REVIEWED
By Kristen Lynch at 2:22 pm, Nov 09, 2016

NMOCD
APPROVED
Work Plan

SITE INFORMATION

Report Type: Work Plan 1RP-4214

General Site Information:						
Site:	Lusk Deep Unit A #023H					
Company:	COG Operating LLC					
Section, Township and Range	Unit P	Sec. 19	T19S	R32E		
Lease Number:	API No. 30-025-40260					
County:	Lea County					
GPS:	32.6396141° N			103.7981644° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of 243 & 126A in rural Lea county, travel north on 126A for 4.6 miles, turn west onto lease road for 200 feet, turn north onto lease road for 0.25 mi to location.					

Release Data:	
Date Released:	3/1/2016
Type Release:	Produced water
Source of Contamination:	Flowline release
Fluid Released:	10 bbls
Fluids Recovered:	8 bbls

Official Communication:			
Name:	Robert McNeil		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	***0***	*130'*
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	0
Total Ranking Score:	***0***	

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

TETRA TECH

September 26, 2016

Ms. Lynch, Kristen
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC., Lusk Deep Unit A #023H, Unit P, Section 19, Township 19 South, Range 32 East, Lea County, New Mexico. 1 RP-4214

Ms. Kristen:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to review the assessment data and prepare a work plan for a spill that occurred at the Lusk Deep Unit A #023H, Unit P, Section 19, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.6396141º, W 103.7981644º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release was discovered on March 1, 2016 due to a ruptured flowline. The incident released approximately ten (10) barrels of produced water and approximately eight (8) barrels of produced water were recovered. The impacted area occured in the pasture along the side of a lease road and measures approximately 25' x 30'. The initial C-141 form is included in Appendix A.

Groundwater

According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 500'. New Mexico Office of the State Engineer database showed 2 wells in Section 19 and 20 with a reported groundwater depth of 102' and 345', respectively. 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 August 8, 2016, COG personnel were onsite to evaluate and sample the release area. A total of two (2) boreholes (S1 and S2) were installed to depths of 45' and 80' below surface using an air rotary rig to assess the impacted soils. Additionally, a background borehole (BG) was installed to evaluate the native soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 3.

Referring to Table 1, all of the samples collected at S1 were below the BTEX and TPH laboratory reporting limits. The area of S1 showed chloride concentrations that increased with depth, with a chloride high of 19,600 mg/kg at 14' below surface. The chloride concentrations then inconsistently declined with depth and showed a bottom hole concentration of 8,000 mg/kg at 45' below surface. Deeper samples could not be collected due to a sandy formation causing the borehole to collapse. The area of S2 also showed elevated chloride concentrations with a chloride high of 18,400 mg/kg at 10' below surface, which then declined with depth to 288 mg/kg at 70' below surface and a bottom hole concentration of 368 mg/kg at 80' below surface. Additionally, the background samples (BG) collected showed a chloride concentration of 384 mg/kg at 4' below surface, which then declined with depth to 64.0 mg/kg at 30' below surface.

The area of S1 was not vertically defined, however the area of S2 was vertically defined. Due to the limited size of the impacted area, approximately 25' x 30', the samples collected at S2 are likely representative in concentration and extents of the release area.

Work Plan

Based on the results, COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of S1 and S2 will be excavated to a depth of 4.0' below surface and propose to cap the

excavation bottoms with a 20 mil liner to prevent vertical migration of the chloride impacted soils. All of the excavated material from these areas will be transported offsite for proper disposal. The excavations will be backfilled with clean soil to grade. After the site remediation is performed, COG will reseed the remediated area in the pasture in June of 2017 to coincide with the rainy season in southeast New Mexico.

