SITE INFORMATION

Report Type: Closure Report 2RP-4083

General Site Information:						
Site:	**Burch Keely Unit #933H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit E**	**Sec. 13**	**T 17S**	**R 29E**		
Lease Number:	**API No. 30-015-40970**					
County:	**Eddy County**					
GPS:	**32.835019º N**			**104.035119º W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of Hwy 82 (Lovington Hwy) and Kewanee Rd in rural Eddy County, travel north on Kewanee Rd for approximately 1.0 mi, turn east onto the lease road for approximately 330 feet to the location on the south side of the lease road.					

Release Data:		
Date Released:	1/16/2017	
Type Release:	Oil & Produced Water	
Source of Contamination:	Flowline	
Fluid Released:	2 bbls oil & 3 bbls water	
Fluids Recovered:	1 bbl oil & 0 bbl 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***	*150'-175'*
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., Burch Keely Unit #933H, Unit E, Section 13, Township 17 South, Range 29 East, Eddy County, New Mexico. 2RP-4083

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 Burch Keely Unit #933H, Unit E, Section 13, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.835019º, W 104.035119º. 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 January 16, 2017, and released approximately two (2) barrels of oil and three (3) barrels of produced water due to pinhole leaks in a flowline. Approximately one (1) barrel of oil was recovered using a vacuum truck. However, none of the produced water was recovered. The spill is located in the pasture to the southeast of the facility and measures approximately 20' x 90'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed within Section 13 on the New Mexico Office of the State Engineer's database. The nearest well is located in Section 22, approximately 2.15 miles to the southwest of the site, with a reported depth of approximately 76' below surface. This well is located in a draw area with a surface elevation of approximately 3,548' above sea level. The elevation at the site is approximately 3,635' above sea level. Based on the relative elevation, the estimated depth to groundwater at the site is approximately 160' below surface. Additionally, according to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area is shown to be between 150' and 175' 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 February 7, 2017, COG personnel were onsite to evaluate and sample the release area. Using a backhoe, two (2) trenches (T-1 and T-2) were installed to a total depths of 5.0' below surface. 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 locations are shown on Figure 3.

Referring to Table 1, the areas of trenches (T-1 and T-2) showed chloride highs of 160 mg/kg and 48.0 mg/kg at 1.0' below surface, respectively, before declining with depth to 16.0 mg/kg (T-1) and <16.0 mg/kg (T-2) at 2.0' below surface. Total TPH and benzene concentrations were below the RRAL's in all collected samples. However, total BTEX concentrations exceeding the RRAL's were detected in the shallow soils with concentrations of 105 mg/kg (T-1) and 122 mg/kg (T-2) at 1.0' below surface. The total BTEX concentrations declined with depth to below the laboratory detection limits at 2.0' below surface at both trench locations.

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 some stipulations. As performed, the NMOCD requested lateral sampling/definition of the impacted soils during the excavation.

On June 19-20, 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 areas of trenches (T-1 and T-2) were excavated to 1.0' below surface. A total of five (5) sidewall samples (West Wall, North Wall, South Wall, South East Wall, and South West Wall) were collected in the area of trench (T-1) and three (3) sidewall samples (North Wall, East Wall, and West Wall) were collected in the area of trench (T-2).

Tetra Tech field screened the samples for soil headspace gas survey measurements of the relative concentration of volatile organic constituents in the soils. The concentration of organic vapors were measured using a photo-ionization detector (PID). Based on the field screening, the excavation footprint expanded accordingly to ensure proper removal of the impacted soils. Selected samples were analyzed for BTEX by EPA Method 8021B. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The sidewall sample locations are shown on Figure 4.

Referring to Table 1, all of the sidewall samples collected showed total BTEX concentrations below the RRAL's with concentrations ranging from <0.00200 mg/kg to 0.302 mg/kg. Once the excavation was completed, the areas of trenches (T-1 and T-2) were backfilled with clean material to grade. Approximately 180 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.

