



October 28, 2018

Maria Pruett
Oil Conservation Division, District 2
811 S First St.
Artesia, NM 88210

Shelly Tucker
Bureau of Land Management
620 E. Green St.
Carlsbad, NM 88220

Re: Work Plan
WD McIntyre E SW Tank Battery (8/18/18)
RP#: 2RP-4945
GPS: 32.8150708, -103.995597
Unit Letter N, Section 20, Township 17 South, Range 30 East
Eddy County, New Mexico

Ms. Tucker/Ms. Pruett,

COG Operating, LLC (COG) is pleased to submit the following work plan in response to a release that occurred at the WD McIntyre E SW Tank Battery located in Unit Letter N, Section 20, Township 17 South and Range 30 East in Eddy County, New Mexico.

BACKGROUND

The release was discovered on August 18, 2018 and a C-141 initial report was submitted and approved by the New Mexico Oil Conservation Division (NMOCD). The initial C-141 is shown in Appendix A. The crude oil release occurred from a plugged equalizer line which caused the oil tank to overflow. Approximately fifteen (15) barrels of oil were released and recovered twelve (12) barrels of oil. All of the fluids were contained inside the facility firewalls.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the New Mexico Office of the State Engineer (NMOSE), reported a water well in Section 20 with groundwater depth of 80 feet below surface. The Chevron trend map show a depth to water >100 feet. The water well information is shown in Appendix B.

A risk based evaluation and site determinations were perform in accordance to the New Mexico Oil Conservation Division (NMOCD) Rule (Title 19 Chapter 15 Part 29) for releases on oil and gas development and production in New Mexico (effective August 14, 2018). According to the site characterization evaluation, no other receptors (water wells, playas, karst, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The groundwater data and the site

characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

General Site Characterization and Groundwater:

Site Characterization	Average Groundwater Depth (ft.)
None Encountered	50-100 feet

Delineation and Closure Criteria:

Remedial Action Levels (RALs)	
Chlorides	10,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

PROPOSED WORK PLAN

- The areas of AH-1, AH-2 and AH-3 will be excavated to a depth of 1.0 below surface to remove the impacted soil above the RALs.
- All of the excavated material will be hauled to an NMOCD approved solid waste disposal facility.
- The excavation will be backfilled with clean backfilled material.

SAMPLING PLAN

Once the excavation is complete, soil confirmation samples will be collected from the excavated areas. To collect representative samples, composite samples (5-point composite) will be collected every 200 square feet for the final confirmation sampling for the constituents of concern. Discrete soil samples will be collected from the excavation if any “hot spots” are encountered during the excavation.

REMEDIATION TIMEFRAME AND ESTIMATED VOLUME

The remediation will be performed 90 days after the work plan has been approved. Approximately 55 cubic yards of impacted soil will be excavated from the impacted area.

SITE RECLAMATION AND RESTORATION

All of the soil remained on the pad and no reclamation activities will be required at the site.

Should you have any questions or concerns on the proposed remediation activities, please do not hesitate to contact me.

Sincerely,
Concho Operating, LLC

A handwritten signature in blue ink, appearing to read 'Ike Tavarez'.

Ike Tavarez, P. G.
Senior HSE Supervisor
itavarez@concho.com

CC:

