SITE INFORMATION

Report Type: Closure Report 2RP-4024

General Site Information:						
Site:	**Firefox 4 Fed Com 5H Battery**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit M**	**Sec. 04**	**T 19S**	**R 31E**		
Lease Number:	**API No. 30-015-41423**					
County:	**Eddy County**					
GPS:	**32.683605º N**			**103.882709º 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 , turn west onto lease road for 0.15 mi to location on north side of lease road.					

Release Data:		
Date Released:	11/25/2016	
Type Release:	Produced Water	
Source of Contamination:	Water Line	
Fluid Released:	8 bbls	
Fluids Recovered:	7 bbls	

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***	*175'-200'*
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

July 17, 2017

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

Re: Closure Report for the COG Operating LLC., Firefox 4 Fed Com 5H Battery, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico. 2RP-4024

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess and remediate a release that occurred at the COG at the Firefox 4 Fed Com 5H Battery, Unit M, Section 04, Township 19 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.683605º, W 103.882709º. 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 25, 2016, and released approximately eight (8) barrels of produced water due to leak in a water line. Approximately seven (7) barrels of produced water was recovered using a vacuum truck. The spill is located outside the bermed facility and migrated into the pasture and measures approximately 25' x 75' and 25' x 75'. 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. The nearest well listed in the NMOSE database 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 is shown to be 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.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 5,000 mg/kg.

Soil Assessment and Analytical Results

On December 19, 2016, COG personnel was onsite to evaluate and sample the release area. Using a backhoe, two (2) sample trenches (T-1 and T-2) were installed to total depths of 8.0' and 10.0' below surface to evaluate the impact to the 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 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 collected at trenches (T-1 and T-2) showed total TPH, benzene, or total BTEX concentrations above the RRAL's. However, the area of trench (T-1) showed elevated chloride concentrations in the shallow soils with a chloride high of 8,000 mg/kg at 1.0' below surface, which then declined with depth and showed a bottom hole concentration of 208 mg/kg at 10.0' below surface. Additionally, the area of trench (T-2) showed a chloride high of 12,800 mg/kg at surface, which inconsistently declined with depth to 228 mg/kg at 6.0' below surface. A chloride spike of 3,480 mg/kg was detected at 7.0', before declining to 720 mg/kg at 8.0' below surface and the area was not vertically defined.

Based on the laboratory results, COG personnel returned to the site on March 16, 2017, to resample and assess the area of trench (T-2). One (1) backhoe trench (T-1) was installed in the area of trench (T-2) in order to vertically define the chloride impact. Selected samples were analyzed 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.

Referring to Table 1, the area of T-1 (T-2) showed a chloride concentration of 7,970 mg/kg at surface. The chloride concentrations then steadily declined with depth to 307 mg/kg at 8.0' and showed a bottom hole concentration of <10.0 mg/kg at 14.0' below surface.

TETRA TECH

Remediation Activities

Tetra Tech submitted the work plan to the NMOCD and BLM for review and approval, dated April 28, 2017. The NMOCD approved the work plan with stipulations. As performed, the NMOCD requested lateral sampling/definition of the impacted soils.

On June 22-26, 2017, Tetra Tech personnel were onsite to supervise the excavation and remediation activities. The excavated areas and depths are shown on Figure 4 and highlighted (green) in Table 1. The area of trench (T-1) was excavated to 2.0' and the area of trench (T-2) was excavated to 6.0' below surface. A total of four (4) sidewall samples (North Sidewall, West Sidewall, South Sidewall, and East Sidewall) were collected to ensure proper removal of the impacted material. Selected samples were analyzed for 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 sidewall sample locations are shown on Figure 4.

Referring to Table 1, none of the sidewall samples showed chloride concentrations above 600 mg/kg, with concentrations ranging between 17.4 mg/kg and 373 mg/kg. Once the excavation was completed, the areas of trenches (T-1 and T-2) were backfilled with clean material to surface grade. Approximately 400 cubic yards of excavated material was transported offsite for proper disposal.

Conclusion

Based on the soil assessment and remediation work performed at the site, COG requests closure of this spill. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

