

SITE INFORMATION

Report Type: Work Plan 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:	32.835019° N			104.035119° 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 Tavaréz
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.Tavaréz@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	150'-175'
WellHead Protection:		
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:		
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		0

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



April 28, 2017

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

Re: Work Plan for the COG Operating LLC., 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 prepare a work plan for the release assessed by 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 32.835019°, W 104.035119°. 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.tetrattech.com

Regulatory

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

Soil Assessment and Analytical Results

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.

Work Plan

Based on the laboratory results, COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of trenches (T-1 and T-2) will be excavated to a depth of approximately 1.0' below surface to remove the elevated BTEX concentrations in the shallow soils. Once excavated to the appropriate depth, the excavated area will be backfilled with clean material to surface grade. All of the excavated material will be transported offsite for proper disposal.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.



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

Respectfully submitted,
TETRA TECH

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

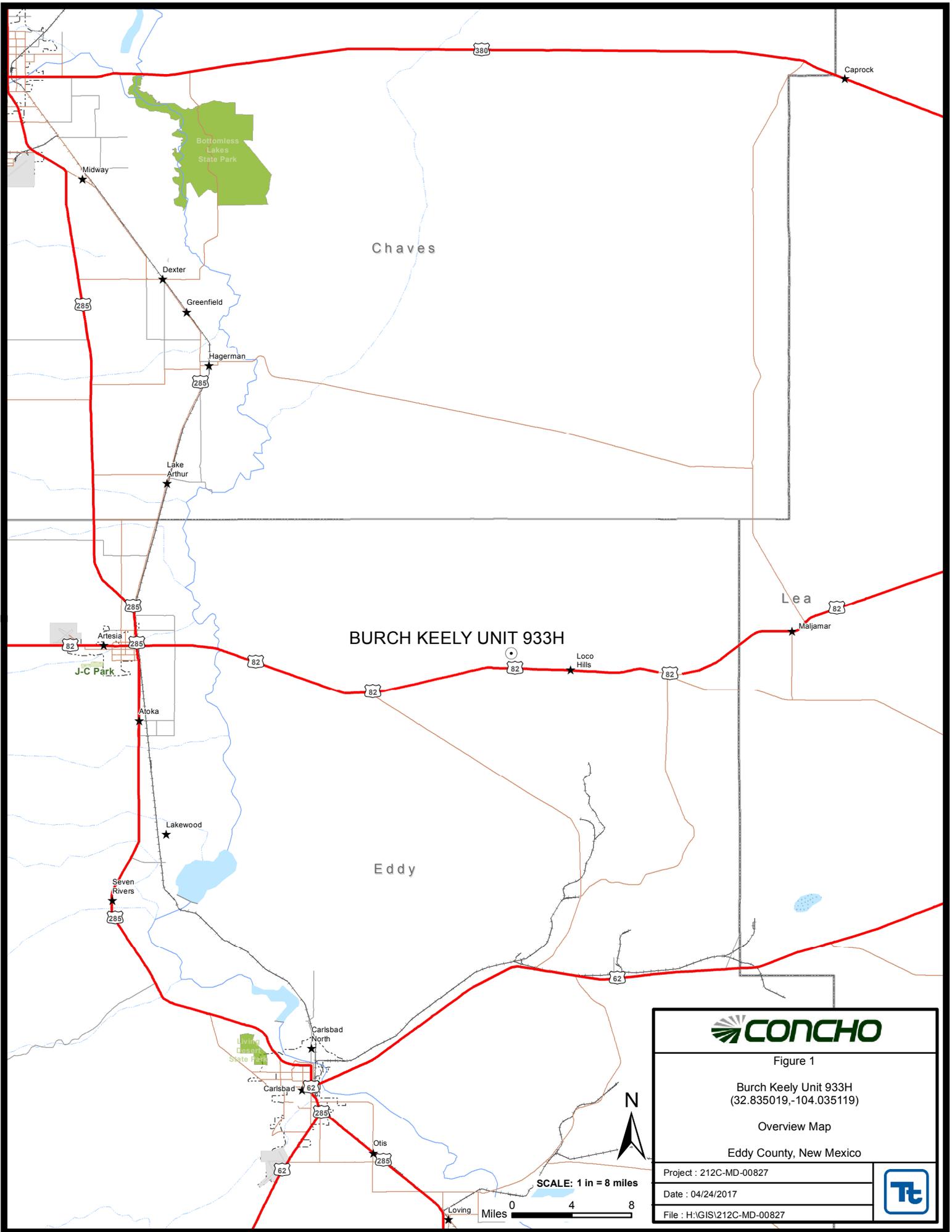
Clair Gonzales,
Geologist I

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

Ike Tavarez,
Senior Project Manager, P.G.