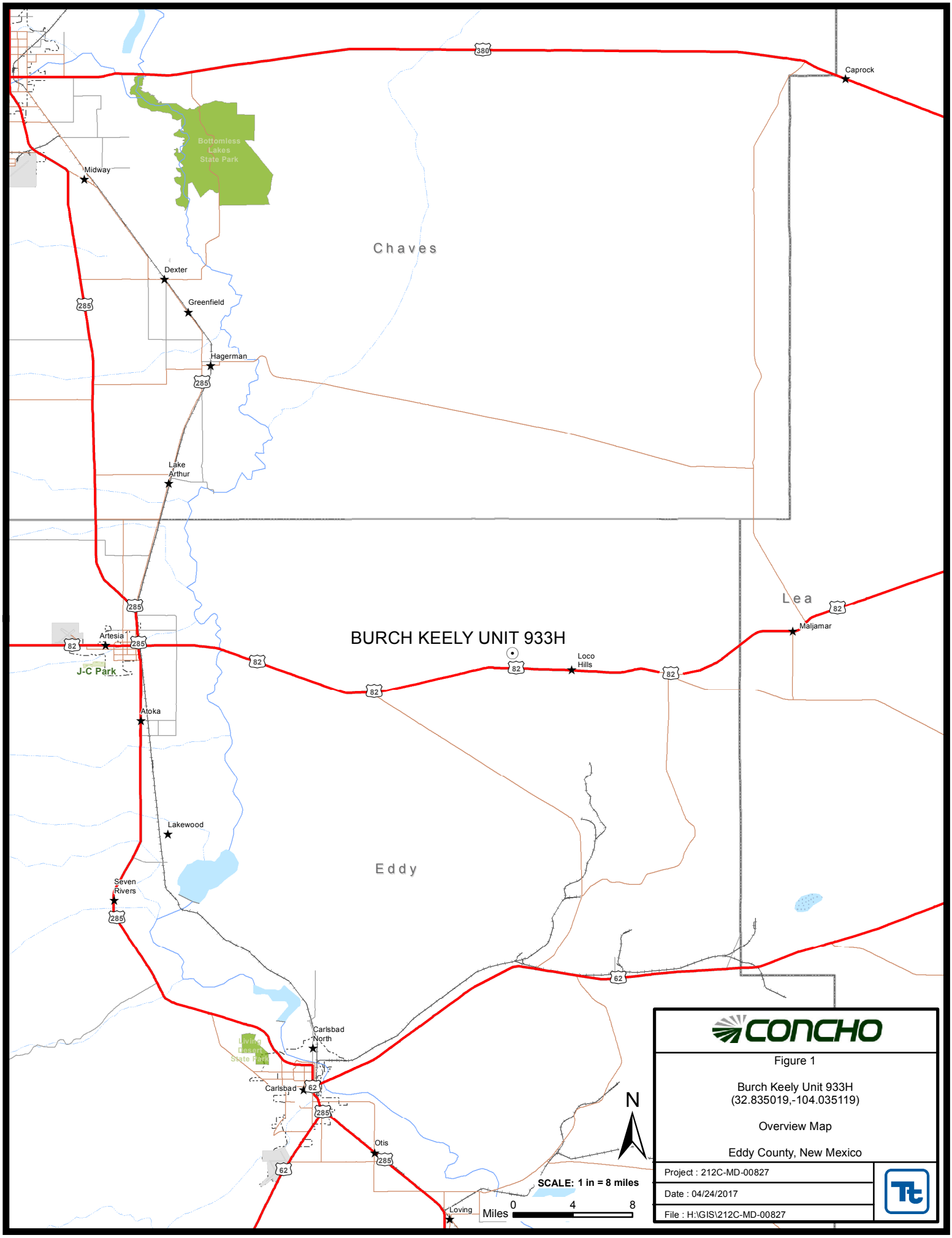
Respectfully submitted,
TETRA TECH

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

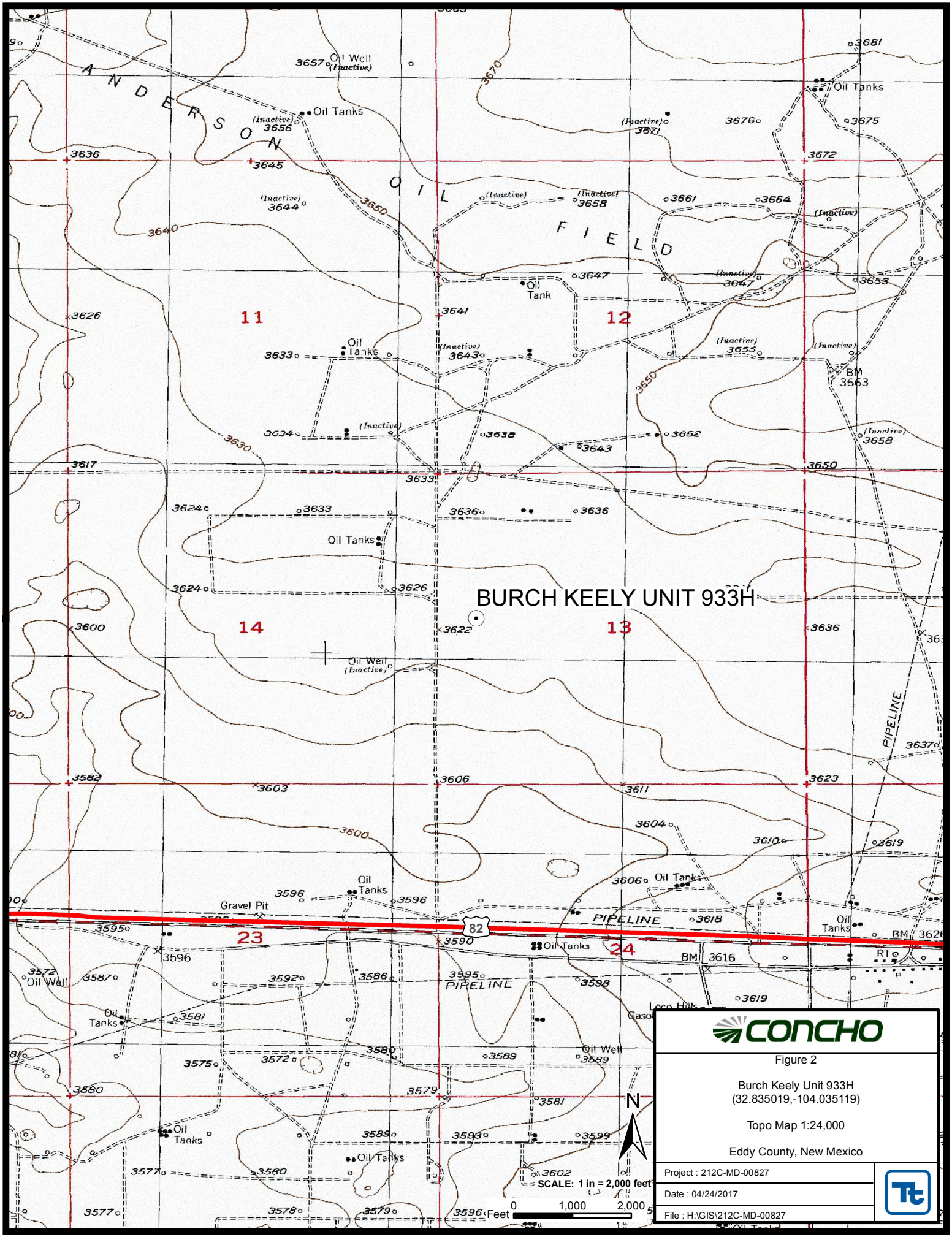
Burch Keely Unit 933H
(32.835019,-104.035119)