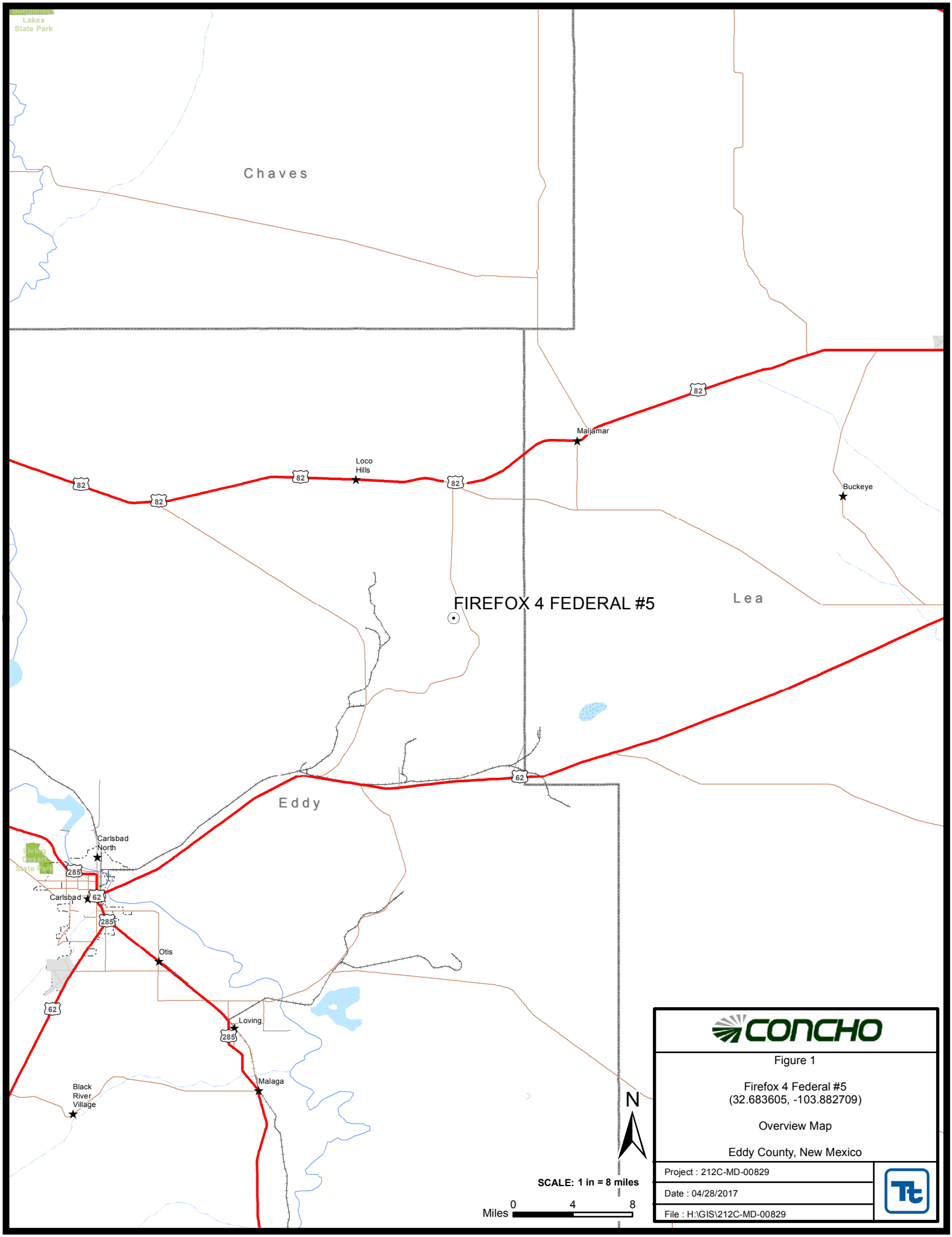
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist I

Ike Tavarez,
Senior Project Manager, P.G.