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

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

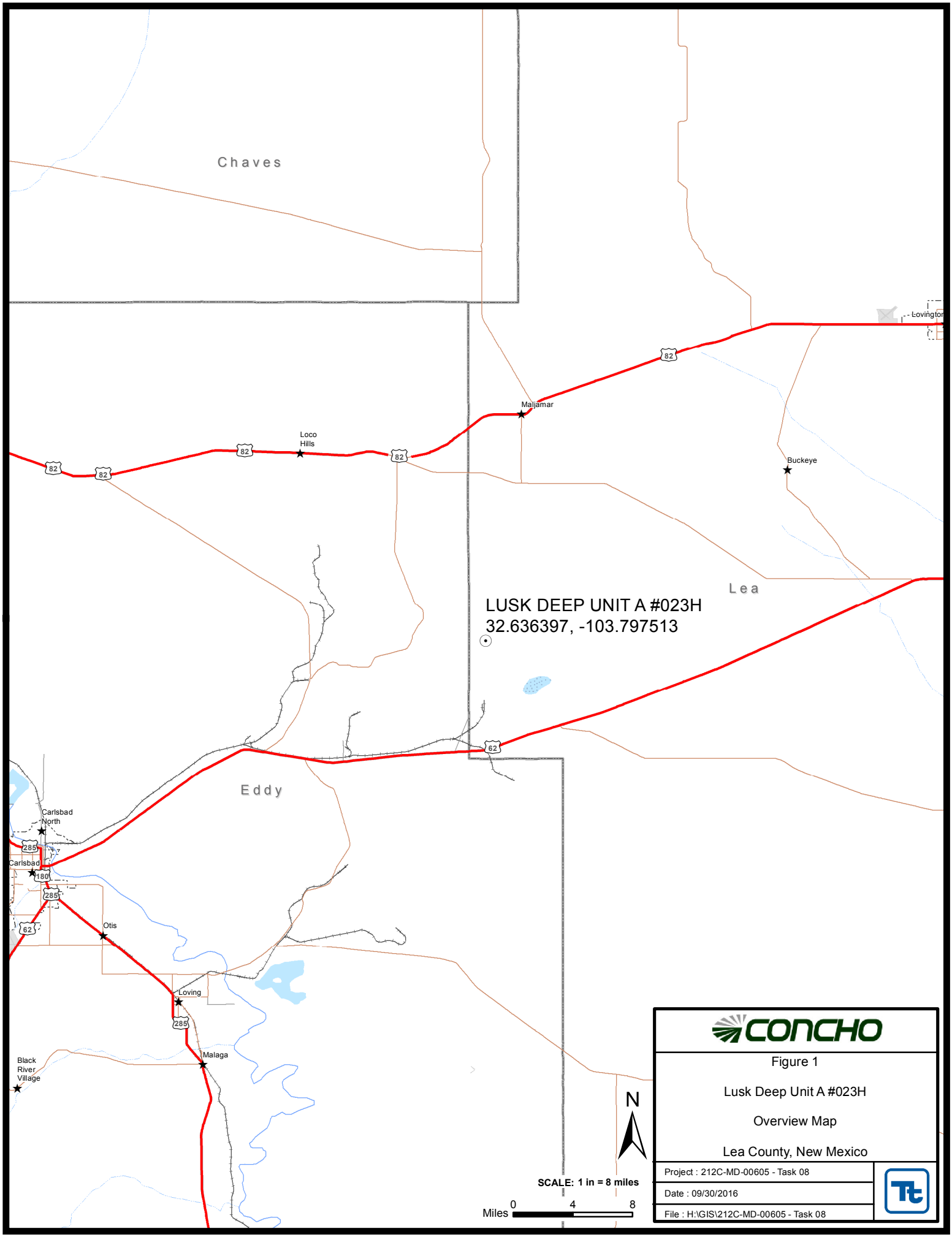
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Geologist I

Ike Tavarez,
Senior Project Manager, P.G.

