SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	**Firefox 4 Federal Com #005H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit M**	**Sec. 4**	**T 19S**	**R 31E**		
Lease Number:	**API No. 30-015-41423**					
County:	**Eddy**					
GPS:	**32.68419º N**			**103.88297º W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of NM-243 & CR 126A, travel north on 126A for approximately 5.6 mi, turn west onto Lusk Plant Rd for approximately 5.1 miles, turn west onto lease road for 1 mi, turn north onto lease road for 0.8 mi to location.					

Release Data:	
Date Released:	7/11/2016
Type Release:	Oil & Produced Water
Source of Contamination:	Heater Treater
Fluid Released:	20 bbls oil & 5 bbls water
Fluids Recovered:	15 bbls oil & 3 bbls water

Official Communication:			
Name:	Robert McNeil		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		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@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	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:	***0***	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

TETRA TECH

September 1, 2016

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

Re: Work Plan for the COG Operating LLC., Firefox 4 Federal Com #005H, Unit M, Section 4, Township 19 South, Range 31 East, Eddy County, New Mexico.

Ms. Patterson:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a spill from Firefox 4 Federal Com #005H, Unit M, Section 4, Township 19 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.68419º, W 103.88297º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on July 11, 2016, and released 20 barrels of oil and 5 barrels produced water due to a hole in the heater treater. All free standing fluids within the lined facility were recovered with a vacuum truck and the pasture area was treated with Micro-blaze product. The release was primarily overspray which measured approximately 125'x 350' in the pasture and approximately 10' x 50' on the pad area. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 4. According to the NMOCD groundwater map, the average depth to groundwater in this area is between 175' to 200' below surface. The groundwater data is shown in Appendix B.

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

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

(RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On August 16, 2016, Tetra Tech personnel were onsite to evaluate and sample the release area. Four (4) auger holes (AH-1, AH-2, AH-3, and AH-4) were installed to depths of 1-1.5' and 4-4.5' below surface using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, the areas of auger holes (AH-1, AH-2, and AH-3) showed total TPH and BTEX concentrations below the laboratory reporting limits. However, the area of auger hole (AH-4) showed a total TPH concentration of 10,420 mg/kg at 0-1' which then declined with depth to 21.6 mg/kg at 2-2.5' below surface. Additionally, the BTEX concentration at 0-1' below surface was 253 mg/kg which then declined with depth to below laboratory reporting limits at 2-2.5' below surface.

The chloride concentrations in all samples collected were below 250 mg/kg and does not appear to be an environmental concern.

Work Plan

Based on the results, COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of auger hole (AH-4) will be excavated to a depth of approximately 1.5-2.0' to remove the hydrocarbon impacted soils. The excavated areas will be backfilled with clean material to surface grade. The excavated 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 safely concerns for onsite personnel. As such, Tetra Tech will excavate the impacted soils to the maximum extent practicable.

Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

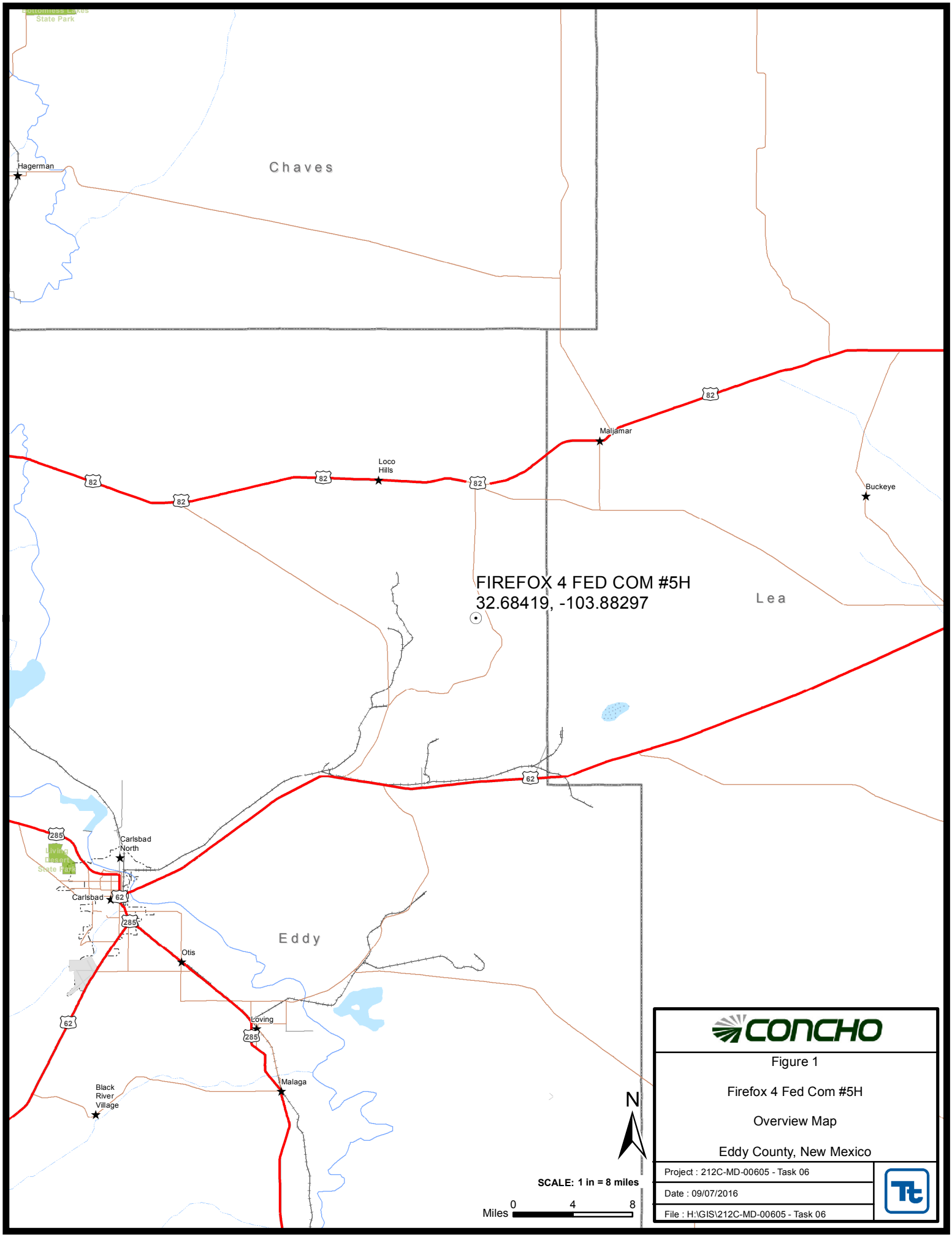
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist I

Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG

Figures



CONCHO

Figure 1

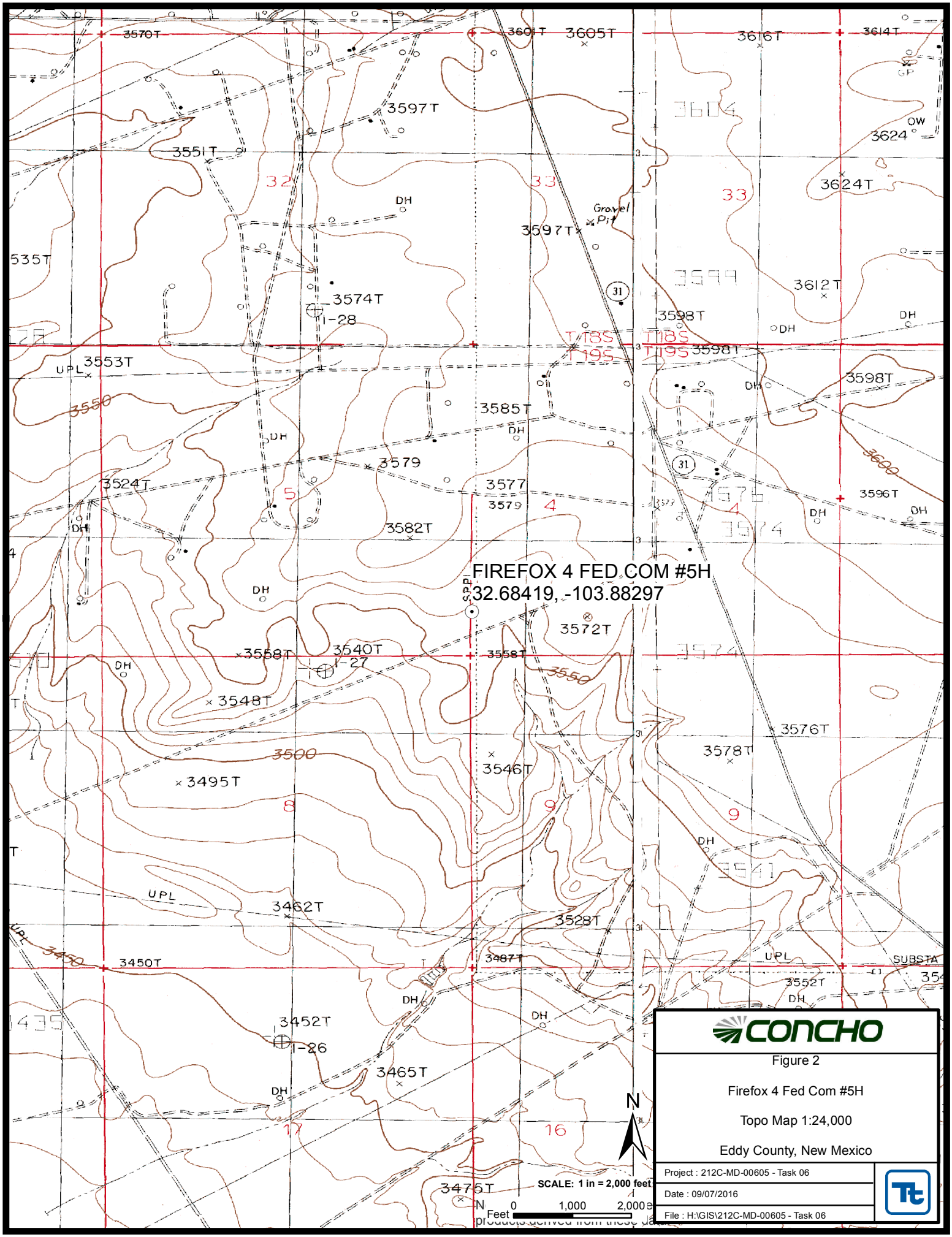
Firefox 4 Fed Com #5H

Overview Map