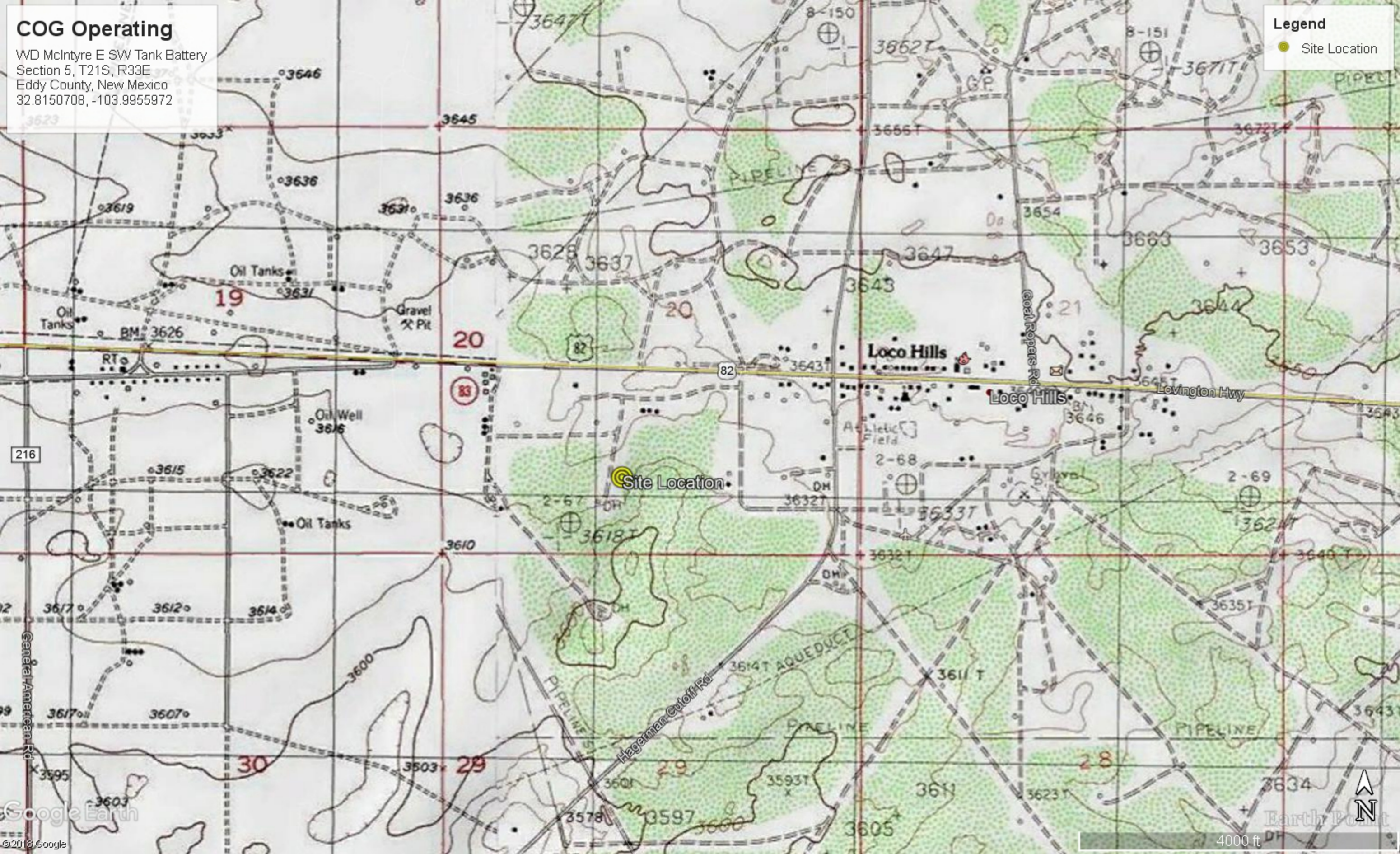
Figures

COG Operating

WD McIntyre E SW Tank Battery
Section 5, T21S, R33E
Eddy County, New Mexico
32.8150708, -103.9955972

Legend

Site Location



COG Operating

WD McIntyre E SW Tank Battery
Section 5, T21S, R33E
Eddy County, New Mexico
32.8150708, -103.9955972

Legend

- Auger hole
- battery
- Spill Area



Tables

Table 1
COG Operating LLC.
WD McIntyre E SW Tank Battery
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)						Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	
			In-Situ	Removed	GRO	DRO	MRO	Total	GRO	DRO				Total
Average Depth to Groundwater (ft) >50 -100'														
NMOCD RAL Limits (mg/kg)					-	-	-	2,500	-	-	1,000	10	50	10,000
AH-1	8/23/2018	0-1	X		1650	2720	90.1	4460	1650	2720	4370	7.48	339	22.5
		1-1.5			<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.001	<0.002	62.9
		2-2.5			<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.001	<0.002	32.2
AH-2	8/23/2018	0-1	X		1560	1820	<74.8	3380	1560	1820	3380	3.87	264	34.3
		1-1.5			<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<0.002	0.0335	<4.96
		2-2.5			<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<0.002	<0.002	<4.99
AH-3	8/23/2018	0-1	X		909	1170	<74.9	2080	909	1170	2079	3.37	160	14.9
		1-1.5			<15.0	41.4	<15.0	41.4	<15.0	41.4	41.4	<0.002	<0.002	39.4
		2-2.5			<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	0.0230	0.0414	158

(-) Not Analyzed

 Proposed Excavation Depth

(-) Not Analyzed

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 April 3, 2017

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 (OGRID #229137)	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: WD McIntyre E SW	Facility Type: Tank Battery
Surface Owner: Federal	Mineral Owner: Federal
API No.	

LOCATION OF RELEASE

Unit Letter N	Section 20	Township 17S	Range 30E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude 32.8150708 Longitude -103.99559725 NAD83

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 15 bbl.	Volume Recovered: 12 bbl.
Source of Release: Tank Overflow	Date and Hour of Occurrence: August 18, 2018 7:00am	Date and Hour of Discovery: August 18, 2018 7:00am
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.*		
The tank overflow was caused by the line being plugged when the tank was set to equalize. The equalizing lines will be cleaned out.		
Describe Area Affected and Cleanup Action Taken.*		
The release was on location. 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: 	OIL CONSERVATION DIVISION	
Printed Name: DeAnn Grant	Approved by Environmental Specialist: 	
Title: HSE Administrative Assistant	Approval Date: 08/21/18	Expiration Date: N/A
E-mail Address: agrant@concho.com	Conditions of Approval:	Attached ☐
Date: August 20, 2018	Phone: 432-253-4513	2RP-4945

* Attach Additional Sheets If Necessary

FID: fMAP1823332902

I#: nMAP1823333271

A#: pMAP1823334059

Incident ID	
District RP	2RP 4945
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	50'-100.(ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
515	
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☒ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: <i>Each of the following items must be included in the report.</i> ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. ☐ Field data ☒ Data table of soil contaminant concentration data ☒ Depth to water determination ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release ☐ Boring or excavation logs ☐ Photographs including date and GIS information ☒ Topographic/Aerial maps ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	2RP 4945
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Ike Tavaréz Title: Senior HSE Supervisor