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

Figures



CONCHO

Figure 1

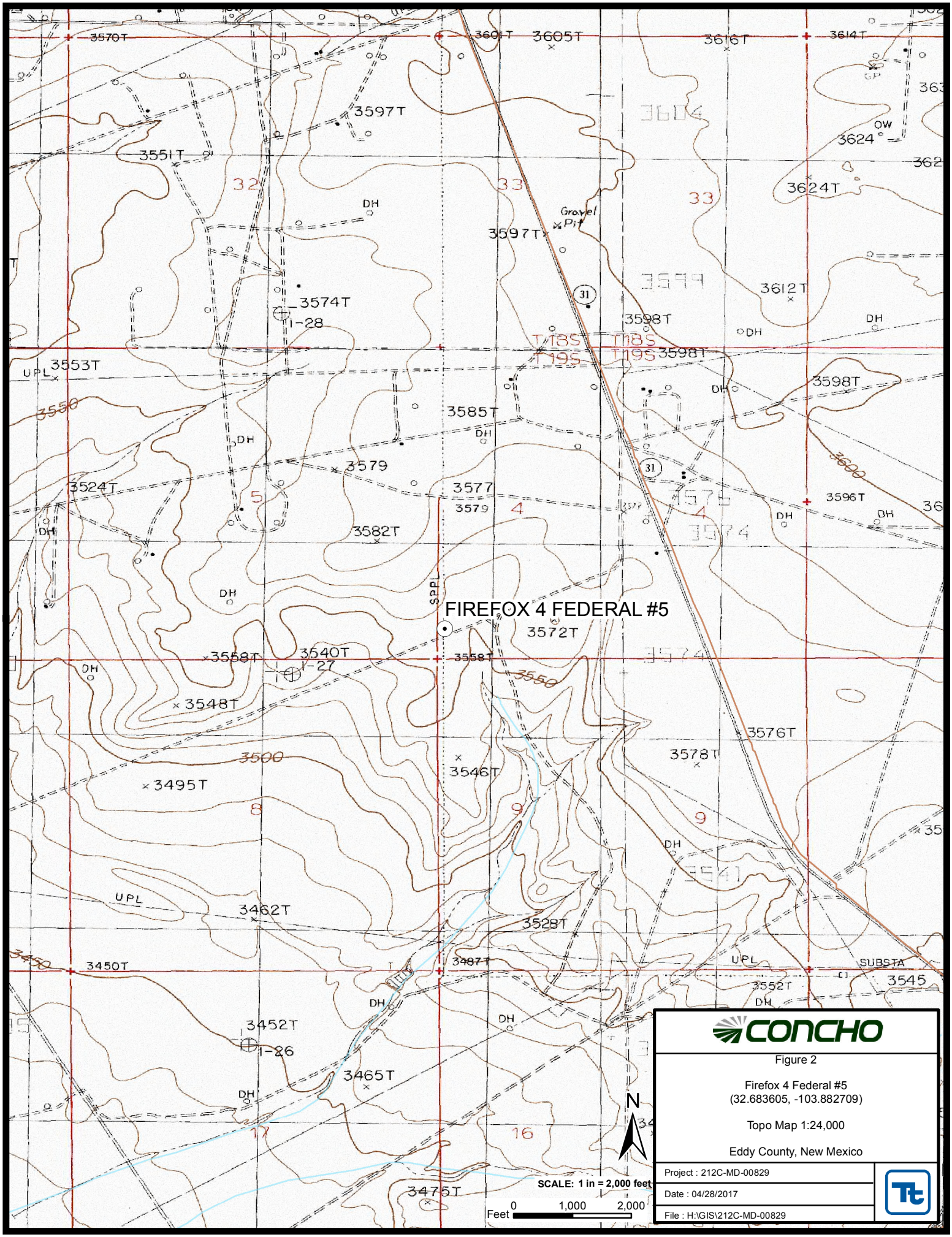
Firefox 4 Federal #5
(32.683605, -103.882709)

Overview Map

Eddy County, New Mexico

Project : 212C-MD-00829	
Date : 04/28/2017	
File : H:\GIS\212C-MD-00829	

Mapped By: Isabel Marmolejo



CONCHO

Figure 2

Firefox 4 Federal #5
(32.683605, -103.882709)

Topo Map 1:24,000

Eddy County, New Mexico

Project : 212C-MD-00829

Date : 04/28/2017

File : H:\GIS\212C-MD-00829

Mapped By: Isabel Marmolejo


25'
75'
T-1
T-2
25'
75'
N
SCALE: 1 IN = 50 FEET
Feet 0 25 50
EXPLANATION
TRENCH SAMPLE LOCATIONS
SPILL AREA
CONCHO
Figure 3
Firefox 4 Federal #5
(32.683605, -103.882709)
Spill Assessment Map
Eddy County, New Mexico
Project : 212C-MD-00829
Date : 04/28/2017
File : H:\GIS\212C-MD-00829
Mapped By: Isabel Marmolejo

EXPLANATION

- SIDEWALL SAMPLE LOCATIONS
- TRENCH SAMPLE LOCATIONS
- EXCAVATED AREA

CONCHO

Figure 4

Firefox 4 Federal #5
(32.683605, -103.882709)