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

Figures



CONCHO

Figure 1

Lusk Deep Unit A #023H

Overview Map

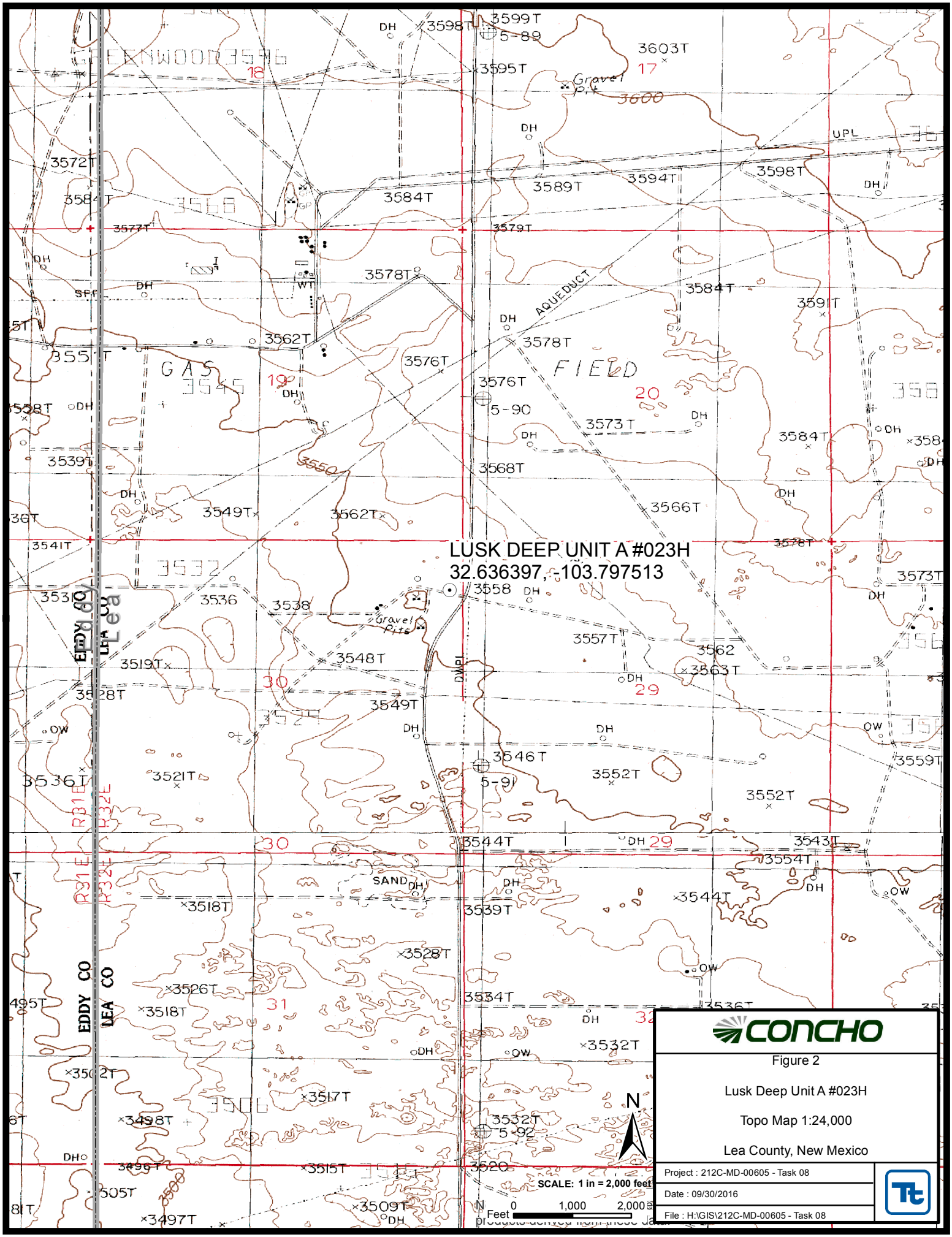
Lea County, New Mexico

Project : 212C-MD-00605 - Task 08

Date : 09/30/2016

File : H:\GIS\212C-MD-00605 - Task 08

Mapped By: Isabel Marmolejo



CONCHO

Figure 2

Lusk Deep Unit A #023H

Topo Map 1:24,000

Lea County, New Mexico

Project : 212C-MD-00605 - Task 08

Date : 09/30/2016

File : H:\GIS\212C-MD-00605 - Task 08

Mapped By: Isabel Marmolejo

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- BACKGROUND SAMPLE LOCATION
- SPILL AREA

CONCHO

Figure 3

Lusk Deep Unit A #023H
(32.636397, -103.797513)

Spill Assessment Map

Lea County, New Mexico

Project : 212C-MD-00605 - Task 08	
Date : 09/30/2016	
File : H:\GIS\212C-MD-00605 - Task 08	

Mapped By: Isabel Marmolejo

CONCHO

Figure 4

Lusk Deep Unit A #023H
(32.636397, -103.797513)

Proposed Excavation Area & Depth Map

Lea County, New Mexico

Project : 212C-MD-00605 - Task 08

Date : 09/30/2016

File : H:\GIS\212C-MD-00605 - Task 08

Mapped By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
Lusk Deep Unit A #023H
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						
S1	8/8/2016	1	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	2,560
	"	2	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	2,120
	"	3	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	6,960
	"	4	X		<10.0	<10.0	<20.0	<0.050	<0.050	<0.050	<0.150	<0.300	6,880
	"	6	X		-	-	-	-	-	-	-	-	10,000
	"	8	X		-	-	-	-	-	-	-	-	13,500
	"	10	X		-	-	-	-	-	-	-	-	12,900
	"	12	X		-	-	-	-	-	-	-	-	16,000
	"	14	X		-	-	-	-	-	-	-	-	19,600
	"	16	X		-	-	-	-	-	-	-	-	12,500
	"	18	X		-	-	-	-	-	-	-	-	9,860
	"	20	X		-	-	-	-	-	-	-	-	5,680
	"	22	X		-	-	-	-	-	-	-	-	9,600
	"	24	X		-	-	-	-	-	-	-	-	10,700
	"	26	X		-	-	-	-	-	-	-	-	10,400
	"	30	X		-	-	-	-	-	-	-	-	12,800
	"	35	X		-	-	-	-	-	-	-	-	4,660
	"	40	X		-	-	-	-	-	-	-	-	5,680
	"	45	X		-	-	-	-	-	-	-	-	8,000