Overview Map

Eddy County, New Mexico

Project : 212C-MD-00827	
Date : 04/24/2017	
File : H:\GIS\212C-MD-00827	

Mapped By: Isabel Marmolejo



CONCHO

Figure 2

Burch Keely Unit 933H
(32.835019,-104.035119)

Topo Map 1:24,000

Eddy County, New Mexico

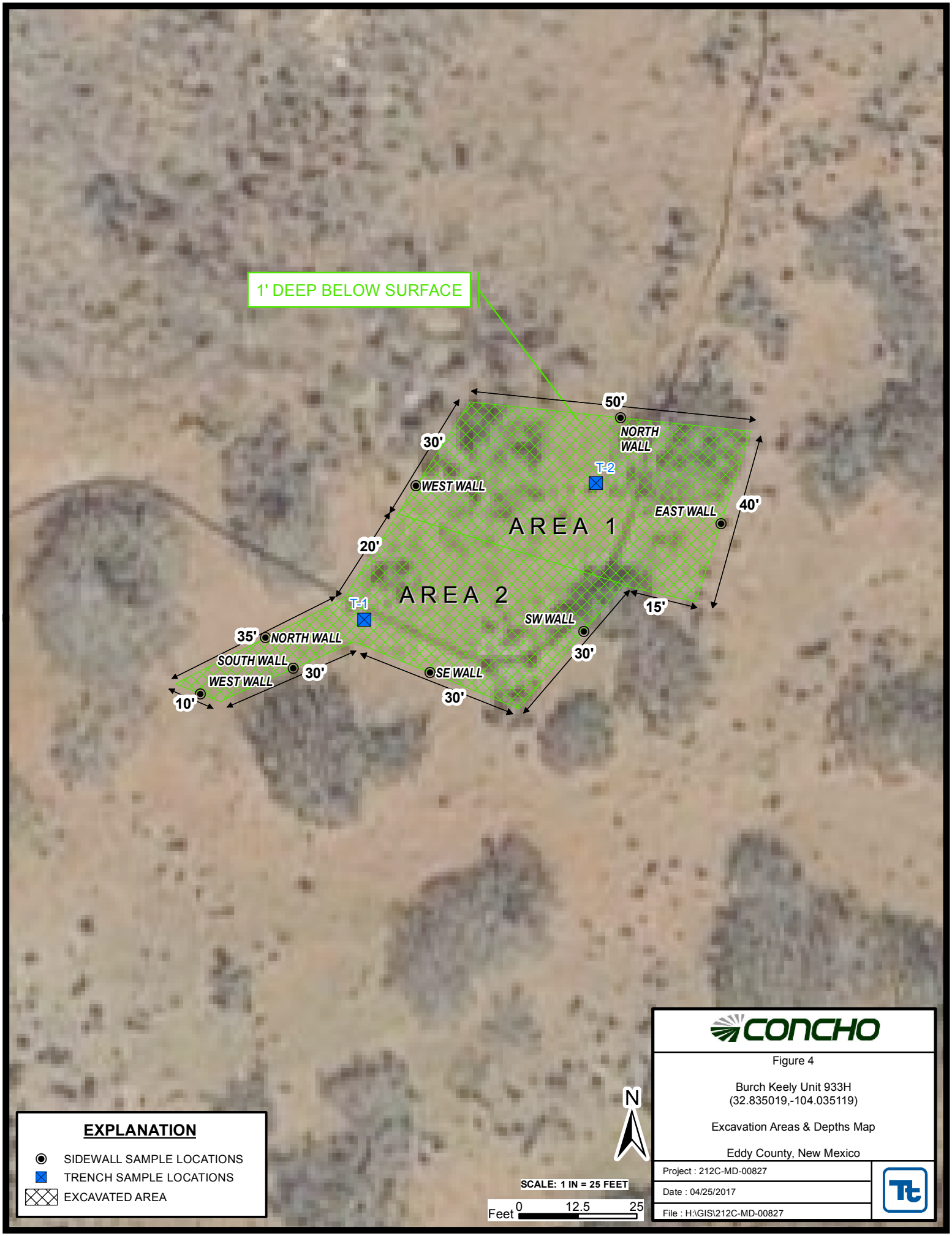
Project : 212C-MD-00827

Date : 04/24/2017

File : H:\GIS\212C-MD-00827

Mapped By: Isabel Marmolejo

Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Burch Keely Unit # 933H
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	2/7/2017	1		X	730	2,130	2,860	0.924	23.5	30.0	50.4	**105**	160
	"	2	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	16.0
	"	3	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	16.0
	"	4	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	16.0
	"	5	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	32.0
West Wall	6/19/2017	-	X		-	-	-	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	-
North Wall	6/19/2017	-	X		-	-	-	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
South Wall	6/19/2017	-	X		-	-	-	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	-
South East Wall	6/20/2017	-	X		-	-	-	<0.00199	0.00214	0.00229	0.0194	0.0238	-
South West Wall	6/20/2017	-	X		-	-	-	<0.00341	0.00770	0.0188	0.276	0.302	-
T-2	2/7/2017	1		X	802	2,420	3,222	0.638	27.9	35.3	57.9	**122**	48.0
	"	2	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
	"	3	X		<10.0	38.2	38.2	<0.050	<0.050	<0.050	<0.150	<0.300	32.0
	"	4	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
	"	5	X		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	16.0
North Wall	6/20/2017	-	X		-	-	-	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	-
East Wall	6/20/2017	-	X		-	-	-	<0.00199	0.00763	0.01320	0.135	0.15600	-
West Wall	6/20/2017	-	X		-	-	-	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	-

(-) Not Analyzed

Excavation Depths

Photos

COG Operating LLC
Burch Keely Unit #933H
Eddy County, New Mexico

View Southwest – Excavated Area of T-1

View North – Excavated Area of T-2

COG Operating LLC
Burch Keely Unit #933H
Eddy County, New Mexico

View Southwest – Backfilled Area of T-1

View Northwest – 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: Burch-Keely Unit #933H		Facility Type:	Flowline

Surface Owner: Federal	Mineral Owner:	API No. 30-015-40970

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	13	17S	29E	2310	North	330	West	Eddy

Latitude 32.8355293 **Longitude** -104.0357742