Excavation Areas & Depths Map

Eddy County, New Mexico

Project : 212C-MD-00829

Date : 07/11/2017

File : H:\GIS\212C-MD-00829

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						
T-1	12/19/2016	Surface		X	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	6,800
	"	1		X	-	-	-	-	-	-	-	-	8,000
	"	2		X	-	-	-	-	-	-	-	-	1,120
	"	3	X		-	-	-	-	-	-	-	-	48.0
	"	4	X		-	-	-	-	-	-	-	-	128
	"	5	X		-	-	-	-	-	-	-	-	112
	"	6	X		-	-	-	-	-	-	-	-	128
	"	8	X		-	-	-	-	-	-	-	-	256
	"	10	X		-	-	-	-	-	-	-	-	208
North Sidewall	6/26/2017	-	X		-	-	-	-	-	-	-	-	22.9
West Sidewall	6/26/2017	-	X		-	-	-	-	-	-	-	-	17.4
T-2	12/19/2016	Surface		X	107	1,750	1,857	<0.050	0.113	1.24	3.35	4.7	12,800
	"	1		X	-	-	-	-	-	-	-	-	1,490
	"	2		X	-	-	-	-	-	-	-	-	4,800
	"	3		X	-	-	-	-	-	-	-	-	336
	"	4		X	-	-	-	-	-	-	-	-	1,720
	"	5		X	-	-	-	-	-	-	-	-	9,200
	"	6		X	-	-	-	-	-	-	-	-	228
	"	7	X		-	-	-	-	-	-	-	-	3,480
	"	8	X		-	-	-	-	-	-	-	-	720
T-1	3/16/2017	Surface		X	-	-	-	-	-	-	-	-	7,970
	"	1		X	-	-	-	-	-	-	-	-	6,440
	"	3		X	-	-	-	-	-	-	-	-	1,800
	"	6		X	-	-	-	-	-	-	-	-	941
	"	8	X		-	-	-	-	-	-	-	-	307
	"	10	X		-	-	-	-	-	-	-	-	341
	"	12	X		-	-	-	-	-	-	-	-	31.3
	"	14	X		-	-	-	-	-	-	-	-	<10.0
East Sidewall	6/23/2017	-	X		-	-	-	-	-	-	-	-	24.2
South Sidewall	6/23/2017	-	X		-	-	-	-	-	-	-	-	373

(-) Not Analyzed

Excavation Depths

212C-MD-00829
Cardinal Labs
Xenco Labs

Photos

COG Operating LLC
Firefox 4 Fed Com 5H Battery
Eddy County, New Mexico

View North – Excavated area of T-1

View West- Excavated Area of T-2

COG Operating LLC
Firefox 4 Fed Com 5H Battery
Eddy County, New Mexico

View North – Backfilled Area of T-1

View West – Backfilled Area of T-2

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 Fed Com 5H Battery	Facility Type: Tank Battery

Surface Owner: Federal	Mineral Owner:	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	04	19S	31E	670	South	250	West	Eddy

Latitude 32.684082 **Longitude** 103.8822098

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 8bbls	Volume Recovered: 7bbls
Source of Release: Water Line	Date and Hour of Occurrence: November 25, 2016 10:00 am	Date and Hour of Discovery: November 25, 2016 10:00 am
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 four (4) inch 45 degree fitting on a water line developed a hole. The 45 degree fitting was replaced.

Describe Area Affected and Cleanup Action Taken.*

The release occurred on location but outside the battery berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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: Rebecca Haskell	OIL CONSERVATION DIVISION
Printed Name: Rebecca Haskell	Approved by Environmental Specialist:
Title: Senior HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: / Attached ☐
Date: 11/30/16 Phone: 432-683-7443	

* Attach Additional Sheets If Necessary

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 **Robert McNeil**
Address **600 West Illinois Ave., Midland TX 79701**	Telephone No. **(432) 683-7443**
Facility Name Firefox 4 Fed Com 5H Battery	Facility Type **Tank Battery**

Surface Owner: Federal	Mineral Owner	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	04	19S	31E	670	South	250	West	Eddy

Latitude N 32.684082° **Longitude** W 103.8822098°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 8 bbls	Volume Recovered 7 bbls
Source of Release: Water Line	Date and Hour of Occurrence 11/25/16 10:00 am	Date and Hour of Discovery 11/25/16 10:00 am
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. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

A four inch 45 degree fitting on a water line developed a hole. The fitting was replaced. The release occurred on location outside of the berm. A vacuum truck was used to remove all free standing fluids.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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: Ike Tavarez (agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 07/11/17 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Firefox 4 Fed Com #5H
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	33 101 140	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 dry
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

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 Code	Sub-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**

Appendix C

Appendix D

CARDINAL Laboratories

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

January 05, 2017

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 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 accreditated 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,

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
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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T1 - SURFACE (H602890-01)

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*	<0.050	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 *99.3 %* *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	**6800**	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 *99.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *112 %* *28-171*

Sample ID: T1 - 1' (H602890-02)

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**8000**	16.0	12/31/2016	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T1 - 2' (H602890-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1120**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T1 - 3' (H602890-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T1 - 4' (H602890-05)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T1 - 5' (H602890-06)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T1 - 6' (H602890-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	12/31/2016	ND	416	104	400	0.00	

Cardinal Laboratories *=Accredited Analyte

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
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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T1 - 8' (H602890-08)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T1 - 10' (H602890-09)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**208**	16.0	12/31/2016	ND	416	104	400	0.00	

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
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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T2 - SURFACE (H602890-10)