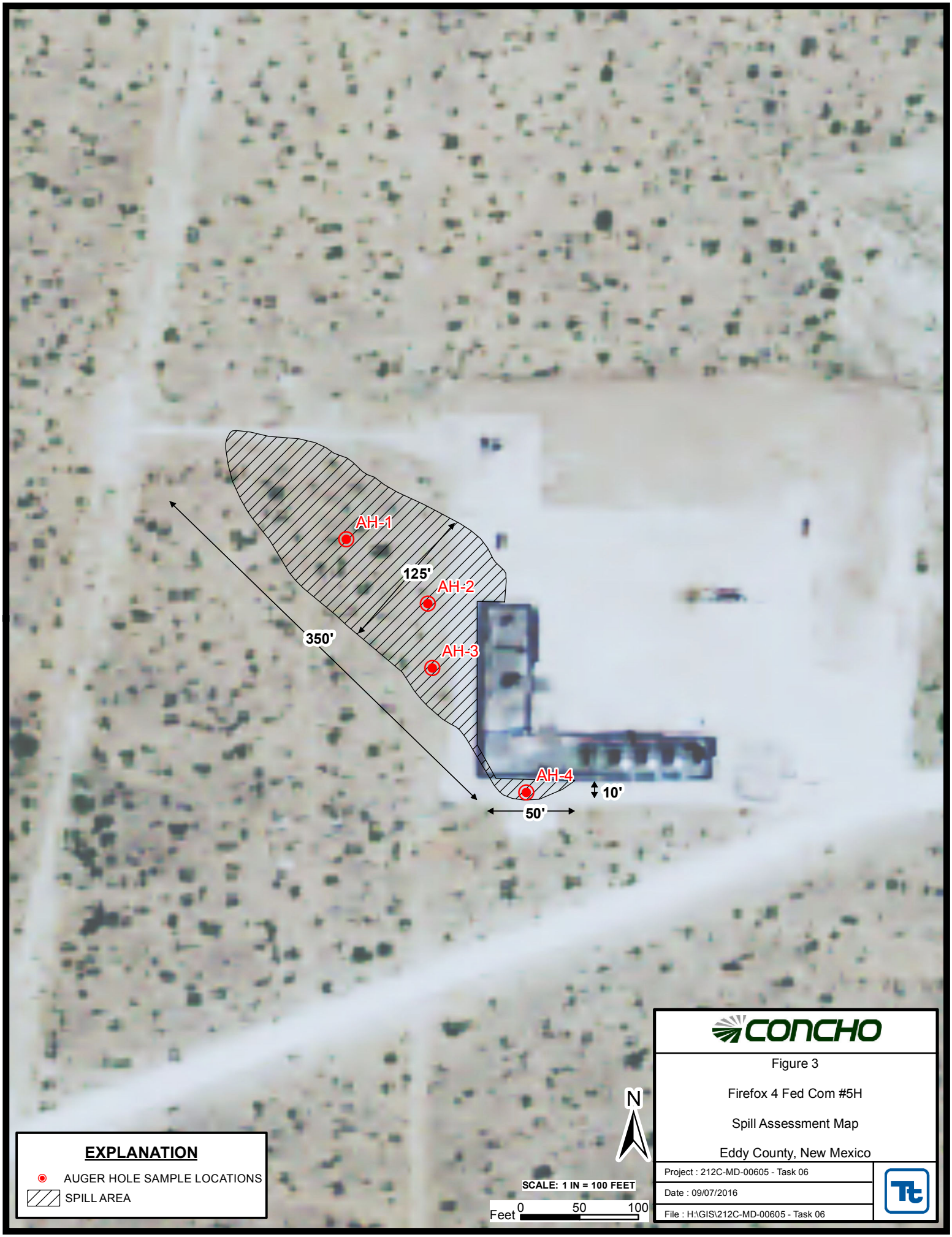
Eddy County, New Mexico

Project : 212C-MD-00605 - Task 06	
Date : 09/07/2016	
File : H:\GIS\212C-MD-00605 - Task 06	

Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



CONCHO

Figure 3

Firefox 4 Fed Com #5H

Spill Assessment Map

Eddy County, New Mexico

Project : 212C-MD-00605 - Task 06

Date : 09/07/2016

File : H:\GIS\212C-MD-00605 - Task 06

Mapped By: Isabel Marmolejo

CONCHO

Figure 4

Firefox 4 Fed Com #5H

Proposed Excavation Area & Depth Map

Eddy County, New Mexico

Project : 212C-MD-00605 - Task 06

Date : 09/07/2016

File : H:\GIS\212C-MD-00605 - Task 06

Mapped By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Firefox 4 Federal Commingle #5H
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						
AH-1	8/16/2016	0-1	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	32.0
AH-2	8/16/2016	0-1	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	48.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	80.0
AH-3	8/16/2016	0-1	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	48.0
	"	1-1.5	X		-	-	-	-	-	-	-	-	<16.0
AH-4	8/16/2016	0-1	X		1,780	8,640	10,420	<1.00	39.8	77.2	136	253	48.0
	"	1-1.5	X		525	3,660	4,190	<1.00	8.53	23.1	42.3	73.9	32.0
	"	2-2.5	X		<10	21.6	21.6	<0.050	<0.050	<0.050	<0.150	<0.300	16.0
	"	3-3.5	X		-	-	-	-	-	-	-	-	<16.0
	"	4-4.5	X		-	-	-	-	-	-	-	-	32.0

(-) Not Analyzed

Proposed Excavation Depths

212C-MD-00605
Cardinal Labs

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

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

Form C-141
Revised August 8, 2011

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. 432-683-7443
Facility Name: FIREFOX 4 FEDERAL COM #005H	Facility Type:

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-41423

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	4	19S	31E	670	South	250	West	Eddy

Latitude Longitude

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 20 bbls Oil ; 5 bbls PW	Volume Recovered: 15 bbls Oil ; 3 bbls PW
Source of Release: Heater treater	Date and Hour of Occurrence: 7/11/2016 unknown	Date and Hour of Discovery: 7/11/2016 8:00 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher – NMOCD / Shelly Tucker – BLM	
By Whom? Amanda T. Davis	Date and Hour: 7/11/2016 6:21 PM	
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.*
This release was caused by a hole in the heater treater. A vacuum truck was dispatched to recover free liquids and Microblaze was applied to the pasture areas.

Describe Area Affected and Cleanup Action Taken.*

This release occurred primarily in the containment however a spray of fluids impacted the nearby pasture. 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: Amanda T. Davis	OIL CONSERVATION DIVISION	
Printed Name: Amanda Trujillo Davis	Approved by Environmental Specialist:	
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: atrujillo@concho.com	Conditions of Approval:	Attached ☐
Date: July 19, 2016 Phone: 575-748-6940		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Firefox 4 Federal Com #005H, 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	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	12 400
18	17	16	15 98	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

6	5	4 65	3	2	1
7 460 82	8	9	10	11	12
18	17	16 84	15	14	13
19	20 164	21	22 429	23	24
30	29	28	27	26	25
31	32	33	34 117	35	36

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 90	29	28	27	26	25
31 115	32	33	34	35	36

19 South 31 East

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

19 South 32 East

6	5	4	3	2	1
7	8 365	9	10	11	12
18	17	16	15	14	13 135
19 102	20 345	21	22	23	24
30	29	28	27	26	25
31	32	33	34 250	35	36

20 South 30 East

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

20 South 31 East

6	5	4	3	2	1
7	8	9	10 130	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 21.8
7	8	9	10	11	12
18 89	17	16	15	14	13
19	20	21	22	23	24
30 9.9	29	28	27 12.3	26	25
31	32	33	34	35	36 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

121 Abandoned Waterwell (recently measured)

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-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00641		ED		4	1	36	19S	31E	610247	3609634*	300	130	170
CP 00642		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		LE	2	4	1	33	19S	31E	605519	3609673*	220	140	80
CP 00723		ED	2	1	1	33	19S	31E	605111	3610071*	139		
CP 00725		ED	1	3	3	28	19S	31E	604906	3610473*	231		
CP 00829		LE		2	4	16	19S	31E	606165	3614009*	120		
CP 00873		ED		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**

Appendix C

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

August 25, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: FIREFOX 4 FED COM #5H

Enclosed are the results of analyses for samples received by the laboratory on 08/16/16 16:45.