Signature: _____  _____ Date: 10/24/18

email: itavarez@concho.com Telephone: 432-683-7443

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	2RP 4945
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 10/24/18

email: itavarez@concho.com Telephone: 432-683-7443

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

Incident ID	
District RP	2RP 4945
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of 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 OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____

Title: _____

Signature: _____

Date: _____

email: _____

Telephone: _____

OCD Only

Received by: _____

Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____

Date: _____

Printed Name: _____

Title: _____

Appendix B

COG Operating LLC

WVD McIntyre E SW Tank Battery
Eddy County, New Mexico
32.8150708 -103.9955972

Legend

- High
- Low
- Medium
- Site Location

Site Location

Livingston Hwy

82

Goat Ropers Rd
Loco Hills

Hagerman Cutoff Rd

Google Earth

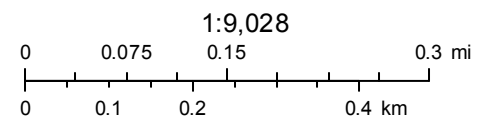
3000 ft

N

New Mexico NFHL Data



November 7, 2018



FEMA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

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This is a non-regulatory product for informational use only. Please consult your local floodplain administrator for further information.



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National Water Information System: Mapper

[Help](#) [Info](#)

[Sites](#) [Map](#)

Map Layers

Base Map



Imagery



Imagery with
Labels



Streets



Site Information



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 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 11914 POD1	RA	ED		2	4	2	20	17S	30E	594801	3632002	85	80	5

Average Depth to Water: **80 feet**

Minimum Depth: **80 feet**

Maximum Depth: **80 feet**

Record Count: 1

PLSS Search:

Section(s): 20

Township: 17S

Range: 30E

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



Certificate of Analysis Summary 596931

COG Operating LLC, Artesia, NM

Project Name: WD McIntyre E SW (8-18-18)



Project Id:

Contact: Ike Tavaréz

Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Aug-24-18 08:53 am

Report Date: 05-SEP-18

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	596931-001	596931-002	596931-003	596931-004	596931-005	596931-006
	Field Id:	AH-1 (0-1')	AH-1 (1-1.5')	AH-1 (2-2.5')	AH-2 (0-1')	AH-2 (1-1.5')	AH-2 (2-2.5')
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Aug-23-18 00:00	Aug-23-18 00:00	Aug-23-18 00:00	Aug-23-18 00:00	Aug-23-18 00:00	Aug-23-18 00:00
BTEX by EPA 8021B	Extracted:	Sep-05-18 09:30	Sep-04-18 10:00	Sep-04-18 10:00	Sep-05-18 09:30	Sep-04-18 10:00	Sep-04-18 10:00
	Analyzed:	Sep-05-18 16:26	Sep-05-18 15:51	Sep-05-18 15:51	Sep-05-18 16:27	Sep-05-18 15:51	Sep-05-18 15:51
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		7.48 1.00	<0.00199 0.00199	<0.00202 0.00202	3.87 2.01	<0.00200 0.00200	<0.00200 0.00200
Toluene		91.3 1.00	<0.00199 0.00199	<0.00202 0.00202	65.5 2.01	0.00322 0.00200	<0.00200 0.00200
Ethylbenzene		130 1.00	<0.00199 0.00199	<0.00202 0.00202	109 2.01	0.0135 0.00200	<0.00200 0.00200
m,p-Xylenes		74.8 2.00	<0.00398 0.00398	<0.00403 0.00403	62.7 4.02	0.00581 0.00399	<0.00400 0.00400
o-Xylene		35.1 1.00	<0.00199 0.00199	<0.00202 0.00202	22.5 2.01	0.0110 0.00200	<0.00200 0.00200
Total Xylenes		110 1.00	<0.00199 0.00199	<0.00202 0.00202	85.2 2.01	0.0168 0.00200	<0.00200 0.00200
Total BTEX		339 1.00	<0.00199 0.00199	<0.00202 0.00202	264 2.01	0.0335 0.00200	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Aug-27-18 15:00	Aug-27-18 15:00	Aug-27-18 15:00	Aug-27-18 15:00	Aug-27-18 15:00	Aug-27-18 08:15
	Analyzed:	Aug-27-18 16:28	Aug-27-18 16:33	Aug-27-18 16:39	Aug-27-18 16:44	Aug-27-18 17:01	Aug-27-18 13:35
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		22.5 5.00	62.9 5.00	32.2 5.00	34.3 4.97	<4.96 4.96	<4.99 4.99
TPH By SW8015 Mod	Extracted:	Aug-24-18 11:00	Aug-24-18 11:00	Aug-24-18 11:00	Aug-24-18 11:00	Aug-24-18 11:00	Aug-24-18 11:00
	Analyzed:	Aug-24-18 14:53	Aug-24-18 15:13	Aug-24-18 15:34	Aug-24-18 15:54	Aug-24-18 16:14	Aug-24-18 16:35
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		1650 74.9	<15.0 15.0	<15.0 15.0	1560 74.8	<14.9 14.9	<14.9 14.9
Diesel Range Organics (DRO)		2720 74.9	<15.0 15.0	<15.0 15.0	1820 74.8	<14.9 14.9	<14.9 14.9
Oil Range Hydrocarbons (ORO)		90.1 74.9	<15.0 15.0	<15.0 15.0	<74.8 74.8	<14.9 14.9	<14.9 14.9
Total TPH		4460 74.9	<15.0 15.0	<15.0 15.0	3380 74.8	<14.9 14.9	<14.9 14.9