Table 1
COG Operating LLC.
Lusk Deep Unit A #023H
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						
S2	8/8/2016	10	X		-	-	-	-	-	-	-	-	18,400
	"	20	X		-	-	-	-	-	-	-	-	5,600
	"	30	X		-	-	-	-	-	-	-	-	10,500
	"	40	X		-	-	-	-	-	-	-	-	4,880
	"	50	X		-	-	-	-	-	-	-	-	3,880
	"	60	X		-	-	-	-	-	-	-	-	1,360
	"	70	X		-	-	-	-	-	-	-	-	288
	"	75	X		-	-	-	-	-	-	-	-	720
	"	80	X		-	-	-	-	-	-	-	-	368
BG	8/8/2016	4	X		-	-	-	-	-	-	-	-	384
	"	10	X		-	-	-	-	-	-	-	-	64.0
	"	20	X		-	-	-	-	-	-	-	-	48.0
	"	30	X		-	-	-	-	-	-	-	-	64.0

(-) Not Analyzed

Proposed Excavation Depth

Proposed Liner Depth

212C-MD-00605
Cardinal Labs

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: LUSK DEEP UNIT A #023H	Facility Type: Battery

Surface Owner:	Mineral Owner: Federal	API No. 30-025-40260

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	19	19S	32E	330’	South	380’	East	Lea

Latitude 32.6396141 **Longitude** -103.7981644

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 10 bbls	Volume Recovered: 8 bbls
Source of Release: Flowline	Date and Hour of Occurrence: 3/1/2016 2:00 pm	Date and Hour of Discovery: 3/1/2016 2:00 pm
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.*
This release was caused by a ruptured poly flowline. A vacuum truck was dispatched to recover standing fluid.

Describe Area Affected and Cleanup Action Taken.*

This release occurred in the pasture along the lease road. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Robert Grubbs Jr.		
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: rgrubbs@concho.com	Conditions of Approval:	Attached ☐
Date: March 11, 2016 Phone: 432-683-7443		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Lusk Deep Unit A #023H
Lea County, New Mexico

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15 98	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

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

18 South 33 East

6	5	4	3 60	2	1
7	8 100	9	10 62	11 46	12 143 140
18	17 85	16	15	14 36	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33 177	34	35	36

19 South 31 East

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

19 South 32 East

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

19 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18 340	17 116	16	15	14	13
19	20	21	22	23	24
30	29	28 130 dry	27	26 92 85	25
31	32 185	33	34	35	36

20 South 31 East

6	5	4	3	2	1
7	8	9	10 130	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36 80

20 South 32 East

6	5	4	3	2	1 21.8
7	8	9	10	11	12
18 89	17	16	15	14	13
19	20	21	22	23	24
30 9.9	29	28	27 12.3	26	25
31	32	33	34	35	36 46

20 South 33 East

6	5 325 278	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 +300
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
CP 00073	CP	LE		2	4	34	19S	32E	617502	3609301	575		
CP 00075		LE		2	4	34	19S	32E	617502	3609301	575		
CP 00563		LE	1	1	2	19	19S	32E	612118	3613376*	300		
CP 00639		LE		3	1	20	19S	32E	613029	3612880*	350	345	5
CP 00640		LE		2	2	19	19S	32E	612621	3613280*	260	102	158
CP 00812		LE		4	4	01	19S	32E	620623	3616973*	200		

Average Depth to Water: **223 feet**

Minimum Depth: **102 feet**

Maximum Depth: **345 feet**

Record Count: 6

PLSS Search:

Township: 19S **Range:** 32E

***UTM location was derived from PLSS - see Help**

Appendix C

CARDINAL Laboratories

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

August 16, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: LUSK DEED UNIT A #23H