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 accreditated through the State of Colorado Department of Public Health and Environment for:

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH-1 (0-1')	H601830-01	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-1 (1-1.5')	H601830-02	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-2 (0-1')	H601830-03	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-2 (1-1.5')	H601830-04	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-3 (0-1')	H601830-05	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-3 (1-1.5')	H601830-06	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-4 (0-1')	H601830-07	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-4 (1-1.5')	H601830-08	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-4 (2-2.5')	H601830-09	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-4 (3-3.5')	H601830-10	Soil	16-Aug-16 00:00	16-Aug-16 16:45
AH-4 (4-4.5')	H601830-11	Soil	16-Aug-16 00:00	16-Aug-16 16:45

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-1 (0-1')

H601830-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081703	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*107 %*	*73.6-140*		*6081701*	MS	*17-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			*102 %*	*35-147*		*6081608*	MS	*17-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*108 %*	*28-171*		*6081608*	MS	*17-Aug-16*	*8015B*	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-1 (1-1.5')

H601830-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**32.0**		16.0	mg/kg	4	6081703	AC	18-Aug-16	4500-Cl-B	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-2 (0-1')

H601830-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**48.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*106 %*	*73.6-140*		*6081701*	MS	*17-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			*102 %*	*35-147*		*6081608*	MS	*17-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*97.2 %*	*28-171*		*6081608*	MS	*17-Aug-16*	*8015B*	

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-2 (1-1.5')

H601830-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**80.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-3 (0-1')

H601830-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**48.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6081701	MS	17-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*108 %*	*73.6-140*		*6081701*	MS	*17-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6081608	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			*106 %*	*35-147*		*6081608*	MS	*17-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*118 %*	*28-171*		*6081608*	MS	*17-Aug-16*	*8015B*	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-3 (1-1.5')

H601830-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-4 (0-1')

H601830-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**48.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<1.00		1.00	mg/kg	1000	6081701	MS	17-Aug-16	8021B	
Toluene*	**39.8**		1.00	mg/kg	1000	6081701	MS	17-Aug-16	8021B	
Ethylbenzene*	**77.2**		1.00	mg/kg	1000	6081701	MS	17-Aug-16	8021B	
Total Xylenes*	**136**		3.00	mg/kg	1000	6081701	MS	17-Aug-16	8021B	
Total BTEX	**253**		6.00	mg/kg	1000	6081701	MS	17-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*124 %*	*73.6-140*		*6081701*	MS	*17-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										**S-06**
GRO C6-C10	**1780**		50.0	mg/kg	5	6081608	MS	17-Aug-16	8015B	
DRO >C10-C28	**8640**		50.0	mg/kg	5	6081608	MS	17-Aug-16	8015B	
Surrogate: 1-Chlorooctane			*166 %*	*35-147*		*6081608*	MS	*17-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*198 %*	*28-171*		*6081608*	MS	*17-Aug-16*	*8015B*	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-4 (1-1.5')

H601830-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**32.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<1.00		1.00	mg/kg	1000	6081810	MS	19-Aug-16	8021B	
Toluene*	**8.53**		1.00	mg/kg	1000	6081810	MS	19-Aug-16	8021B	QM-07
Ethylbenzene*	**23.1**		1.00	mg/kg	1000	6081810	MS	19-Aug-16	8021B	QM-07
Total Xylenes*	**42.3**		3.00	mg/kg	1000	6081810	MS	19-Aug-16	8021B	QM-07
Total BTEX	**73.9**		6.00	mg/kg	1000	6081810	MS	19-Aug-16	8021B	QM-07
Surrogate: 4-Bromofluorobenzene (PID)			*116 %*	*73.6-140*		*6081810*	MS	*19-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										**S-06**
GRO C6-C10	**525**		50.0	mg/kg	5	6081901	MS	19-Aug-16	8015B	QM-07, QR-03
DRO >C10-C28	**3660**		50.0	mg/kg	5	6081901	MS	19-Aug-16	8015B	QM-07
Surrogate: 1-Chlorooctane			*149 %*	*35-147*		*6081901*	MS	*19-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*126 %*	*28-171*		*6081901*	MS	*19-Aug-16*	*8015B*	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-4 (2-2.5')

H601830-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**16.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	
Volatile Organic Compounds by EPA Method 8021										
Benzene*	<0.050		0.050	mg/kg	50	6082401	MS	24-Aug-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6082401	MS	24-Aug-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6082401	MS	24-Aug-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6082401	MS	24-Aug-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6082401	MS	24-Aug-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			*109 %*	*73.6-140*		*6082401*	MS	*24-Aug-16*	*8021B*	
Petroleum Hydrocarbons by GC FID										
GRO C6-C10	<10.0		10.0	mg/kg	1	6082201	MS	24-Aug-16	8015B	
DRO >C10-C28	**21.6**		10.0	mg/kg	1	6082201	MS	24-Aug-16	8015B	
Surrogate: 1-Chlorooctane			*95.8 %*	*35-147*		*6082201*	MS	*24-Aug-16*	*8015B*	
Surrogate: 1-Chlorooctadecane			*99.3 %*	*28-171*		*6082201*	MS	*24-Aug-16*	*8015B*	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-4 (3-3.5')