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 2 bbls Oil & 3 bbls PW	Volume Recovered: 1 bbls Oil & 0 bbls PW
Source of Release: Flowline	Date and Hour of Occurrence: January 16, 2017 9:20 am	Date and Hour of Discovery: January 16, 2017 9:20 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.*

Five pinholes were discovered in the polyline. Replaced section of the flowline.

Describe Area Affected and Cleanup Action Taken.*

The release was within a pasture. 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

Printed Name: Rebecca Haskell

Title: Senior HSE Coordinator

E-mail Address: rhaskell@concho.com

Date: January 17, 2017 Phone: 432-683-7443

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

* 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 Burch Keely Unit #933H	Facility Type **Flowline**

Surface Owner: Federal	Mineral Owner	API No. 30-015-40970

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
E	13	17S	29E	2310	North	330	West	Eddy

Latitude N 32.8355293° **Longitude** W 104.0357742°

NATURE OF RELEASE

Type of Release: Oil & Produced water	Volume of Release 2 bbls oil&3 bbls produced water	Volume Recovered 1 bbl oil & 0 bbl produced water
Source of Release: Flowline	Date and Hour of Occurrence 01/16/17 9:20 am	Date and Hour of Discovery 01/16/17 9:20 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.*

Five pinholes were discovered in the poly line and the section of flowline was replaced. The release occurred in the pasture. A vacuum truck was dispatched to remove all freestanding 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	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 - Burch Keely Unit #933H
Eddy County, New Mexico

16 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **61**	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 220 dry	13
19 110	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

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

17 South 28 East

6	5	4	3	2 28	1
7	8	9	10	11	12
18	17	16	15	14 80	13
19 224	20	21	22 45 79	23	24
30	29	28	27	26	25
31	32	33	34	35 **258**	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 SITE
19	20	21	22 76 80	23	24
30	29 210 **208**	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20 80	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 28 East

6	5	4 **108**	3	2 55	1
7 **49**	8 81 **69**	9	10	11	12
18	17	16	15 80	14	13
19	20	21 **226**	22	23	24
30 137	29	28	27	26	25
31	32	33	34	35 65	36