Enclosed are the results of analyses for samples received by the laboratory on 08/08/16 16:20.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 1' (H601758-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2016	ND	2.21	111	2.00	0.627	
Toluene*	<0.050	0.050	08/09/2016	ND	2.26	113	2.00	0.265	
Ethylbenzene*	<0.050	0.050	08/09/2016	ND	2.17	109	2.00	0.193	
Total Xylenes*	<0.150	0.150	08/09/2016	ND	6.55	109	6.00	0.225	
Total BTEX	<0.300	0.300	08/09/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *104 %* *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	**2560**	16.0	08/09/2016	ND	432	108	400	7.69	

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	08/09/2016	ND	198	99.1	200	4.26	
DRO >C10-C28	<10.0	10.0	08/09/2016	ND	181	90.6	200	7.17	

Surrogate: 1-Chlorooctane *92.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *102 %* *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
DAKOTA NEEL
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 2' (H601758-02)

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	08/09/2016	ND	2.21	111	2.00	0.627	
Toluene*	<0.050	0.050	08/09/2016	ND	2.26	113	2.00	0.265	
Ethylbenzene*	<0.050	0.050	08/09/2016	ND	2.17	109	2.00	0.193	
Total Xylenes*	<0.150	0.150	08/09/2016	ND	6.55	109	6.00	0.225	
Total BTEX	<0.300	0.300	08/09/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**2120**	16.0	08/09/2016	ND	432	108	400	7.69	

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	08/09/2016	ND	198	99.1	200	4.26	
DRO >C10-C28	<10.0	10.0	08/09/2016	ND	181	90.6	200	7.17	

Surrogate: 1-Chlorooctane *87.0 %* *35-147*

Surrogate: 1-Chlorooctadecane *93.6 %* *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
DAKOTA NEEL
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 3' (H601758-03)

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	08/09/2016	ND	2.21	111	2.00	0.627	
Toluene*	<0.050	0.050	08/09/2016	ND	2.26	113	2.00	0.265	
Ethylbenzene*	<0.050	0.050	08/09/2016	ND	2.17	109	2.00	0.193	
Total Xylenes*	<0.150	0.150	08/09/2016	ND	6.55	109	6.00	0.225	
Total BTEX	<0.300	0.300	08/09/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *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	**6960**	16.0	08/09/2016	ND	432	108	400	7.69	

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	08/09/2016	ND	198	99.1	200	4.26	
DRO >C10-C28	<10.0	10.0	08/09/2016	ND	181	90.6	200	7.17	

Surrogate: 1-Chlorooctane *86.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *91.5 %* *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
DAKOTA NEEL
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 4' (H601758-04)

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	08/09/2016	ND	2.21	111	2.00	0.627	
Toluene*	<0.050	0.050	08/09/2016	ND	2.26	113	2.00	0.265	
Ethylbenzene*	<0.050	0.050	08/09/2016	ND	2.17	109	2.00	0.193	
Total Xylenes*	<0.150	0.150	08/09/2016	ND	6.55	109	6.00	0.225	
Total BTEX	<0.300	0.300	08/09/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *104 %* *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	**6880**	16.0	08/09/2016	ND	432	108	400	7.69	

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	08/09/2016	ND	198	99.1	200	4.26	
DRO >C10-C28	<10.0	10.0	08/09/2016	ND	181	90.6	200	7.17	

Surrogate: 1-Chlorooctane *77.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *82.5 %* *28-171*

Sample ID: S1 6' (H601758-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10000**	16.0	08/09/2016	ND	432	108	400	7.69	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 8' (H601758-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**13500**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 10' (H601758-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**12900**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 12' (H601758-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16000**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 14' (H601758-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**19600**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 16' (H601758-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**12500**	16.0	08/09/2016	ND	432	108	400	7.69	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 18' (H601758-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**9860**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 20' (H601758-12)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5680**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 22' (H601758-13)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**9600**	16.0	08/09/2016	ND	432	108	400	7.69	

Sample ID: S1 24' (H601758-14)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10700**	16.0	08/09/2016	ND	400	100	400	0.00	QM-07

Sample ID: S1 26' (H601758-15)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10400**	16.0	08/09/2016	ND	400	100	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK DEED UNIT A #23H	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S1 30' (H601758-16)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**12800**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S1 35' (H601758-17)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4660**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S1 40' (H601758-18)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5680**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S1 45' (H601758-19)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**8000**	16.0	08/09/2016	ND	400	100	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: COG	**BILL TO** P.O. #:
Project Manager: Dakota Neel	Company:
Address:	Attn:
City: State: Zip:	Address:
Phone #: Fax #:	City:
Project #: Lusk 23 Flowline Project Owner:	State: Zip:
Project Name:	Phone #:
Project Location: Lusk Deep Unit A #23	Fax #:
Sampler Name: Dakota Neel	