H601830-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	<16.0		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

AH-4 (4-4.5')

H601830-11 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	**32.0**		16.0	mg/kg	4	6081705	AC	18-Aug-16	4500-Cl-B	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081703 - 1:4 DI Water										
Blank (6081703-BLK1)				Prepared & Analyzed: 17-Aug-16						
Chloride	ND	16.0	mg/kg							
LCS (6081703-BS1)				Prepared & Analyzed: 17-Aug-16						
Chloride	416	16.0	mg/kg	400		104	80-120			
LCS Dup (6081703-BSD1)				Prepared & Analyzed: 17-Aug-16						
Chloride	416	16.0	mg/kg	400		104	80-120	0.00	20	
Batch 6081705 - 1:4 DI Water										
Blank (6081705-BLK1)				Prepared: 17-Aug-16 Analyzed: 18-Aug-16						
Chloride	ND	16.0	mg/kg							
LCS (6081705-BS1)				Prepared: 17-Aug-16 Analyzed: 18-Aug-16						
Chloride	400	16.0	mg/kg	400		100	80-120			
LCS Dup (6081705-BSD1)				Prepared: 17-Aug-16 Analyzed: 18-Aug-16						
Chloride	400	16.0	mg/kg	400		100	80-120	0.00	20	

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081701 - Volatiles										
Blank (6081701-BLK1)				Prepared & Analyzed: 17-Aug-16						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	*0.0537*		mg/kg	*0.0500*		*107*	*73.6-140*			
LCS (6081701-BS1)				Prepared & Analyzed: 17-Aug-16						
Benzene	2.32	0.050	mg/kg	2.00		116	82.6-122			
Toluene	2.37	0.050	mg/kg	2.00		119	72.9-122			
Ethylbenzene	2.29	0.050	mg/kg	2.00		114	65.4-131			
Total Xylenes	6.90	0.150	mg/kg	6.00		115	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	*0.0538*		mg/kg	*0.0500*		*108*	*73.6-140*			
LCS Dup (6081701-BSD1)				Prepared & Analyzed: 17-Aug-16						
Benzene	2.35	0.050	mg/kg	2.00		117	82.6-122	1.22	8.23	
Toluene	2.41	0.050	mg/kg	2.00		120	72.9-122	1.57	8.71	
Ethylbenzene	2.33	0.050	mg/kg	2.00		116	65.4-131	1.73	9.46	
Total Xylenes	7.00	0.150	mg/kg	6.00		117	73.8-125	1.52	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	*0.0530*		mg/kg	*0.0500*		*106*	*73.6-140*			
Batch 6081810 - Volatiles										
Blank (6081810-BLK1)				Prepared: 18-Aug-16 Analyzed: 19-Aug-16						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	*0.0533*		mg/kg	*0.0500*		*107*	*73.6-140*			

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081810 - Volatiles										
LCS (6081810-BS1)				Prepared: 18-Aug-16 Analyzed: 19-Aug-16						
Benzene	2.27	0.050	mg/kg	2.00		114	82.6-122			
Toluene	2.30	0.050	mg/kg	2.00		115	72.9-122			
Ethylbenzene	2.21	0.050	mg/kg	2.00		110	65.4-131			
Total Xylenes	6.67	0.150	mg/kg	6.00		111	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	*0.0530*		mg/kg	*0.0500*		*106*	*73.6-140*			
LCS Dup (6081810-BSD1)				Prepared: 18-Aug-16 Analyzed: 19-Aug-16						
Benzene	2.29	0.050	mg/kg	2.00		114	82.6-122	0.693	8.23	
Toluene	2.34	0.050	mg/kg	2.00		117	72.9-122	1.53	8.71	
Ethylbenzene	2.25	0.050	mg/kg	2.00		113	65.4-131	2.10	9.46	
Total Xylenes	6.80	0.150	mg/kg	6.00		113	73.8-125	1.99	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	*0.0538*		mg/kg	*0.0500*		*108*	*73.6-140*			
Batch 6082401 - Volatiles										
Blank (6082401-BLK1)				Prepared & Analyzed: 24-Aug-16						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	*0.0537*		mg/kg	*0.0500*		*107*	*73.6-140*			
LCS (6082401-BS1)				Prepared & Analyzed: 24-Aug-16						
Benzene	2.37	0.050	mg/kg	2.00		118	82.6-122			
Toluene	2.37	0.050	mg/kg	2.00		118	72.9-122			
Ethylbenzene	2.22	0.050	mg/kg	2.00		111	65.4-131			
Total Xylenes	6.71	0.150	mg/kg	6.00		112	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	*0.0528*		mg/kg	*0.0500*		*106*	*73.6-140*			