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 596931

COG Operating LLC, Artesia, NM

Project Name: WD McIntyre E SW (8-18-18)



Project Id:

Contact: Ike Tavaréz

Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Aug-24-18 08:53 am

Report Date: 05-SEP-18

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	596931-007	596931-008	596931-009			
	Field Id:	AH-3 (0-1')	AH-3 (1-1.5')	AH-3 (2-2.5')			
	Depth:						
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Aug-23-18 00:00	Aug-23-18 00:00	Aug-23-18 00:00			
BTEX by EPA 8021B	Extracted:	Sep-05-18 09:30	Sep-04-18 10:00	Sep-04-18 10:00			
	Analyzed:	Sep-05-18 16:26	Sep-05-18 15:51	Sep-05-18 15:51			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
	Benzene	3.37 0.499	<0.00202 0.00202	0.0231 0.00994			
	Toluene	36.7 0.499	<0.00202 0.00202	0.0183 0.00994			
Ethylbenzene		62.8 0.499	<0.00202 0.00202	<0.00994 0.00994			
m,p-Xylenes		41.2 0.998	<0.00403 0.00403	<0.0199 0.0199			
o-Xylene		15.7 0.499	<0.00202 0.00202	<0.00994 0.00994			
Total Xylenes		56.9 0.499	<0.00202 0.00202	<0.00994 0.00994			
Total BTEX		160 0.499	<0.00202 0.00202	0.0414 0.00994			
Chloride by EPA 300	Extracted:	Aug-27-18 08:15	Aug-27-18 08:15	Aug-27-18 08:15			
	Analyzed:	Aug-27-18 13:41	Aug-27-18 13:46	Aug-27-18 13:52			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
	Chloride	14.9 4.97	39.4 4.99	158 4.98			
TPH By SW8015 Mod	Extracted:	Aug-24-18 11:00	Aug-24-18 11:00	Aug-27-18 11:00			
	Analyzed:	Aug-24-18 16:55	Aug-24-18 17:16	Aug-27-18 13:15			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
	Gasoline Range Hydrocarbons (GRO)	909 74.9	<15.0 15.0	<15.0 15.0			
	Diesel Range Organics (DRO)	1170 74.9	41.4 15.0	<15.0 15.0			
Oil Range Hydrocarbons (ORO)		<74.9 74.9	<15.0 15.0	<15.0 15.0			
Total TPH		2080 74.9	41.4 15.0	<15.0 15.0			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 596931

for COG Operating LLC

Project Manager: Ike Tavaréz

WD McIntyre E SW (8-18-18)

05-SEP-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-27), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-13)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-16)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



05-SEP-18

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **596931**

WD McIntyre E SW (8-18-18)

Project Address: Eddy County, New Mexico

Ike Tavaréz:

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) 596931. 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. 596931 will be filed for 45 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,

Jessica Kramer

Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

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A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 (0-1')	S	08-23-18 00:00		596931-001
AH-1 (1-1.5')	S	08-23-18 00:00		596931-002
AH-1 (2-2.5')	S	08-23-18 00:00		596931-003
AH-2 (0-1')	S	08-23-18 00:00		596931-004
AH-2 (1-1.5')	S	08-23-18 00:00		596931-005
AH-2 (2-2.5')	S	08-23-18 00:00		596931-006
AH-3 (0-1')	S	08-23-18 00:00		596931-007
AH-3 (1-1.5')	S	08-23-18 00:00		596931-008
AH-3 (2-2.5')	S	08-23-18 00:00		596931-009



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: WD McIntyre E SW (8-18-18)

Project ID:
Work Order Number(s): 596931

Report Date: 05-SEP-18
Date Received: 08/24/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3062194 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 597553-001 S.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3062203 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 596931-001,596931-004,596931-007.



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-001

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 15.00

Basis: Wet Weight

Seq Number: 3061362

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	22.5	5.00	mg/kg	08.27.18 16.28		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	1650	74.9	mg/kg	08.24.18 14.53		5
Diesel Range Organics (DRO)	C10C28DRO	2720	74.9	mg/kg	08.24.18 14.53		5
Oil Range Hydrocarbons (ORO)	PHCG2835	90.1	74.9	mg/kg	08.24.18 14.53		5
Total TPH	PHC635	4460	74.9	mg/kg	08.24.18 14.53		5
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	103	%	70-135	08.24.18 14.53		
o-Terphenyl	84-15-1	130	%	70-135	08.24.18 14.53		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-001

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.05.18 09.30

Basis: Wet Weight

Seq Number: 3062203

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	7.48	1.00	mg/kg	09.05.18 16.26		500
Toluene	108-88-3	91.3	1.00	mg/kg	09.05.18 16.26		500
Ethylbenzene	100-41-4	130	1.00	mg/kg	09.05.18 16.26		500
m,p-Xylenes	179601-23-1	74.8	2.00	mg/kg	09.05.18 16.26		500
o-Xylene	95-47-6	35.1	1.00	mg/kg	09.05.18 16.26		500
Total Xylenes	1330-20-7	110	1.00	mg/kg	09.05.18 16.26		500
Total BTEX		339	1.00	mg/kg	09.05.18 16.26		500
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	189	%	70-130	09.05.18 16.26	**	
1,4-Difluorobenzene	540-36-3	89	%	70-130	09.05.18 16.26		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (1-1.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-002