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*	**0.113**	0.050	12/30/2016	ND	1.85	92.3	2.00	2.27	
Ethylbenzene*	**1.24**	0.050	12/30/2016	ND	1.90	95.0	2.00	2.67	
Total Xylenes*	**3.35**	0.150	12/30/2016	ND	5.54	92.3	6.00	2.61	
Total BTEX	**4.70**	0.300	12/30/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *120 %* *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	**12800**	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	**107**	10.0	12/30/2016	ND	184	92.0	200	3.90	
DRO >C10-C28	**1750**	10.0	12/30/2016	ND	190	95.0	200	1.29	

Surrogate: 1-Chlorooctane *116 %* *35-147*

Surrogate: 1-Chlorooctadecane *125 %* *28-171*

Sample ID: T2 - 1' (H602890-11)

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1490**	16.0	12/31/2016	ND	416	104	400	0.00	QM-07

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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
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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T2 - 2' (H602890-12)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4800**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T2 - 3' (H602890-13)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**336**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T2 - 4' (H602890-14)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1720**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T2 - 5' (H602890-15)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**9200**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T2 - 6' (H602890-16)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	12/31/2016	ND	416	104	400	0.00	

Cardinal Laboratories *=Accredited Analyte

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
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:	FIREFOX 4 FED COM #5H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Angela Cabrera
Project Location:	EDDY COUNTY		

Sample ID: T2 - 7' (H602890-17)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3480**	16.0	12/31/2016	ND	416	104	400	0.00	

Sample ID: T2 - 8' (H602890-18)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**720**	16.0	12/31/2016	ND	416	104	400	0.00	

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

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

1 OF 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

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:	FIREFOX 4 FEDERAL #5
Project Location:	
Sampler Name:	Dakota Neel & Aaron Lieb

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	BTEX	TPH	Chloride
H602880																	
1	T1-SURFACE												12/19/16	10:00 AM	x	x	x
2	T1-1'												12/19/16	10:00 AM			x
3	T1-2'												12/19/16	10:00 AM			x
4	T1-3'												12/19/16	10:00 AM			x
5	T1-4'												12/19/16	10:00 AM			x
6	T1-5'												12/19/16	10:00 AM			x
7	T1-6'												12/19/16	10:00 AM			x
8	T1-8'												12/19/16	10:00 AM			x
9	T1-10'												12/19/16	10:00 AM			x

Relinquished By:	**Date:** 12-29-16 **Time:** 12:05	**Received By:**	
Relinquished By:	**Date:** **Time:**	**Received By:**	

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: #75 5.2°C

Sample Condition	**CHECKED BY: (Initials)**
Cool: ☑ Yes ☐ No	
Intact: ☑ Yes ☐ No	

Phone Result:	☐ Yes	☐ No	**Add'l Phone #:**
Fax Result:	☐ Yes	☐ No	**Add'l Fax #:**
REMARKS:			

dneel2@concho.com
rgrubbs@concho.com

Please only run deeper horizons for BTEX AND TPH if Benzene exceeds 10ppm, BTEX exceeds 50ppm, and TPH exceeds 5000ppm.

FORM-006 R 2.0

3. Please fax written changes to 575-393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL Laboratories

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

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:	FIREFOX 4 FEDERAL #5
Project Location:	
Sampler Name:	Dakota Neel & Aaron Lieb

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	BTEX	TPH	Chloride
H602890																	
10	T2 - SURFACE												12/19/16	10:00 AM	x	x	x
11	T2 - 1'												12/19/16	10:00 AM			x
12	T2 - 2'												12/19/16	10:00 AM			x
13	T2 - 3'												12/19/16	10:00 AM			x
14	T2 - 4'												12/19/16	10:00 AM			x
15	T2 - 5'												12/19/16	10:00 AM			x
16	T2 - 6'												12/19/16	10:00 AM			x
17	T2 - 7'												12/19/16	10:00 AM			x
18	T2 - 8'												12/19/16	10:00 AM			x

Relinquished By:	**Date:** 12-29-16	**Received By:**	
	Time: 12:05		
Relinquished By:	**Date:**	**Received By:**	
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: #75 5.2°C

Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No

CHECKED BY: (Initials)

Phone Result:	☐ Yes	☐ No	**Add'l Phone #:**
Fax Result:	☐ Yes	☐ No	**Add'l Fax #:**

REMARKS:

dneel2@concho.com

rgrubbs@concho.com

Please only run deeper horizons for BTEX AND TPH if Benzene exceeds 10ppm, BTEX exceeds 50ppm, and TPH exceeds 5000ppm.

s. Please fax written changes to 575-393-2476

Certificate of Analysis Summary 549473

COG Operating LLC, Artesia, NM

Project Name: Firefox 4 Fed Com #5H

Project Id:

