



January 12, 2021

Oil Conservation Division, District I
1625 N. French Drive
Hobbs, New Mexico 88240

Re: Closure Report
Columbus Federal 23& 24H CTB (7.11.20)
Tracking#: NRM2020456890
GPS: 32.0924, -103.5565
Unit Letter B, Section 34, Township 25 South, Range 33 East
Lea County, New Mexico

To Whom it May Concern,

COG Operating, LLC (COG) is pleased to submit the following closure report in response to a release that occurred at the Columbus Federal 23 & 24H CTB, located in Unit Letter B, Section 34, Township 25 South, Range 33 East Lea County, New Mexico. (Tracking#: NRM2020456890)

BACKGROUND

The release was discovered on July 11, 2020. An initial C-141 report was submitted and accepted by the New Mexico Oil Conservation Division (NMOCD). The release occurred when a 4-inch valve on a steel flow line leaked due to internal corrosion. The release occurred on the backside of the facility with a small amount occurring in the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Approximately fifteen (15) barrels of produced water was released with thirteen (13) barrels being recovered. The initial C-141 and final C-141 are attached in Appendix A.

GROUNDWATER

Published Information

A search of a groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) was conducted to determine the average depth to groundwater within a one (1) Mile radius of the Release Site and identify any registered water wells within a 1/2 Mile of the Release Site. There is a NMOSE well located approximately half mile to the northeast of the release, with a reported depth of 110' below surface. The information for this well is found in Appendix B.

Windmill – Static Water Level

In addition, a windmill was located approximately 0.5-mile northeast of the site. During inspection, the windmill was inactive and had access to the well to collect a static water level. COG collected a static water level of 135 feet below surface.

Resistivity Survey – Depth to Water

COG contacted WSP to perform an Electrical Resistivity (ER) Survey to investigate and determine the depth to groundwater in the area using this technique. COG wanted to evaluate and confirm this alternative method as part of the site characterization to determine depth of groundwater. To confirm, the windmill static water level of 135' was used to compare the findings. The ER Survey generated a subsurface visually presentation (2-D model) to determine the depth of groundwater. The ER Survey Report is shown in Appendix B.

Referring to the ER Survey Report, the data showed a presence of groundwater at 131 feet below surface to confirm the findings. Based on the results, COG will be using the ER Survey as an alternative method or technique to establish depth of groundwater on future sites, if approved.

REGULATORY

A risk-based evaluation and site determinations were performed 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, the affected area has low potential for cave and karst, and no other receptors (water wells, playas, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The delineation and closure criteria are listed below:

General Site Characterization and Groundwater:

Site Characterization	Average Groundwater Depth (ft.)
Low Karst	135 feet

Delineation and Closure Criteria:

Remedial Action Levels (RALs)	
Chlorides	20,000 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

INITIAL ASSESMENT

The release area was delineated during initial sampling at three (3) sample locations (T-1, T-2, & T-3). The area around T-1, T-2, & T-3 indicate chloride impact with the top four (4) feet. The sample results are shown in Table 1.

REMEDIATION PLAN

All samples were below the Table 1 Closure Criteria; thus, no remediation occurred.

SITE RECLAMATION AND RESTORATION

Concho performed the reclamation and revegetation in the pasture area per NMED 19.15.29.13. The reclamation was achieved by removing the soil to a depth of 4.0' below surface. Approximately 460 cubic yards of material was removed and hauled to proper disposal. Once excavated, soil samples were collected from the sidewalls to confirm the removal of impact soil greater than 600 mg/kg chlorides or background (whichever is greater). Bottom samples were also collected to confirm the soil concentrations were below the Table 1 Closure Criteria.

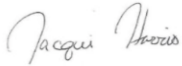
The backfilled material was non-contaminated with concentrations below 600 mg/kg chlorides and reseeded per BLM guidelines when appropriate.

CLOSURE REQUEST

COG Operating, LLC respectfully requests that the New Mexico Oil Conservation Division grant closure approval for the Columbus Federal 23H & 24H CTB that occurred on July 11, 2020 (Tracking # M2020456890).

Should you have any questions or concerns on the closure report, please do not hesitate to contact me.