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6082401 - Volatiles										
LCS Dup (6082401-BSD1)				Prepared & Analyzed: 24-Aug-16						
Benzene	2.40	0.050	mg/kg	2.00		120	82.6-122	1.51	8.23	
Toluene	2.41	0.050	mg/kg	2.00		121	72.9-122	1.94	8.71	
Ethylbenzene	2.28	0.050	mg/kg	2.00		114	65.4-131	2.56	9.46	
Total Xylenes	6.89	0.150	mg/kg	6.00		115	73.8-125	2.61	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	*0.0534*		mg/kg	*0.0500*		*107*	*73.6-140*			

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Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081608 - General Prep - Organics										
Blank (6081608-BLK1)				Prepared & Analyzed: 16-Aug-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	*51.6*		mg/kg	*50.0*		*103*	*35-147*			
Surrogate: 1-Chlorooctadecane	*57.9*		mg/kg	*50.0*		*116*	*28-171*			
LCS (6081608-BS1)				Prepared & Analyzed: 16-Aug-16						
GRO C6-C10	201	10.0	mg/kg	200		101	76.7-115			
DRO >C10-C28	203	10.0	mg/kg	200		102	78.3-122			
Total TPH C6-C28	404	10.0	mg/kg	400		101	79.8-117			
Surrogate: 1-Chlorooctane	*52.9*		mg/kg	*50.0*		*106*	*35-147*			
Surrogate: 1-Chlorooctadecane	*50.3*		mg/kg	*50.0*		*101*	*28-171*			
LCS Dup (6081608-BSD1)				Prepared & Analyzed: 16-Aug-16						
GRO C6-C10	212	10.0	mg/kg	200		106	76.7-115	5.19	9.42	
DRO >C10-C28	211	10.0	mg/kg	200		105	78.3-122	3.72	13.2	
Total TPH C6-C28	423	10.0	mg/kg	400		106	79.8-117	4.46	10.7	
Surrogate: 1-Chlorooctane	*55.9*		mg/kg	*50.0*		*112*	*35-147*			
Surrogate: 1-Chlorooctadecane	*51.2*		mg/kg	*50.0*		*102*	*28-171*			
Batch 6081901 - General Prep - Organics										
Blank (6081901-BLK1)				Prepared & Analyzed: 19-Aug-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	*51.6*		mg/kg	*50.0*		*103*	*35-147*			
Surrogate: 1-Chlorooctadecane	*60.9*		mg/kg	*50.0*		*122*	*28-171*			

Cardinal Laboratories

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PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6081901 - General Prep - Organics										
LCS (6081901-BS1)				Prepared & Analyzed: 19-Aug-16						
GRO C6-C10	214	10.0	mg/kg	200		107	76.7-115			
DRO >C10-C28	230	10.0	mg/kg	200		115	78.3-122			
Total TPH C6-C28	445	10.0	mg/kg	400		111	79.8-117			
Surrogate: 1-Chlorooctane	*58.3*		mg/kg	*50.0*		*117*	*35-147*			
Surrogate: 1-Chlorooctadecane	*64.1*		mg/kg	*50.0*		*128*	*28-171*			
LCS Dup (6081901-BSD1)				Prepared & Analyzed: 19-Aug-16						
GRO C6-C10	220	10.0	mg/kg	200		110	76.7-115	2.60	9.42	
DRO >C10-C28	240	10.0	mg/kg	200		120	78.3-122	4.12	13.2	
Total TPH C6-C28	460	10.0	mg/kg	400		115	79.8-117	3.39	10.7	
Surrogate: 1-Chlorooctane	*60.3*		mg/kg	*50.0*		*121*	*35-147*			
Surrogate: 1-Chlorooctadecane	*64.5*		mg/kg	*50.0*		*129*	*28-171*			
Batch 6082201 - General Prep - Organics										
Blank (6082201-BLK1)				Prepared: 22-Aug-16 Analyzed: 23-Aug-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	*46.2*		mg/kg	*50.0*		*92.4*	*35-147*			
Surrogate: 1-Chlorooctadecane	*54.9*		mg/kg	*50.0*		*110*	*28-171*			
LCS (6082201-BS1)				Prepared: 22-Aug-16 Analyzed: 23-Aug-16						
GRO C6-C10	214	10.0	mg/kg	200		107	76.7-115			
DRO >C10-C28	217	10.0	mg/kg	200		108	78.3-122			
Total TPH C6-C28	431	10.0	mg/kg	400		108	79.8-117			
Surrogate: 1-Chlorooctane	*58.4*		mg/kg	*50.0*		*117*	*35-147*			
Surrogate: 1-Chlorooctadecane	*57.3*		mg/kg	*50.0*		*115*	*28-171*			