Contact: Dakota Neel

Project Location: Edy County, NM

Date Received in Lab: Sat Mar-25-17 10:27 am

Report Date: 06-APR-17

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	549473-001		549473-002		549473-003		549473-004		549473-005		549473-006	
	Field Id:	T1 - Surface		T1 - 1'		T1 - 3'		T1 - 6'		T1 - 8'		T1 - 10'	
	Depth:			1 ft		3 ft		6 ft		8 ft		10 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-16-17 09:30		Mar-16-17 09:35		Mar-16-17 09:40		Mar-16-17 09:45		Mar-16-17 09:50		Mar-16-17 09:52	
Inorganic Anions by EPA 300/300.1 SUB: TX104704215	***Extracted:***	Apr-04-17 17:00		Apr-04-17 17:00		Apr-04-17 17:00		Apr-04-17 17:00		Apr-04-17 09:32		Apr-04-17 09:32	
	Analyzed:	Apr-05-17 05:23		Apr-05-17 05:45		Apr-05-17 05:52		Apr-05-17 06:00		Apr-05-17 00:36		Apr-05-17 00:43	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		7970 D	100	6440 D	100	1800	10.0	941	10.0	307	10.0	341	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 549473

COG Operating LLC, Artesia, NM

Project Name: Firefox 4 Fed Com #5H

Project Id:
Contact: Dakota Neel
Project Location: Edy County, NM

Date Received in Lab: Sat Mar-25-17 10:27 am
Report Date: 06-APR-17
Project Manager: Kelsey Brooks

Analysis Requested							
	Lab Id:	549473-007		549473-008			
	Field Id:	T1 - 12'		T1 - 14'			
	Depth:	12 ft		14 ft			
	Matrix:	SOIL		SOIL			
	Sampled:	Mar-16-17 09:58		Mar-16-17 10:00			
Inorganic Anions by EPA 300/300.1 SUB: TX104704215	***Extracted:***	Apr-04-17 16:00		Apr-04-17 16:00			
	Analyzed:	Apr-05-17 01:05		Apr-05-17 01:12			
	Units/RL:	mg/kg	RL	mg/kg	RL		
Chloride		31.3	10.0	<10.0	10.0		

Kelsey Brooks
Project Manager

Analytical Report 549473

for

COG Operating LLC

Project Manager: Dakota Neel

Firefox 4 Fed Com #5H

06-APR-17

Collected By: Dakota Neel

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

06-APR-17

Project Manager: **Dakota Neel**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **549473**
Firefox 4 Fed Com #5H
Project Address: Edy County, NM

Dakota Neel:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 549473. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 549473 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1 - Surface	S	03-16-17 09:30	N/A	549473-001
T1 - 1'	S	03-16-17 09:35	- 1 ft	549473-002
T1 - 3'	S	03-16-17 09:40	- 3 ft	549473-003
T1 - 6'	S	03-16-17 09:45	- 6 ft	549473-004
T1 - 8'	S	03-16-17 09:50	- 8 ft	549473-005
T1 - 10'	S	03-16-17 09:52	- 10 ft	549473-006
T1 - 12'	S	03-16-17 09:58	- 12 ft	549473-007
T1 - 14'	S	03-16-17 10:00	- 14 ft	549473-008

Client Name: COG Operating LLC

Project Name: Firefox 4 Fed Com #5H

Project ID:
Work Order Number(s): *549473*

Report Date: *06-APR-17*
Date Received: *03/25/2017*

Sample receipt non conformances and comments:

please email results to:
rgrubbs@concho.com rhaskell@concho.com alieb@concho.com

Sample receipt non conformances and comments per sample:

None

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - Surface**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-001	Date Collected:	03.16.17 09.30		
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 17.00	Basis:	Wet Weight
Seq Number:	3014107			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7970**	100	mg/kg	04.05.17 16.56	D	10

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 1'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-002	Date Collected:	03.16.17 09.35	Sample Depth:	1 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 17.00	Basis:	Wet Weight
Seq Number:	3014107			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6440**	100	mg/kg	04.05.17 17.04	D	10

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 3'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-003	Date Collected:	03.16.17 09.40	Sample Depth:	3 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 17.00	Basis:	Wet Weight
Seq Number:	3014107			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1800**	10.0	mg/kg	04.05.17 05.52		1

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 6'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-004	Date Collected:	03.16.17 09.45	Sample Depth:	6 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 17.00	Basis:	Wet Weight
Seq Number:	3014107			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**941**	10.0	mg/kg	04.05.17 06.00		1

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 8'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-005	Date Collected:	03.16.17 09.50	Sample Depth:	8 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 09.32	Basis:	Wet Weight
Seq Number:	3014103			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**307**	10.0	mg/kg	04.05.17 00.36		1

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 10'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-006	Date Collected:	03.16.17 09.52	Sample Depth:	10 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 09.32	Basis:	Wet Weight
Seq Number:	3014103			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**341**	10.0	mg/kg	04.05.17 00.43		1