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 15.00

Basis: Wet Weight

Seq Number: 3061362

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	62.9	5.00	mg/kg	08.27.18 16.33		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.24.18 15.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.24.18 15.13	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.24.18 15.13	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.24.18 15.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	95	%	70-135	08.24.18 15.13		
o-Terphenyl	84-15-1	100	%	70-135	08.24.18 15.13		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (1-1.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-002

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.05.18 15.51	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.05.18 15.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	75	%	70-130	09.05.18 15.51		
4-Bromofluorobenzene	460-00-4	87	%	70-130	09.05.18 15.51		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (2-2.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-003

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 15.00

Basis: Wet Weight

Seq Number: 3061362

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.2	5.00	mg/kg	08.27.18 16.39		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.24.18 15.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.24.18 15.34	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.24.18 15.34	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.24.18 15.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	08.24.18 15.34	
o-Terphenyl	84-15-1	94	%	70-135	08.24.18 15.34	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-1 (2-2.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-003

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.18 15.51	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.05.18 15.51		
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.05.18 15.51		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-2 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-004

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 15.00

Basis: Wet Weight

Seq Number: 3061362

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	34.3	4.97	mg/kg	08.27.18 16.44		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	1560	74.8	mg/kg	08.24.18 15.54		5
Diesel Range Organics (DRO)	C10C28DRO	1820	74.8	mg/kg	08.24.18 15.54		5
Oil Range Hydrocarbons (ORO)	PHCG2835	<74.8	74.8	mg/kg	08.24.18 15.54	U	5
Total TPH	PHC635	3380	74.8	mg/kg	08.24.18 15.54		5
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	08.24.18 15.54		
o-Terphenyl	84-15-1	126	%	70-135	08.24.18 15.54		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-2 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-004

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.05.18 09.30

Basis: Wet Weight

Seq Number: 3062203

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	3.87	2.01	mg/kg	09.05.18 16.27		1000
Toluene	108-88-3	65.5	2.01	mg/kg	09.05.18 16.27		1000
Ethylbenzene	100-41-4	109	2.01	mg/kg	09.05.18 16.27		1000
m,p-Xylenes	179601-23-1	62.7	4.02	mg/kg	09.05.18 16.27		1000
o-Xylene	95-47-6	22.5	2.01	mg/kg	09.05.18 16.27		1000
Total Xylenes	1330-20-7	85.2	2.01	mg/kg	09.05.18 16.27		1000
Total BTEX		264	2.01	mg/kg	09.05.18 16.27		1000
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	89	%	70-130	09.05.18 16.27		
4-Bromofluorobenzene	460-00-4	188	%	70-130	09.05.18 16.27	**	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: AH-2 (1-1.5')

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-005

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 15.00

Basis: Wet Weight

Seq Number: 3061362

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	08.27.18 17.01	U	1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.24.18 16.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.24.18 16.14	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.24.18 16.14	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.24.18 16.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	08.24.18 16.14	
o-Terphenyl	84-15-1	104	%	70-135	08.24.18 16.14	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-2 (1-1.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-005

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Toluene	108-88-3	0.00322	0.00200	mg/kg	09.05.18 15.51		1
Ethylbenzene	100-41-4	0.0135	0.00200	mg/kg	09.05.18 15.51		1
m,p-Xylenes	179601-23-1	0.00581	0.00399	mg/kg	09.05.18 15.51		1
o-Xylene	95-47-6	0.0110	0.00200	mg/kg	09.05.18 15.51		1
Total Xylenes	1330-20-7	0.0168	0.00200	mg/kg	09.05.18 15.51		1
Total BTEX		0.0335	0.00200	mg/kg	09.05.18 15.51		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	127		%	70-130	09.05.18 15.51	
1,4-Difluorobenzene	540-36-3	83		%	70-130	09.05.18 15.51	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: AH-2 (2-2.5')

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-006

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 08.15

Basis: Wet Weight

Seq Number: 3061326

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	08.27.18 13.35	U	1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.24.18 16.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.24.18 16.35	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.24.18 16.35	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.24.18 16.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	08.24.18 16.35	
o-Terphenyl	84-15-1	103	%	70-135	08.24.18 16.35	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: AH-2 (2-2.5')

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-006

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.05.18 15.51	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.18 15.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	70-130	09.05.18 15.51		
4-Bromofluorobenzene	460-00-4	97	%	70-130	09.05.18 15.51		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-3 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-007

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 08.15

Basis: Wet Weight

Seq Number: 3061326

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.9	4.97	mg/kg	08.27.18 13.41		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	909	74.9	mg/kg	08.24.18 16.55		5
Diesel Range Organics (DRO)	C10C28DRO	1170	74.9	mg/kg	08.24.18 16.55		5
Oil Range Hydrocarbons (ORO)	PHCG2835	<74.9	74.9	mg/kg	08.24.18 16.55	U	5
Total TPH	PHC635	2080	74.9	mg/kg	08.24.18 16.55		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	08.24.18 16.55	
o-Terphenyl	84-15-1	116	%	70-135	08.24.18 16.55	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-3 (0-1')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-007