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

COG OPERATING P. O. BOX 1630 ARTESIA NM, 88210	Project: FIREFOX 4 FED COM #5H Project Number: NONE GIVEN Project Manager: DAKOTA NEEL Fax To: NONE	Reported: 25-Aug-16 13:49

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6082201 - General Prep - Organics										
LCS Dup (6082201-BSD1)				Prepared: 22-Aug-16 Analyzed: 23-Aug-16						
GRO C6-C10	215	10.0	mg/kg	200		107	76.7-115	0.125	9.42	
DRO >C10-C28	227	10.0	mg/kg	200		114	78.3-122	4.78	13.2	
Total TPH C6-C28	442	10.0	mg/kg	400		110	79.8-117	2.50	10.7	
Surrogate: 1-Chlorooctane	*58.0*		mg/kg	*50.0*		*116*	*35-147*			
Surrogate: 1-Chlorooctadecane	*60.3*		mg/kg	*50.0*		*121*	*28-171*			

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

H601830

CLIENT NAME: COG

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: COG - Firefox 4 Fed Com #5H Eddy Co. NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	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
1	8/16		S		X	AH-1 (0-1')	1	N			X		X	X											X				
2						(1-1.5')																							
3						AH-2 (0-1)							X	X															
4						(1-1.5')																							
5						AH-3 (0-1)							X	X															
6						(1-1.5')																							
7						AH-4 (0-1)							X	X															
8						(1-1.5)							X	X	added 8/18/16														
9						(2-2.5)							X	X	added 8/22/16														
10						(3-3.5)																							

RELINQUISHED BY: (Signature) Adrian Garcia Date: 8/16/16 Time:

RECEIVED BY: (Signature) Jodi Henson Date: 8/16/16 Time: 4:45

SAMPLED BY: (Print & Initial) Adrian Garcia / AG Date: Time:

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: Cardinal labs
ADDRESS:
CITY: Hobbs STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) DATE: TIME:

TETRA TECH CONTACT PERSON: Adrian Garcia / AKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.5°C

REMARKS: #75

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

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

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

H601830

CLIENT NAME: COG

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: COG_Firefox 4 Fed Com #5 H Eddy Co. NM

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
11	8/16		S		X	AH-4 (4-4.5')	1	N			X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 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
													X				

RELINQUISHED BY: (Signature) Adrian Garcia Date: 8/16/16 Time:

RECEIVED BY: (Signature) Joe Henson Date: 8/16/16 Time: 4:45

SAMPLED BY: (Print & Initial) Adrian Garcia / AG Date: Time:

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: Cardinal Lab
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Adrian Garcia / Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.5°C

REMARKS: #75

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

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

H600183JD

CLIENT NAME: COG | SITE MANAGER: Adrian Garcia

PROJECT NO.: | PROJECT NAME: COG - Firefox 4 Fed Com #5H Eddy Co NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	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. 8081/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
1	8/16		S		X	AH-1 (0-1')	1	N			X		X	X											X				
2	"					(1-1.5')																							
3	"					AH-2 (0-1')							X	X															
4	"					(1-1.5')																							
5	"					AH-3 (0-1')							X	X															
6	"					(1-1.5')																							
7	"					AH-4 (0-1')							X	X															
8	"					(1-1.5')																							
9	"					(2-2.5')																							
10	"		V		V	(3-3.5')	V				V														V				

RELINQUISHED BY: (Signature) Adrian Garcia	Date: 8/16/16 Time:	RECEIVED BY: (Signature) Joel Hernandez	Date: 8-16-16 Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RECEIVING LABORATORY: Cardinal Labs ADDRESS: CITY: Hobbs STATE: ZIP: CONTACT: PHONE:		RECEIVED BY: (Signature) DATE: TIME:	

SAMPLED BY: (Print & Initial) Adrian Garcia / AG — Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

TETRA TECH CONTACT PERSON: Adrian Garcia / DKE Tenant — Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 35°C

REMARKS: #75 Run deeper sample if TPH exceeds 1000 mg/kg / if total BTEX exceeds 50 mg/kg or Benzene exceeds 10 mg/kg run deeper

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

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

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

H601830

CLIENT NAME: COG

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: COG Firefly 4 Fed Com #5 H

Eddy Co. NM

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	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. 8081/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
11	5/16		S		X	AH-4 (4-4.5')	1	N			X														X				

RELINQUISHED BY: (Signature) Adrian Garcia Date: 5/16/16 Time:

RECEIVED BY: (Signature) Date: 5/16/16 Time: 1445

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) Adrian Garcia Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS

AIRBILL #:

OTHER:

RECEIVING LABORATORY: Cardinal Labs

ADDRESS:

CITY: STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

TETRA TECH CONTACT PERSON:
Adrian Garcia
Tye Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.5C

REMARKS: #75 Run deeper sample if TPH exceeds 1000 mg/kg if total BTEX exceeds 50 mg/kg or benzene exceeds 10 mg/kg, run deeper

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