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 12'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-007	Date Collected:	03.16.17 09.58	Sample Depth:	12 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 16.00	Basis:	Wet Weight
Seq Number:	3014103			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**31.3**	10.0	mg/kg	04.05.17 01.05		1

Certificate of Analytical Results 549473

COG Operating LLC, Artesia, NM

Firefox 4 Fed Com #5H

Sample Id:	**T1 - 14'**	Matrix:	Soil	Date Received:	03.25.17 10.27
Lab Sample Id:	549473-008	Date Collected:	03.16.17 10.00	Sample Depth:	14 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	ALA			% Moisture:	
Analyst:	ALA	Date Prep:	04.04.17 16.00	Basis:	Wet Weight
Seq Number:	3014103			SUB:	TX104704215

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<10.0	10.0	mg/kg	04.05.17 01.12	U	1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

QC Summary 549473

COG Operating LLC

Firefox 4 Fed Com #5H

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014002 Matrix: Solid Date Prep: 04.03.17
MB Sample Id: 722515-1-BLK LCS Sample Id: 722515-1-BKS LCSD Sample Id: 722515-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<2.00	20.0	20.2	101	19.8	99	80-120	2	20	mg/kg	04.03.17 21:23	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014103 Matrix: Solid Date Prep: 04.04.17
MB Sample Id: 722589-1-BLK LCS Sample Id: 722589-1-BKS LCSD Sample Id: 722589-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	100	97.1	97	96.9	97	80-120	0	20	mg/kg	04.05.17 00:21	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014107 Matrix: Solid Date Prep: 04.04.17
MB Sample Id: 722590-1-BLK LCS Sample Id: 722590-1-BKS LCSD Sample Id: 722590-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	100	99.2	99	99.1	99	80-120	0	20	mg/kg	04.05.17 04:24	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014002 Matrix: Solid Date Prep: 04.03.17
Parent Sample Id: 549470-012 MS Sample Id: 549470-012 S MSD Sample Id: 549470-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8090	100	7970	0	7980	0	80-120	0	20	mg/kg	04.03.17 22:09	X

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014002 Matrix: Solid Date Prep: 04.03.17
Parent Sample Id: 549470-020 MS Sample Id: 549470-020 S MSD Sample Id: 549470-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	43.6	100	148	104	147	103	80-120	1	20	mg/kg	04.04.17 00:20	

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P
Seq Number: 3014103 Matrix: Soil Date Prep: 04.04.17
Parent Sample Id: 549474-008 MS Sample Id: 549474-008 S MSD Sample Id: 549474-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	168	100	270	102	268	100	80-120	1	20	mg/kg	04.05.17 02:33	

QC Summary 549473

COG Operating LLC

Firefox 4 Fed Com #5H

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3014107 Matrix: Soil Date Prep: 04.04.17

Parent Sample Id: 549472-005 MS Sample Id: 549472-005 S MSD Sample Id: 549472-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	925	100	1000	75	1000	75	80-120	0	20	mg/kg	04.05.17 05:01	X

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3014107 Matrix: Soil Date Prep: 04.04.17

Parent Sample Id: 549475-003 MS Sample Id: 549475-003 S MSD Sample Id: 549475-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	3260	100	3280	20	3270	10	80-120	0	20	mg/kg	04.05.17 06:29	X

Analytical Method: **Inorganic Anions by EPA 300/300.1** Prep Method: E300P

Seq Number: 3014103 Matrix: Soil Date Prep: 04.04.17

Parent Sample Id: 549473-006 MS Sample Id: 549473-006 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Chloride	341	100	437	96	80-120	mg/kg	04.05.17 00:50	

CHAIN OF CUSTODY

XENCO LABORATORIES
Setting the Standard since 1990
Stafford,Texas (281-240-4200)
Dallas Texas (214-902-0300)
San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)
www.xenco.com
Phoenix, Arizona (480-355-0900)

Xenco Quote # | Xenco Job # 549473

Client / Reporting Information

Company Name / Branch: COG Operating LLC
Company Address: 2407 PECOS Avenue Artesia NM 88210
Email: dneel2@concho.com alieb@concho.com rhaskell@concho.com
575-746-2010 rhaskell@concho.com
Project Contact: Dakota Neel
Samplers's Name- Dakota Neel

Project Information

Project Name/Number: Firefox 4 Fed Com #5H
Project Location: Eddy County, NM
Invoice To: COG Operating LLC
Attn: Robert Mcneill
600 W. Illinois
Midland TX 79701
PO Number:

Analytical Information

Chloride

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Chloride	Field Comments
1	T1 - Surface	—	3/16/17	9:30 Am	S	1									✓	
2	T1 - 1'	1		9:35 Am		1									✓	
3	T1 - 3'	3		9:40 Am		1									✓	
4	T1 - 6'	6		9:45 Am		1									✓	
5	T1 - 8'	8		9:50 Am		1									✓	
6	T1 - 10'	10		9:52 Am		1									✓	
7	T1 - 12'	12		9:58 Am		1									✓	
8	T1 - 14'	14		10:00 Am		1									✓	
9																
10																