Sincerely,

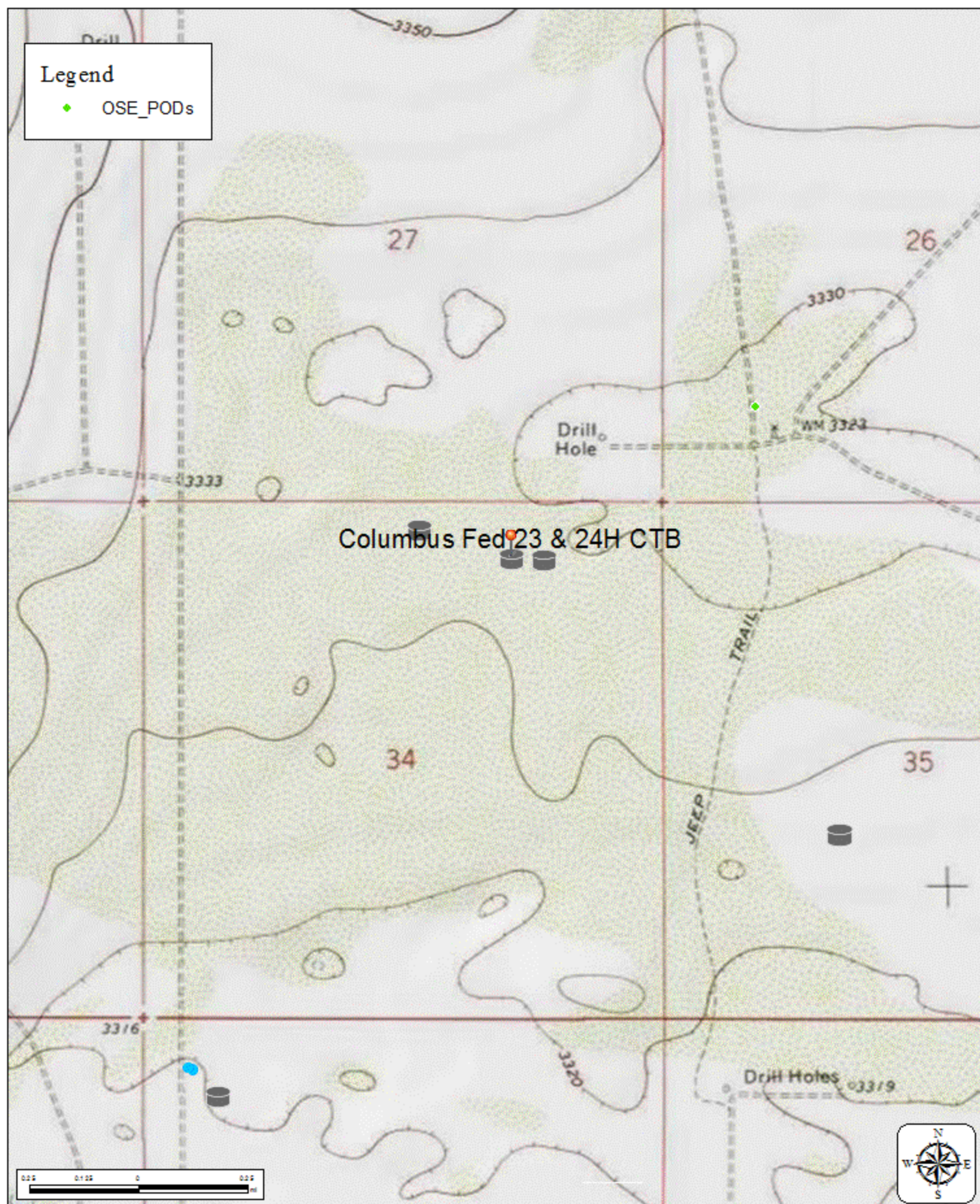


Jacqui Harris
Senior HSE Coordinator
Jharris2@concho.com

Maps



ArcGIS Web Map



COG Operating LLC.

Columbus Fee 023 & 024 CTB
32.09240 -103.5565
Lea County, NM

Legend

-  Delineation Samples
-  Confirmation Sample Points
-  Remediation Area

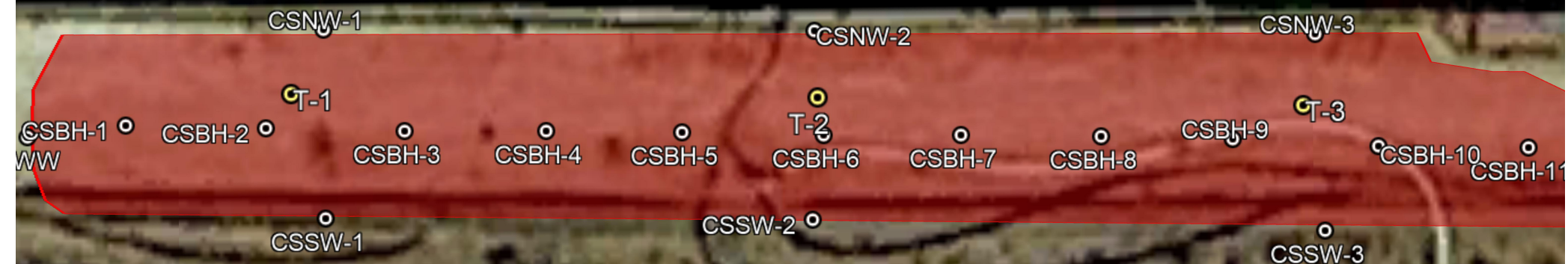


Table of Analytical Data

Table 1
COG Operating LLC.
Columbus Fee 23 & 24 CTB (7/11/20)
Lea County, New Mexico

