neel	Approved by Environmental Specialist:	
Title: Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: dneel2@concho.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: October 3, 2016	Phone: 575-748-6933	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Blue Thunder 4 Federal #1
Eddy County, New Mexico

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	44	
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	98	400	
19	20	21	22	23	317	
30	29	28	27	26	25	
31	32	33	34	35	261	

18 South		32 East				
6	5	4	65	3	2	1
7	460	8	9	10	11	12
18	82	17	16	15	14	13
19	20	21	84	22	23	24
30	164	28	27	429	26	25
31	32	33	34	35	36	117

19 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	
90	31	32	33	34	35	36
115						

19 South		31 East				
6	5	4	3	2	1	
7	8	9	SITE	10	11	12
18	17	16	15	14	13	
19	180	20	21	22	23	24
30	29	28	27	26	25	
31	32	33	180	34	35	36
			101			130
			140			

19 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	
102	345	28	27	26	25	
31	32	33	34	35	36	
			250			

20 South		30 East				
6	5	3.5	4	3	2	1
7	8	9	10	11	12	
18	17	16	6	15	14	13
19	20	21	29	22	23	24
30	29	28	150	27	26	25
31	32	33	34	35	36	
	170	191				

20 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	
					80	

20 South		32 East				
6	5	4	3	2	1	
7	8	9	10	11	21.8	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	
			12.3		46	

- 88** New Mexico State Engineers Well Reports
- 105** USGS Well Reports
- 90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
 Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34** NMOCD - Groundwater Data
- 123** Tetra Tech installed temporary wells and field water level
- 143** NMOCD Groundwater map well location



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00641 POD1	CP	ED		4	1	36	19S	31E		610247	3609634*	300	130	170
CP 00642 POD1	CP	ED		2	2	25	19S	31E		611025	3611657*	250		
CP 00722 POD1	CP	LE		4	3	3	28	19S	31E	605106	3610273*	200		
CP 00722 POD3	CP	LE		2	4	1	33	19S	31E	605519	3609673*	220	140	80
CP 00723 POD1	CP	ED		2	1	1	33	19S	31E	605111	3610071*	139		
CP 00725 POD1	CP	ED		1	3	3	28	19S	31E	604906	3610473*	231		
CP 00829 POD1	CP	LE		2	4	16	19S	31E		606165	3614009*	120		
CP 00873 POD1	CP	LE		1	1	19	19S	31E		601772	3613147*	340	180	160
CP 01554 POD1	CP	LE		2	2	1	22	19S	31E	607166	3613354	400		
CP 01554 POD2	CP	LE		2	2	1	22	19S	31E	607165	3613322	400		

Average Depth to Water: **150 feet**

Minimum Depth: **130 feet**

Maximum Depth: **180 feet**

Record Count: 10

PLSS Search:

Township: 19S

Range: 31E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Appendix C



January 05, 2017

DAKOTA NEEL
COG OPERATING
P. O. BOX 1630
ARTESIA, NM 88210

RE: BLUE THUNDER 4 FEDERAL #1

Enclosed are the results of analyses for samples received by the laboratory on 12/29/16 12:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, flowing "C" and "K".

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - SURFACE (H602889-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19	
Toluene*	0.111	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27	
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67	
Total Xylenes*	1.76	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61	
Total BTEX	1.87	0.300	12/30/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.4 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	12/31/2016	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	760	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	8930	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 186 % 35-147
Surrogate: 1-Chlorooctadecane 193 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 1' (H602889-02)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 95.8 % 35-147

Surrogate: 1-Chlorooctadecane 110 % 28-171

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 2' (H602889-03)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 104 % 35-147

Surrogate: 1-Chlorooctadecane 119 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 3' (H602889-04)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	12/31/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 103 % 35-147

Surrogate: 1-Chlorooctadecane 116 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/29/2016	Sampling Date:	12/19/2016
Reported:	01/05/2017	Sampling Type:	Soil
Project Name:	BLUE THUNDER 4 FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	NOT GIVEN		

Sample ID: T1 - 4' (H602889-05)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/30/2016	ND	1.82	91.1	2.00	2.19		
Toluene*	<0.050	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27		
Ethylbenzene*	<0.050	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67		
Total Xylenes*	<0.150	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61		
Total BTEX	<0.300	0.300	12/30/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	01/04/2017	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/30/2016	ND	184	92.0	200	3.90		
DRO >C10-C28	<10.0	10.0	12/30/2016	ND	190	95.0	200	1.29		

Surrogate: 1-Chlorooctane 98.8 % 35-147

Surrogate: 1-Chlorooctadecane 114 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240
 (575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

105

BILL TO

ANALYSIS REQUEST

Company Name: COG Operating LLC
 Project Manager: Dakota Neel
 Address: 2208 West Main
 City: Artesia State: NM Zip: 88210
 Phone #: 432-215-2783 Fax #:
 Project #: Project Owner:
 Project Name: BLUE THUNDER 4 FEDERAL #1
 Project Location:
 Sampler Name: Dakota Neel & Aaron Lieb
 FOR LAB USE ONLY

P.O. #:
 Company: COG Operating LLC
 Attn: Robert McNeill
 Address: 600 W Illinois
 City: Midland
 State: TX Zip: 79701
 Phone #: (432) 221-0388
 Fax #:

Lab I.D.	Sample I.D.	T1 - SURFACE	DATE	TIME	MATRIX			PRESERV.			SAMPLING	BTEX	TPH	Chloride
					(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL				
H1002887-		T1 - 1'	12/19/16	2:00 PM								X	X	X
		T1 - 2'	12/19/16	2:00 PM								X	X	X
		T1 - 3'	12/19/16	2:00 PM								X	X	X
		T1 - 4'	12/19/16	2:00 PM								X	X	X

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Relinquished By: *[Signature]*
 Date: 12-29-16
 Time: 12:05
 Received By: *[Signature]*
 Date:
 Time:
 Delivered By: (Circle One)
 Sampler - UPS - Bus - Other: #75 5:22

Sample Condition: Cool Intact
 Checked By: *[Signature]*
 Phone Result: Yes No Add'l Phone #:
 Fax Result: Yes No Add'l Fax #:
 REMARKS:
 dneel2@concho.com
 rgrubbs@concho.com

FORM 0007-20
 5. Please fax written changes to 575-393-2476