18 South 29 East

6	5	4	3	2	1
7	8	9	10 **95**	11	12
18	17	16	15	14	13
19	20	21	22	23	24 158
30	29	28	27	26	25
31	32	33	34	35	36

18 South 30 East

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

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

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

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

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

POD Number	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 11807 POD1		ED	1	2	3	22	17S	29E	587360	3631585	131	76	55

Average Depth to Water: **76 feet**

Minimum Depth: **76 feet**

Maximum Depth: **76 feet**

Record Count: 1

PLSS Search:

Township: 17S **Range:** 29E

Appendix C

CARDINAL Laboratories

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

February 22, 2017

AARON LIEB

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: BURCH KEELEY UNIT #933

Enclosed are the results of analyses for samples received by the laboratory on 02/15/17 13:30.

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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 1 - 1 ' (H700394-01)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.924**	0.500	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	**23.5**	0.500	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	**30.0**	0.500	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	**50.4**	1.50	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	**105**	3.00	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *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	**160**	16.0	02/20/2017	ND	432	108	400	3.64	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**730**	50.0	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	**2130**	50.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *136 %* *35-147*

Surrogate: 1-Chlorooctadecane *131 %* *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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 1 - 2 ' (H700394-02)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *88.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *99.0 %* *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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 1 - 3 ' (H700394-03)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.5 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *78.7 %* *35-147*

Surrogate: 1-Chlorooctadecane *95.2 %* *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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 1 - 4 ' (H700394-04)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.0 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *78.4 %* *35-147*

Surrogate: 1-Chlorooctadecane *89.0 %* *28-171*

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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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 1 - 5 ' (H700394-05)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.3 %* *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	**32.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *82.5 %* *35-147*

Surrogate: 1-Chlorooctadecane *98.6 %* *28-171*

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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 2 - 1 ' (H700394-06)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.638**	0.500	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	**27.9**	0.500	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	**35.3**	0.500	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	**57.9**	1.50	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	**122**	3.00	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *111 %* *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	**48.0**	16.0	02/20/2017	ND	432	108	400	3.64	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**802**	50.0	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	**2420**	50.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *131 %* *35-147*

Surrogate: 1-Chlorooctadecane *127 %* *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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 2 - 2 ' (H700394-07)

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	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.0 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *83.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *89.7 %* *28-171*

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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 2 - 3' (H700394-08)

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	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.1 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	**38.2**	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *79.7 %* *35-147*

Surrogate: 1-Chlorooctadecane *91.8 %* *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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 2 - 4 ' (H700394-09)

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	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.1 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *81.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *93.7 %* *28-171*

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
AARON LIEB
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	02/15/2017	Sampling Date:	02/07/2017
Reported:	02/22/2017	Sampling Type:	Soil
Project Name:	BURCH KEELEY UNIT #933	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: T 2- 5 ' (H700394-10)

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	02/18/2017	ND	2.18	109	2.00	2.72	
Toluene*	<0.050	0.050	02/18/2017	ND	2.05	103	2.00	2.65	
Ethylbenzene*	<0.050	0.050	02/18/2017	ND	2.07	103	2.00	3.06	
Total Xylenes*	<0.150	0.150	02/18/2017	ND	5.90	98.4	6.00	2.94	
Total BTEX	<0.300	0.300	02/18/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.7 %* *73.6-140*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	02/20/2017	ND	432	108	400	3.64	

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	02/17/2017	ND	187	93.5	200	0.699	
DRO >C10-C28	<10.0	10.0	02/17/2017	ND	195	97.6	200	1.31	

Surrogate: 1-Chlorooctane *84.6 %* *35-147*

Surrogate: 1-Chlorooctadecane *96.8 %* *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

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

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:	Aaron Lieb
Address:	2407 Pecos Avenue
City:	Artesia **State:** NM **Zip** 88210
Phone #:	575-748-1553 **Fax #:**
Project #:	**Project Owner:**
Project Name:	Burch Keeley Unit #933
Project Location:	
Sampler Name:	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
H7003944																	
1	T1-1'					x					x		2/7/17	9:00AM	x	x	x
2	T1-2'					x					x		2/7/17	9:00AM	x	x	x
3	T1-3'					x					x		2/7/17	9:00AM	x	x	x
4	T1-4'					x					x		2/7/17	9:00AM	x	x	x
5	T1-5'					x					x		2/7/17	9:00AM	x	x	x
6	T2-1'					x					x		2/7/17	9:00AM	x	x	x
7	T2-2'					x					x		2/7/17	9:30 AM	x	x	x
8	T2-3'					x					x		2/7/17	9:30 AM	x	x	x
9	T2-4'					x					x		2/7/17	9:30 AM	x	x	x
10	T2-5'					x					x		2/7/17	9:30 AM	x	x	x