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.05.18 09.30

Basis: Wet Weight

Seq Number: 3062203

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	3.37	0.499	mg/kg	09.05.18 16.26		250
Toluene	108-88-3	36.7	0.499	mg/kg	09.05.18 16.26		250
Ethylbenzene	100-41-4	62.8	0.499	mg/kg	09.05.18 16.26		250
m,p-Xylenes	179601-23-1	41.2	0.998	mg/kg	09.05.18 16.26		250
o-Xylene	95-47-6	15.7	0.499	mg/kg	09.05.18 16.26		250
Total Xylenes	1330-20-7	56.9	0.499	mg/kg	09.05.18 16.26		250
Total BTEX		160	0.499	mg/kg	09.05.18 16.26		250
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	260	%	70-130	09.05.18 16.26	**	
1,4-Difluorobenzene	540-36-3	90	%	70-130	09.05.18 16.26		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-3 (1-1.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-008

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 08.15

Basis: Wet Weight

Seq Number: 3061326

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	39.4	4.99	mg/kg	08.27.18 13.46		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.24.18 11.00

Basis: Wet Weight

Seq Number: 3061228

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.24.18 17.16	U	1
Diesel Range Organics (DRO)	C10C28DRO	41.4	15.0	mg/kg	08.24.18 17.16		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.24.18 17.16	U	1
Total TPH	PHC635	41.4	15.0	mg/kg	08.24.18 17.16		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	08.24.18 17.16	
o-Terphenyl	84-15-1	102	%	70-135	08.24.18 17.16	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-3 (1-1.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-008

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.18 15.51	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.18 15.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	88	%	70-130	09.05.18 15.51		
4-Bromofluorobenzene	460-00-4	128	%	70-130	09.05.18 15.51		



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: AH-3 (2-2.5')

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-009

Date Collected: 08.23.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 08.27.18 08.15

Basis: Wet Weight

Seq Number: 3061326

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	158	4.98	mg/kg	08.27.18 13.52		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.27.18 11.00

Basis: Wet Weight

Seq Number: 3061397

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.27.18 13.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.27.18 13.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.27.18 13.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.27.18 13.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	08.27.18 13.15	
o-Terphenyl	84-15-1	97	%	70-135	08.27.18 13.15	



Certificate of Analytical Results 596931



COG Operating LLC, Artesia, NM

WD McIntyre E SW (8-18-18)

Sample Id: **AH-3 (2-2.5')**

Matrix: Soil

Date Received: 08.24.18 08.53

Lab Sample Id: 596931-009

Date Collected: 08.23.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.04.18 10.00

Basis: Wet Weight

Seq Number: 3062194

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.0231	0.00994	mg/kg	09.05.18 15.51		5
Toluene	108-88-3	0.0183	0.00994	mg/kg	09.05.18 15.51		5
Ethylbenzene	100-41-4	<0.00994	0.00994	mg/kg	09.05.18 15.51	U	5
m,p-Xylenes	179601-23-1	<0.0199	0.0199	mg/kg	09.05.18 15.51	U	5
o-Xylene	95-47-6	<0.00994	0.00994	mg/kg	09.05.18 15.51	U	5
Total Xylenes	1330-20-7	<0.00994	0.00994	mg/kg	09.05.18 15.51	U	5
Total BTEX		0.0414	0.00994	mg/kg	09.05.18 15.51		5
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.05.18 15.51		
1,4-Difluorobenzene	540-36-3	76	%	70-130	09.05.18 15.51		

- 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

SMP Client Sample

BLK

Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample

BKSD/LCSD

Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate

MS

Matrix Spike

MSD: Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

COG Operating LLC
WD McIntyre E SW (8-18-18)**Analytical Method: Chloride by EPA 300**

Seq Number: 3061326

MB Sample Id: 7661166-1-BLK

Matrix: Solid

LCS Sample Id: 7661166-1-BKS

Prep Method: E300P

Date Prep: 08.27.18

LCSD Sample Id: 7661166-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.99	250	241	96	240	96	90-110	0	20	mg/kg	08.27.18 12:30	

Analytical Method: Chloride by EPA 300

Seq Number: 3061326

MB Sample Id: 7661225-1-BLK

Matrix: Solid

LCS Sample Id: 7661225-1-BKS

Prep Method: E300P

Date Prep: 08.27.18

LCSD Sample Id: 7661225-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	248	99	252	101	90-110	2	20	mg/kg	08.27.18 16:01	

Analytical Method: Chloride by EPA 300

Seq Number: 3061326

Parent Sample Id: 596933-001

Matrix: Soil

MS Sample Id: 596933-001 S

Prep Method: E300P

Date Prep: 08.27.18

MSD Sample Id: 596933-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	380	248	627	100	624	98	90-110	0	20	mg/kg	08.27.18 12:46	

Analytical Method: Chloride by EPA 300

Seq Number: 3061326

Parent Sample Id: 596933-002

Matrix: Soil

MS Sample Id: 596933-002 S

Prep Method: E300P

Date Prep: 08.27.18

MSD Sample Id: 596933-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	926	249	1110	74	1100	70	90-110	1	20	mg/kg	08.27.18 14:03	X