Turnaround Time (Business days)

- ☐ Same Day TAT
- ☐ 5 Day TAT
- ☐ Next Day EMERGENCY
- ☐ 7 Day TAT
- ☐ 2 Day EMERGENCY
- ☐ Contract TAT
- ☐ 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- ☐ Level II Std QC
- ☐ Level IV (Full Data Pkg /raw data)
- ☐ Level III Std QC+ Forms
- ☐ TRRP Level IV
- ☐ Level 3 (CLP Forms)
- ☐ UST / RG -411
- ☐ TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	DAKOTA NEEL	3-24-17 11:00 A	Ted Butler 11:00 A 3/24/17	2	3-25-17 10:27	2 Julian Martinez
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
4			3	4		4
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice
			5		☐	☐

Temp: 0.8 IR ID:R-8
CF: +0.1
Corrected Temp: 0.9

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 03/25/2017 10:27:00 AM

Work Order #: 549473

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.9
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**N/A**
#21 VOC samples have zero headspace?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by: Jessica Kramer
Jessica Kramer
Date: 03/27/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 03/27/2017

Analytical Report 556712

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

COG-Firefox 4 Fed Com 5H

212C-MD-00829

10-JUL-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

10-JUL-17

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **556712**
COG-Firefox 4 Fed Com 5H
Project Address: Eddy Co NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 556712. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 556712 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Mike Kimmel
Client Services Manager

Sample Cross Reference 556712

Tetra Tech- Midland, Midland, TX

COG-Firefox 4 Fed Com 5H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
ESW Area 2	S	06-23-17 00:00		556712-001
SSW Area 2	S	06-23-17 00:00		556712-002
NSW Area 1	S	06-26-17 00:00		556712-003
WSW Area 1	S	06-26-17 00:00		556712-004

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 556712

Tetra Tech- Midland, Midland, TX

Project Name: COG-Firefox 4 Fed Com 5H

Project Id: 212C-MD-00829
Contact: Ike Tavarez
Project Location: Eddy Co NM

Date Received in Lab: Fri Jun-30-17 10:41 am
Report Date: 10-JUL-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	556712-001		556712-002		556712-003		556712-004					
	Field Id:	ESW Area 2		SSW Area 2		NSW Area 1		WSW Area 1					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Jun-23-17 00:00		Jun-23-17 00:00		Jun-26-17 00:00		Jun-26-17 00:00					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jul-07-17 14:30		Jul-07-17 14:30		Jul-07-17 14:30		Jul-07-17 14:30					
	Analyzed:	Jul-07-17 16:21		Jul-07-17 16:29		Jul-07-17 16:52		Jul-07-17 17:00					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		24.2	4.96	373	4.96	22.9	4.97	17.4	4.95				

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Version: 1.%

Mike Kimmel
Client Services Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

BS / BSD Recoveries

Project Name: COG-Firefox 4 Fed Com 5H

Work Order #: 556712 **Project ID:** 212C-MD-00829

Analyst: MGO **Date Prepared:** 07/07/2017 **Date Analyzed:** 07/07/2017

Lab Batch ID: 3021754 **Sample:** 727328-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	245	98	250	268	107	9	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: COG-Firefox 4 Fed Com 5H

Work Order # : 556712 **Project ID:** 212C-MD-00829

Lab Batch ID: 3021754 **QC- Sample ID:** 557005-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/07/2017 **Date Prepared:** 07/07/2017 **Analyst:** MGO

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	15.8	246	328	127	246	269	103	20	90-110	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

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

556712

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 212C-MD-00829

PROJECT NAME: Firefox 4 Fed Com 5H Eddy Co NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
	6/23	–	S		X	ESW Area 2	1				X	
	6/23	–	S		X	SSW Area 2	1				X	
	6/26	–	S		X	NSW Area 1	1				X	
	6/26	–	S		X	WSW Area 1	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

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
												X				
												X				
												X				
												X				

Temp: 4.1 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 3.9

RELINQUISHED BY: (Signature) Clint Smith Date: 6/30/17 Time: 1041

RECEIVED BY: (Signature) J Kramer Date: Time:

SAMPLED BY: Clint Smith Time: 17:00

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:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

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

Final 1.000

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XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 06/30/2017 10:41:00 AM

Work Order #: 556712

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.9
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**N/A**
#21 VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Jessica Kramer Date: 06/30/2017
Jessica Kramer

Checklist reviewed by: Kelsey Brooks Date: 06/30/2017
Kelsey Brooks