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

Figures



BURCH KEELY UNIT 933H



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



SCALE: 1 in = 8 miles



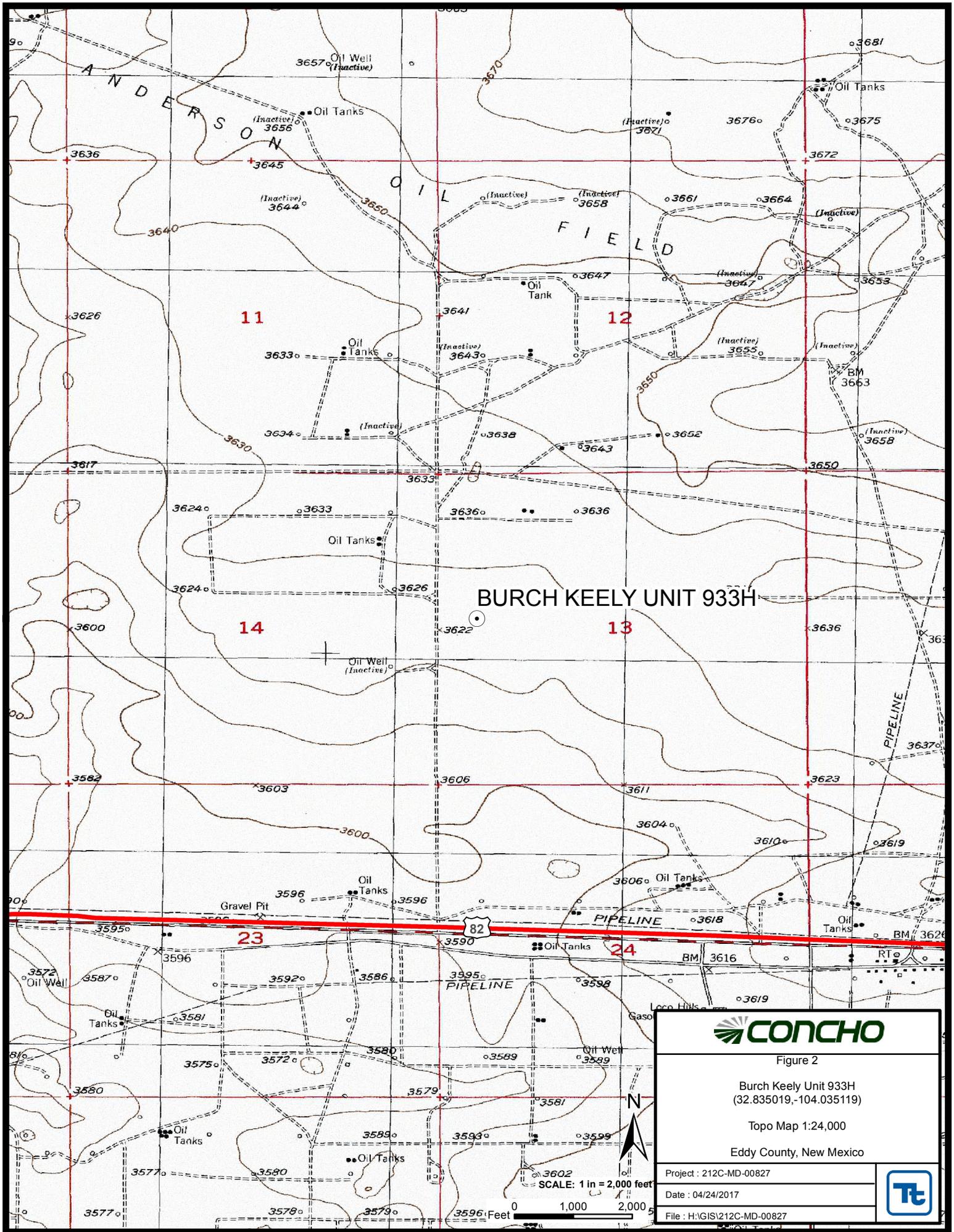


Figure 2

Burch Keely Unit 933H
(32.835019,-104.035119)