Relinquished By:	**Date:** 2-15-17	**Received By:** Jodi Henson	
Relinquished By:	**Time:** 1:30	**Received By:**	
	Date:		
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other: #75 2.5°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
alieb@concho.com
rgrubbs@concho.com
rhaskell@concho.com

Analytical Report 556711

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

COG-Burch Keely 933H

212C-MD-00827

06-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)

06-JUL-17

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

Reference: XENCO Report No(s): **556711**
COG-Burch Keely 933H
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) 556711. 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. 556711 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 556711

Tetra Tech- Midland, Midland, TX

COG-Burch Keely 933H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Area 2 West Wall	S	06-19-17 00:00		556711-001
Area 2 North Wall	S	06-19-17 00:00		556711-002
Area 2 South Wall	S	06-19-17 00:00		556711-003
Area 1 North Wall	S	06-20-17 00:00		556711-004
Area 1 East Wall	S	06-20-17 00:00		556711-005
Area 1 West Wall	S	06-20-17 00:00		556711-006
Area 2 SE Wall	S	06-20-17 00:00		556711-007
Area 2 SW Wall	S	06-20-17 00:00		556711-008

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021389 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3021391 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3021392 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3021493 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits.
Samples in the analytical batch are: 556711-008

Lab Sample ID 556711-008 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Toluene recovered below QC limits in the Matrix Spike. m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 556711-008.
The Laboratory Control Sample for Toluene, m,p-Xylenes, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analysis Summary 556711

Tetra Tech- Midland, Midland, TX

Project Name: COG-Burch Keely 933H

Project Id: 212C-MD-00827
Contact: Ike Tavarez
Project Location: Eddy Co NM

Date Received in Lab: Fri Jun-30-17 10:41 am
Report Date: 06-JUL-17
Project Manager: Kelsey Brooks

Analysis Requested	*Lab Id:*	556711-001		556711-002		556711-003		556711-004		556711-005		556711-006	
	Field Id:	Area 2 West Wall		Area 2 North Wall		Area 2 South Wall		Area 1 North Wall		Area 1 East Wall		Area 1 West Wall	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-19-17 00:00		Jun-19-17 00:00		Jun-19-17 00:00		Jun-20-17 00:00		Jun-20-17 00:00		Jun-20-17 00:00	
BTEX by EPA 8021B	*Extracted:*	Jun-30-17 17:00		Jun-30-17 17:00		Jun-30-17 17:30		Jun-30-17 17:30		Jun-30-17 17:30		Jun-30-17 17:30	
	Analyzed:	Jun-30-17 20:33		Jun-30-17 23:46		Jul-01-17 10:20		Jul-01-17 10:35		Jul-01-17 11:40		Jul-01-17 11:57	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	ND	0.00199	ND	0.00199
Toluene		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	0.00763	0.00199	ND	0.00199
Ethylbenzene		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	0.0132	0.00199	ND	0.00199
m,p-Xylenes		ND	0.00402	ND	0.00399	ND	0.00400	ND	0.00403	0.101	0.00398	ND	0.00398
o-Xylene		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	0.0338	0.00199	ND	0.00199
Total Xylenes		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	0.135	0.00199	ND	0.00199
Total BTEX		ND	0.00201	ND	0.00200	ND	0.00200	ND	0.00202	0.156	0.00199	ND	0.00199

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 556711

Tetra Tech- Midland, Midland, TX

Project Name: COG-Burch Keely 933H

Project Id: 212C-MD-00827
Contact: Ike Tavarez
Project Location: Eddy Co NM

Date Received in Lab: Fri Jun-30-17 10:41 am
Report Date: 06-JUL-17
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	556711-007		556711-008					
	Field Id:	Area 2 SE Wall		Area 2 SW Wall					
	Depth:								
	Matrix:	SOIL		SOIL					
	Sampled:	Jun-20-17 00:00		Jun-20-17 00:00					
BTEX by EPA 8021B	***Extracted:***	Jul-01-17 07:50		Jul-03-17 12:00					
	Analyzed:	Jul-01-17 19:37		Jul-03-17 14:07					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Benzene		ND	0.00199	ND	0.00341				
Toluene		0.00214	0.00199	0.00770	0.00341				
Ethylbenzene		0.00229	0.00199	0.0188	0.00341				
m,p-Xylenes		0.0132	0.00398	0.192	0.00683				
o-Xylene		0.00621	0.00199	0.0835	0.00341				
Total Xylenes		0.0194	0.00199	0.276	0.00341				
Total BTEX		0.0238	0.00199	0.302	0.00341				

Kelsey Brooks
Project 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

	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	

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021389 **Sample:** 556711-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/30/17 20:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 3021389 **Sample:** 556711-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/30/17 23:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0241	0.0300	80	80-120	
4-Bromofluorobenzene	0.0281	0.0300	94	80-120	

Lab Batch #: 3021391 **Sample:** 556711-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 10:20

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0300	0.0300	100	80-120	

Lab Batch #: 3021391 **Sample:** 556711-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 10:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0252	0.0300	84	80-120	