Analytical Method: Chloride by EPA 300

Seq Number: 3061326

Parent Sample Id: 596609-009

Matrix: Soil

MS Sample Id: 596609-009 S

Prep Method: E300P

Date Prep: 08.27.18

MSD Sample Id: 596609-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	149	287	428	97	432	99	90-110	1	20	mg/kg	08.27.18 17:39	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

COG Operating LLC
WD McIntyre E SW (8-18-18)

Analytical Method: Chloride by EPA 300

Seq Number: 3061362

Parent Sample Id: 597070-002

Matrix: Soil

MS Sample Id: 597070-002 S

Prep Method: E300P

Date Prep: 08.27.18

MSD Sample Id: 597070-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	91.9	248	340	100	336	98	90-110	1	20	mg/kg	08.27.18 16:17	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3061228

MB Sample Id: 7661126-1-BLK

Matrix: Solid

LCS Sample Id: 7661126-1-BKS

Prep Method: TX1005P

Date Prep: 08.24.18

LCSD Sample Id: 7661126-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	923	92	909	91	70-135	2	20	mg/kg	08.24.18 08:51	
Diesel Range Organics (DRO)	<15.0	1000	958	96	944	94	70-135	1	20	mg/kg	08.24.18 08:51	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		114		109		70-135	%	08.24.18 08:51
o-Terphenyl	105		100		102		70-135	%	08.24.18 08:51

Analytical Method: TPH By SW8015 Mod

Seq Number: 3061397

MB Sample Id: 7661243-1-BLK

Matrix: Solid

LCS Sample Id: 7661243-1-BKS

Prep Method: TX1005P

Date Prep: 08.27.18

LCSD Sample Id: 7661243-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	915	92	1020	102	70-135	11	20	mg/kg	08.27.18 12:35	
Diesel Range Organics (DRO)	<15.0	1000	935	94	1050	105	70-135	12	20	mg/kg	08.27.18 12:35	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		113		126		70-135	%	08.27.18 12:35
o-Terphenyl	100		100		109		70-135	%	08.27.18 12:35

Analytical Method: TPH By SW8015 Mod

Seq Number: 3061228

Parent Sample Id: 596788-002

Matrix: Soil

MS Sample Id: 596788-002 S

Prep Method: TX1005P

Date Prep: 08.24.18

MSD Sample Id: 596788-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	1000	100	902	90	70-135	10	20	mg/kg	08.25.18 12:31	
Diesel Range Organics (DRO)	<15.0	997	1050	105	944	94	70-135	11	20	mg/kg	08.25.18 12:31	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	122		113		70-135	%	08.25.18 12:31
o-Terphenyl	112		99		70-135	%	08.25.18 12:31

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 596931

COG Operating LLC WD McIntyre E SW (8-18-18)

Analytical Method: TPH By SW8015 Mod

Seq Number: 3061397

Parent Sample Id: 596931-009

Matrix: Soil

MS Sample Id: 596931-009 S

Prep Method: TX1005P

Date Prep: 08.27.18

MSD Sample Id: 596931-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	888	89	886	89	70-135	0	20	mg/kg	08.27.18 13:35	
Diesel Range Organics (DRO)	<15.0	999	917	92	925	93	70-135	1	20	mg/kg	08.27.18 13:35	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		112		70-135	%	08.27.18 13:35
o-Terphenyl	101		102		70-135	%	08.27.18 13:35

Analytical Method: BTEX by EPA 8021B

Seq Number: 3062194

MB Sample Id: 7661715-1-BLK

Matrix: Solid

LCS Sample Id: 7661715-1-BKS

Prep Method: SW5030B

Date Prep: 09.04.18

LCSD Sample Id: 7661715-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0904	90	0.110	109	70-130	20	35	mg/kg	09.05.18 15:51	
Toluene	0.000646	0.100	0.0868	87	0.0982	97	70-130	12	35	mg/kg	09.05.18 15:51	
Ethylbenzene	<0.00200	0.100	0.101	101	0.120	119	70-130	17	35	mg/kg	09.05.18 15:51	
m,p-Xylenes	<0.00401	0.200	0.185	93	0.222	110	70-130	18	35	mg/kg	09.05.18 15:51	
o-Xylene	<0.00200	0.100	0.0846	85	0.0997	99	70-130	16	35	mg/kg	09.05.18 15:51	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	88		93		101		70-130	%	09.05.18 15:51
4-Bromofluorobenzene	91		86		80		70-130	%	09.05.18 15:51

Analytical Method: BTEX by EPA 8021B

Seq Number: 3062203

MB Sample Id: 7661720-1-BLK

Matrix: Solid

LCS Sample Id: 7661720-1-BKS

Prep Method: SW5030B

Date Prep: 09.05.18

LCSD Sample Id: 7661720-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.0841	83	0.0870	86	70-130	3	35	mg/kg	09.05.18 16:26	
Toluene	<0.00201	0.101	0.0879	87	0.0919	91	70-130	4	35	mg/kg	09.05.18 16:26	
Ethylbenzene	<0.00201	0.101	0.108	107	0.114	113	70-130	5	35	mg/kg	09.05.18 16:26	
m,p-Xylenes	<0.00402	0.201	0.203	101	0.215	106	70-130	6	35	mg/kg	09.05.18 16:26	
o-Xylene	<0.00201	0.101	0.0952	94	0.102	101	70-130	7	35	mg/kg	09.05.18 16:26	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	90		84		89		70-130	%	09.05.18 16:26
4-Bromofluorobenzene	95		86		100		70-130	%	09.05.18 16:26