Topo Map 1:24,000

Eddy County, New Mexico

Project : 212C-MD-00827

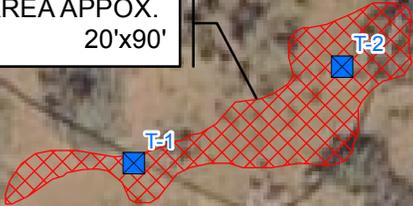
Date : 04/24/2017

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





SPILL AREA APPROX.
20'x90'



EXPLANATION

-  TRENCH SAMPLE LOCATIONS
-  SPILL AREA

SCALE: 1 IN = 50 FEET



	
Figure 3	
Burch Keely Unit 933H (32.835019,-104.035119)	
Spill Assessment Map	
Eddy County, New Mexico	
Project : 212C-MD-00827	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00827	



1' DEEP BELOW SURFACE

SPILL AREA APPROX.
20'x90'

T-1

T-2

EXPLANATION

-  TRENCH SAMPLE LOCATIONS
-  PROPOSED EXCAVATION AREA

SCALE: 1 IN = 50 FEET



	
Figure 4	
Burch Keely Unit 933H (32.835019,-104.035119)	
Proposed Excavation Area & Depths Map	
Eddy County, New Mexico	
Project : 212C-MD-00827	
Date : 04/25/2017	
File : H:\GIS\212C-MD-00827	

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
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

(-) Not Analyzed



Proposed Excavation Depths

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-141
Revised August 8, 2011

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

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

Release Notification and Corrective Action

OPERATOR

Initial Report Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Burch-Keely Unit #933H	Facility Type: Flowline

Surface Owner: Federal	Mineral Owner:	API No. 30-015-40970
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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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

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: <i>Rebecca Haskell</i>	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 <input type="checkbox"/>
Date: January 17, 2017 Phone: 432-683-7443		

* 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	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	13
19	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	13
19	20	21	22 45	23	24
30	29	28	27	26	25
31	32	33	34	35	36

17 South			29 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 76	23	24
30	29 210	28	27	26	25
31	32	33	34	35	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	3	2 55	1
7	8 81	9	10	11	12
18	17	16	15 80	14	13
19	20	21	22	23	24
30	137	29	28	27	26
31	32	33	34	35	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
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-Code	basin	County	Q 1	Q 2	Q 3	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

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

Appendix C



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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene
Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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

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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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, SM4500CI-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

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager

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



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

BILL TO

ANALYSIS REQUEST

Company Name: COG Operating LLC
 Project Manager: Aaron Lieb
 Address: 2407 Pecos Avenue
 City: Artesia State: NM Zip: 88210
 Phone #: 575-748-1553 Fax #: 575-748-1553
 Project #: Project Owner: Midland
 Project Name: Burch Keeley Unit #933 State: TX Zip: 79701
 Project Location: Phone #: (432) 221-0388
 Sampler Name: Aaron Lieb Fax #:

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	BTEX	TPH	Chloride
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:					
H7100394															
	T1-1'			X							2/7/17	9:00AM	X	X	X
	T1-2'			X							2/7/17	9:00AM	X	X	X
	T1-3'			X							2/7/17	9:00AM	X	X	X
	T1-4'			X							2/7/17	9:00AM	X	X	X
	T1-5'			X							2/7/17	9:00AM	X	X	X
	T2-1'			X							2/7/17	9:30 AM	X	X	X
	T2-2'			X							2/7/17	9:30 AM	X	X	X
	T2-3'			X							2/7/17	9:30 AM	X	X	X
	T2-4'			X							2/7/17	9:30 AM	X	X	X
	T2-5'			X							2/7/17	9:30 AM	X	X	X

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Relinquished By: [Signature] Date: 2-15-17
 Received By: [Signature] Date: 2-15-17
 Relinquished By: [Signature] Date: [Blank]
 Received By: [Signature] Date: [Blank]

Delivered By: (Circle One) #75 2.52
 Sampler - UPS - Bus - Other: [Blank]
 Sample Condition: Cool Intact
 Yes No Yes No
 CHECKED BY: [Signature]

REMARKS: dnee12@concho.com
 alleb@concho.com
 rarubbs@concho.com
 rmaskell@concho.com
 Phone Result: Yes No Add'l Phone #:
 Fax Result: Yes No Add'l Fax #:
 FORM 0007 R 2.0