Lab Batch #: 3021391 **Sample:** 556711-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 11:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021391 **Sample:** 556711-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 11:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0241	0.0300	80	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

Lab Batch #: 3021392 **Sample:** 556711-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 19:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0253	0.0300	84	80-120	
4-Bromofluorobenzene	0.0263	0.0300	88	80-120	

Lab Batch #: 3021493 **Sample:** 556711-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/03/17 14:07

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

Lab Batch #: 3021389 **Sample:** 727124-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/30/17 20:16

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0286	0.0300	95	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 3021391 **Sample:** 727129-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 08:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0258	0.0300	86	80-120	
4-Bromofluorobenzene	0.0244	0.0300	81	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021392 **Sample:** 727130-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 16:00

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0331	0.0300	110	80-120	

Lab Batch #: 3021493 **Sample:** 727173-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/03/17 13:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0309	0.0300	103	80-120	

Lab Batch #: 3021389 **Sample:** 727124-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/30/17 18:55

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0319	0.0300	106	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

Lab Batch #: 3021391 **Sample:** 727129-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 03:00

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0254	0.0300	85	80-120	

Lab Batch #: 3021392 **Sample:** 727130-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 14:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0293	0.0300	98	80-120	
4-Bromofluorobenzene	0.0301	0.0300	100	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021493 **Sample:** 727173-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/03/17 12:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 3021389 **Sample:** 727124-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/30/17 19:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	80-120	
4-Bromofluorobenzene	0.0329	0.0300	110	80-120	

Lab Batch #: 3021391 **Sample:** 727129-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 03:16

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0288	0.0300	96	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Lab Batch #: 3021392 **Sample:** 727130-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/01/17 14:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0329	0.0300	110	80-120	
4-Bromofluorobenzene	0.0326	0.0300	109	80-120	

Lab Batch #: 3021493 **Sample:** 727173-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/03/17 12:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0341	0.0300	114	80-120	
4-Bromofluorobenzene	0.0282	0.0300	94	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021389 **Sample:** 556711-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/30/17 19:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0355	0.0300	118	80-120	
4-Bromofluorobenzene	0.0359	0.0300	120	80-120	

Lab Batch #: 3021391 **Sample:** 556362-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 03:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0334	0.0300	111	80-120	
4-Bromofluorobenzene	0.0360	0.0300	120	80-120	

Lab Batch #: 3021392 **Sample:** 556518-002 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 15:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0356	0.0300	119	80-120	
4-Bromofluorobenzene	0.0354	0.0300	118	80-120	

Lab Batch #: 3021493 **Sample:** 556711-008 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/03/17 13:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	80-120	
4-Bromofluorobenzene	0.0321	0.0300	107	80-120	

Lab Batch #: 3021389 **Sample:** 556711-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/30/17 19:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0353	0.0300	118	80-120	
4-Bromofluorobenzene	0.0354	0.0300	118	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: COG-Burch Keely 933H

Work Orders : 556711,

Project ID: 212C-MD-00827

Lab Batch #: 3021391 **Sample:** 556362-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 03:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0355	0.0300	118	80-120	
4-Bromofluorobenzene	0.0359	0.0300	120	80-120	

Lab Batch #: 3021392 **Sample:** 556518-002 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/01/17 15:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0360	0.0300	120	80-120	
4-Bromofluorobenzene	0.0353	0.0300	118	80-120	

Lab Batch #: 3021493 **Sample:** 556711-008 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/03/17 13:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0333	0.0300	111	80-120	
4-Bromofluorobenzene	0.0354	0.0300	118	80-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: COG-Burch Keely 933H

Work Order #: 556711 **Project ID:** 212C-MD-00827

Analyst: ALJ **Date Prepared:** 06/30/2017 **Date Analyzed:** 06/30/2017

Lab Batch ID: 3021389 **Sample:** 727124-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00199	0.0994	0.0950	96	0.0998	0.0979	98	3	70-130	35	
Toluene	<0.00199	0.0994	0.0858	86	0.0998	0.0902	90	5	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.100	101	0.0998	0.0966	97	3	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.193	97	0.200	0.176	88	9	70-135	35	
o-Xylene	<0.00199	0.0994	0.103	104	0.0998	0.104	104	1	71-133	35	

Analyst: ALJ **Date Prepared:** 06/30/2017 **Date Analyzed:** 07/01/2017

Lab Batch ID: 3021391 **Sample:** 727129-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00199	0.0996	0.0852	86	0.0998	0.0832	83	2	70-130	35	
Toluene	<0.00199	0.0996	0.0808	81	0.0998	0.0808	81	0	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0873	88	0.0998	0.0891	89	2	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.166	83	0.200	0.162	81	2	70-135	35	
o-Xylene	<0.00199	0.0996	0.0825	83	0.0998	0.0897	90	8	71-133	35	