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

COG Operating LLC
WD McIntyre E SW (8-18-18)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3062203

Parent Sample Id: 597513-001

Matrix: Soil

MS Sample Id: 597513-001 S

Prep Method: SW5030B

Date Prep: 09.05.18

MSD Sample Id: 597513-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0834	84	0.0788	79	70-130	6	35	mg/kg	09.05.18 16:26	
Toluene	<0.00199	0.0996	0.0830	83	0.0782	78	70-130	6	35	mg/kg	09.05.18 16:26	
Ethylbenzene	<0.00199	0.0996	0.0972	98	0.0911	91	70-130	6	35	mg/kg	09.05.18 16:26	
m,p-Xylenes	<0.00398	0.199	0.180	90	0.168	84	70-130	7	35	mg/kg	09.05.18 16:26	
o-Xylene	<0.00199	0.0996	0.0841	84	0.0784	78	70-130	7	35	mg/kg	09.05.18 16:26	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	90		89		70-130	%	09.05.18 16:26
4-Bromofluorobenzene	94		89		70-130	%	09.05.18 16:26

Analytical Method: BTEX by EPA 8021B

Seq Number: 3062194

Parent Sample Id: 597553-001

Matrix: Soil

MS Sample Id: 597553-001 S

Prep Method: SW5030B

Date Prep: 09.04.18

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Benzene	0.00204	0.104	0.0825	77	70-130	mg/kg	09.05.18 15:51	
Toluene	0.0594	0.104	0.175	111	70-130	mg/kg	09.05.18 15:51	
Ethylbenzene	0.100	0.104	0.181	78	70-130	mg/kg	09.05.18 15:51	
m,p-Xylenes	0.220	0.209	0.339	57	70-130	mg/kg	09.05.18 15:51	X
o-Xylene	0.0963	0.104	0.148	50	70-130	mg/kg	09.05.18 15:51	X

Surrogate	MS %Rec	MS Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	111		70-130	%	09.05.18 15:51
4-Bromofluorobenzene	231		70-130	%	09.05.18 15:51

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Analysis Request of Chain of Custody Record



One Concho
Center/600 Illinois
Avenue/Midland, Texas
Tel (432) 683-7443

5916931

Client Name: COG

Site Manager: Ike Tavaréz

Project Name: WD McIntyre E SW (8-18-18)

Project Location: Eddy County, New Mexico

Project #:

Invoice to:

Receiving Laboratory:

Xenco

Sampler Signature:

Ike Tavaréz

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD			CONTAINERS	FILTERED (Y/N)
		YEAR:		WATER	OIL	HCL	NO ₃	CE		
		DATE	TIME							

AH-1 (0-1')				8/23/2018		X		X		1	
AH-1 (1-1.5')				8/23/2018		X		X		1	
AH-1 (2-2.5')				8/23/2018		X		X		1	
AH-2 (0-1')				8/23/2018		X		X		1	
AH-2 (1-1.5')				8/23/2018		X		X		1	
AH-2 (2-2.5')				8/23/2018		X		X		1	
AH-3 (0-1')				8/23/2018		X		X		1	
AH-3 (1-1.5')				8/23/2018		X		X		1	
AH-3 (2-2.5')				8/23/2018		X		X		1	

Relinquished by: *[Signature]* Date: Time: Received by: *[Signature]* Date: Time: 8/24/18 0853

Relinquished by: *[Signature]* Date: Time: Received by: *[Signature]* Date: Time: 8/24/18 0853

Relinquished by: Date: Time: Received by: Date: Time:

ANALYSIS REQUEST (Circle or Specify Method No.)

☒	BTEX 8021B	BTEX 8260B
☒	TPH TX1005 (Ext to C35)	
☒	TPH 8015M (GRO - DRO - MRO)	
☒	PAH 8270C	
☒	Total Metals Ag As Ba Cd Cr Pb Se Hg	
☒	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	
☒	TCLP Volatiles	
☒	TCLP Semi Volatiles	
☒	RCI	
☒	GC/MS Vol. 8260B / 624	
☒	GC/MS Semi. Vol. 8270C/625	
☒	PCB's 8082 / 608	
☒	NORM	
☒	PLM (Asbestos)	
☒	Chloride	
☒	Chloride Sulfate TDS	
☒	General Water Chemistry (see attached list)	
☒	Anion/Cation Balance	
☒	Hold	

LAB USE ONLY

Sample Temperature

0-1/0-0
128

REMARKS:

- ☐ RUSH: Same Day 24 hr 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 08/24/2018 08:53:00 AM

Work Order #: 596931

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)?	.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6*Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water 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: Brianna Teel
Brianna Teel

Date: 08/24/2018

Checklist reviewed by: Jessica Kramer
Jessica Kramer

Date: 08/27/2018