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	ANALYSIS REQUEST: Chloride	TPH	BTEX
H601758																	
1	S1 1'	X				X							8/8/16	4pm	X	X	X
2	S1 2'	X				X									X	X	X
3	S1 3'	X				X									X	X	X
4	S1 4'	X				X									X	X	X
5	S1 6'	X				X									X	X	X
6	S1 8'	X				X									X		
7	S1 10'	X				X									X		
8	S1 12'	X				X									X		
9	S1 14'	X				X									X		
10	S1 16'	X				X									X		

Relinquished By:	Date: 8/8/16	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Time: 4:20	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
	Date:		REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 4.9°C ~~25.2°C~~

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

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#75

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: COG	**BILL TO**
Project Manager:	P.O. #:
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location:	Phone #:
Sampler Name:	Fax #:

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	chlorides
H601758															
11	S1 15	X	X			X							8/8/16	4pm	X
12	S1 20	X	X			X									X
13	S1 22	X	X			X									X
14	S1 24	X	X			X									X
15	S1 26	X	X			X									X
16	S1 30	X	X			X									X
17	S1 35	X	X			X									X
18	S1 40'	X	X			X									X
19	S1 45'	X	X			X									X

Relinquished By:	Date: 8/8/16	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 4:20		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 4.9°c ~~25.2°c~~

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

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

$75

CARDINAL Laboratories

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

August 16, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: LUSK 23 FLOWLINE

Enclosed are the results of analyses for samples received by the laboratory on 08/08/16 16:20.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK 23 FLOWLINE	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LUSK DEEP UNIT A #23		

Sample ID: S2 10' (H601759-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**18400**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S2 20' (H601759-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5600**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S2 30' (H601759-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**10500**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S2 40' (H601759-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4880**	16.0	08/09/2016	ND	400	100	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK 23 FLOWLINE	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LUSK DEEP UNIT A #23		

Sample ID: S2 50' (H601759-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3880**	16.0	08/09/2016	ND	400	100	400	0.00	

Sample ID: S2 60' (H601759-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1360**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: S2 70' (H601759-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: S2 75' (H601759-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**720**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: S2 80' (H601759-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	08/11/2016	ND	400	100	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: COG	**BILL TO**
Project Manager: Dakota Neel	P.O. #:
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: Lusk 23 Flowline	State: Zip:
Project Location: Lusk ~~South~~ Deep Unit #23	Phone #:
Sampler Name: Dakota Neel	Fax #:

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chloride
H601759															
1	S2 - 10	X				X							8/8/16	4:00	X
2	S2 - 20	X				X									X
3	S2 - 30	X				X									X
4	S2 - 40	X				X									X
5	S2 - 50	X				X									X
6	S2 - 60	X				X									X
7	S2 - 70	X				X									X
8	S2 - ~~75~~	X				X									X
9	S2 - 80	X				X									X
	~~S2~~														

Relinquished By: Dakota Neel	Date: 8/8/16	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 4:20		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 23.5°C

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

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#75

CARDINAL Laboratories

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

August 16, 2016

DAKOTA NEEL

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: LUSK 23 FLOWLINE

Enclosed are the results of analyses for samples received by the laboratory on 08/08/16 16:30.

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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

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Analytical Results For:

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

Received:	08/08/2016	Sampling Date:	08/08/2016
Reported:	08/16/2016	Sampling Type:	Soil
Project Name:	LUSK 23 FLOWLINE	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LUSK DEEP UNIT A #23		

Sample ID: BG 4' (H601760-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**384**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: BG 10' (H601760-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: BG 20' (H601760-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/11/2016	ND	400	100	400	0.00	

Sample ID: BG 30' (H601760-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	08/11/2016	ND	400	100	400	0.00	

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*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	COG	BILL TO	
Project Manager:	Dakota Neel	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	Lusk 23 Flowline	State: Zip:	
Project Location:	Lusk Deep Unit A #23	Phone #:	
Sampler Name:	Dakota Neel	Fax #:	

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	ANALYSIS REQUEST: chloride
H601760															
1	BG - 4'	X				X							8/8/16	4pm	X
2	BG - 10'	X				X									X
3	BG - 20'	X				X									X
4	BG - 30'	X				X									X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 8/8/16	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 4:30pm	Jodi Henson	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

25.4°

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

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

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