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

BS / BSD Recoveries

Project Name: COG-Burch Keely 933H

Work Order #: 556711 **Project ID:** 212C-MD-00827

Analyst: ALJ **Date Prepared:** 07/01/2017 **Date Analyzed:** 07/01/2017

Lab Batch ID: 3021392 **Sample:** 727130-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00200	0.100	0.0891	89	0.100	0.0927	93	4	70-130	35	
Toluene	<0.00200	0.100	0.0840	84	0.100	0.0833	83	1	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0878	88	0.100	0.0892	89	2	71-129	35	
m,p-Xylenes	<0.00401	0.200	0.158	79	0.201	0.159	79	1	70-135	35	
o-Xylene	<0.00200	0.100	0.0850	85	0.100	0.0883	88	4	71-133	35	

Analyst: ALJ **Date Prepared:** 07/03/2017 **Date Analyzed:** 07/03/2017

Lab Batch ID: 3021493 **Sample:** 727173-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00199	0.0996	0.0894	90	0.100	0.0867	87	3	70-130	35	
Toluene	<0.00199	0.0996	0.0815	82	0.100	0.0774	77	5	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0922	93	0.100	0.0873	87	5	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.155	78	0.200	0.153	77	1	70-135	35	
o-Xylene	<0.00199	0.0996	0.0911	91	0.100	0.0821	82	10	71-133	35	

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

Form 3 - MS / MSD Recoveries

Project Name: COG-Burch Keely 933H

Work Order # : 556711 **Project ID:** 212C-MD-00827

Lab Batch ID: 3021389 **QC- Sample ID:** 556711-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/30/2017 **Date Prepared:** 06/30/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00200	0.100	0.0874	87	0.0996	0.0920	92	5	70-130	35	
Toluene	<0.00200	0.100	0.0809	81	0.0996	0.0859	86	6	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0816	82	0.0996	0.0888	89	8	71-129	35	
m,p-Xylenes	<0.00401	0.200	0.148	74	0.199	0.157	79	6	70-135	35	
o-Xylene	<0.00200	0.100	0.0796	80	0.0996	0.0872	88	9	71-133	35	

Lab Batch ID: 3021391 **QC- Sample ID:** 556362-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/01/2017 **Date Prepared:** 06/30/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00199	0.0996	0.0779	78	0.101	0.0706	70	10	70-130	35	
Toluene	<0.00199	0.0996	0.0789	79	0.101	0.0689	68	14	70-130	35	X
Ethylbenzene	<0.00199	0.0996	0.0784	79	0.101	0.0662	66	17	71-129	35	X
m,p-Xylenes	<0.00398	0.199	0.145	73	0.202	0.136	67	6	70-135	35	X
o-Xylene	<0.00199	0.0996	0.0809	81	0.101	0.0675	67	18	71-133	35	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

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

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.

Form 3 - MS / MSD Recoveries

Project Name: COG-Burch Keely 933H

Work Order # : 556711 **Project ID:** 212C-MD-00827

Lab Batch ID: 3021392 **QC- Sample ID:** 556518-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/01/2017 **Date Prepared:** 07/01/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00202	0.101	0.0822	81	0.101	0.0828	82	1	70-130	35	
Toluene	<0.00202	0.101	0.0793	79	0.101	0.0772	76	3	70-130	35	
Ethylbenzene	<0.00202	0.101	0.0699	69	0.101	0.0700	69	0	71-129	35	X
m,p-Xylenes	<0.00405	0.202	0.125	62	0.202	0.119	59	5	70-135	35	X
o-Xylene	<0.00202	0.101	0.0715	71	0.101	0.0802	79	11	71-133	35	

Lab Batch ID: 3021493 **QC- Sample ID:** 556711-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/03/2017 **Date Prepared:** 07/03/2017 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B 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
Benzene	<0.00351	0.175	0.139	79	0.172	0.167	97	18	70-130	35	
Toluene	0.00770	0.175	0.122	65	0.172	0.168	93	32	70-130	35	X
Ethylbenzene	0.0188	0.175	0.151	76	0.172	0.189	99	22	71-129	35	
m,p-Xylenes	0.192	0.351	0.520	93	0.345	0.411	63	23	70-135	35	X
o-Xylene	0.0835	0.175	0.287	116	0.172	0.180	56	46	71-133	35	XF

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

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

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

556711

PAGE: 1 OF: 1

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 212C-MD-00827

PROJECT NAME: Burch Keely 933H 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	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
	6/19	-	S		X	Area 2 West Wall	1				X		X															
	6/19	-	S		X	Area 2 North Wall	1				X		X															
	6/19	-	S		X	Area 2 South Wall	1				X		X															
	6/20	-	S		X	Area 1 ~~North Wall~~ North Wall	1				X		X															
	6/20	-	S		X	Area 1 ~~North Wall~~ East Wall	1				X		X															
	6/20	-	S		X	Area 1 ~~North Wall~~ West Wall	1				X		X															
	6/20	-	S		X	Area 2 SE Wall	1				X		X															
	6/20	-	S		X	Area 2 SW Wall	1				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 Mercroft Date: 6/30/19 Time: 1041
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Initial) Clint Mercroft Date: 6/20/.. 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

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

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

Work Order #: 556711

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