Sample ID/Depth (ft)	Sample Date	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) - 51'-100' Low Karst													
NMOCD RAL Limits (mg/kg)				-	-	-	2,500	-	-	1,000	10	50	20,000
T-1 1'	8/19/2020		X	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	2,830
T-1 2'	8/19/2020		X	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<0.00201	<0.00201	1,770
T-1 3'	8/19/2020		X	-	-	-	-	-	-	-	-	-	4,820
T-1 4'	8/19/2020		X	-	-	-	-	-	-	-	-	-	6,500
T-1 6'	8/19/2020	X		-	-	-	-	-	-	-	-	-	8,370
T-1 8'	8/19/2020	X		-	-	-	-	-	-	-	-	-	3,650
T-1 10'	8/19/2020	X		-	-	-	-	-	-	-	-	-	187
T-1 10'	8/19/2020	X		-	-	-	-	-	-	-	-	-	169
T-2 1'	8/19/2020		X	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<0.00202	<0.00202	2220
T-2 2'	8/19/2020		X	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<0.00202	<0.00202	3010
T-2 3'	8/19/2020		X	-	-	-	-	-	-	-	-	-	3490
T-2 4'	8/19/2020		X	-	-	-	-	-	-	-	-	-	7660
T-2 6'	8/19/2020	X		-	-	-	-	-	-	-	-	-	4790
T-2 8'	8/19/2020	X		-	-	-	-	-	-	-	-	-	1580
T-2 10'	8/19/2020	X		-	-	-	-	-	-	-	-	-	153
T-2 12'	8/19/2020	X		-	-	-	-	-	-	-	-	-	146
T-3 1'	8/20/2020		X	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<0.00201	<0.00201	2500
T-3 2'	8/20/2020		X	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<0.00200	<0.00200	2150
T-3 3'	8/20/2020		X	-	-	-	-	-	-	-	-	-	3900
T-3 4'	8/20/2020		X	-	-	-	-	-	-	-	-	-	6630
T-3 6'	8/20/2020	X		-	-	-	-	-	-	-	-	-	745
T-3 8'	8/20/2020	X		-	-	-	-	-	-	-	-	-	150
CS Bottom Hole 1 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	6770
CS Bottom Hole 2 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00202	<0.00202	7030
CS Bottom Hole 3 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	7460
CS Bottom Hole 4 4'	9/2/2020	X		-	-	-	-	-	-	-	<0.00200	<0.00200	7320
CS Bottom Hole 5 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	7470

Sample ID/Depth (ft)	Sample Date	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) - 51'-100' Low Karst													
NMOCD RAL Limits (mg/kg)				-	-	-	2,500	-	-	1,000	10	50	20,000
CS Bottom Hole 6 4'	9/2/2020	X		<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<0.00200	<0.00200	7510
CS Bottom Hole 7 4'	9/2/2020	X		-	-	-	-	-	-	-	-	-	7610
CS Bottom Hole 8 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	-	-	7450
CS Bottom Hole 9 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	-	-	2610
CS Bottom Hole 10 4'	8/20/2020	X		-	-	-	-	-	-	-	-	-	2470
CS Bottom Hole 11 4'	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	-	-	2800
CS North Wall 1	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	-	-	17.3
CS North Wall 2	9/2/2020	X		<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	-	-	27.6
CS North Wall 3	9/2/2020	X		<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<0.00200	<0.00200	29.9
CS South Wall 1	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	-	-	16.9
CS South Wall 2	9/2/2020	X		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	15.9
CS South Wall 3	9/2/2020	X		<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	-	-	33.4
CS East Wall	9/2/2020	X		<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	<49.9	-	-	37.0
CS West Wall	9/2/2020	X		<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	<49.8	-	-	34.4



Impacted material removed and hauled to disposal

(CS) Confirmation Sample

(-) Not Analyzed

Photos



Photo of Excavation



Photo of Excavation



Photo of Backfilled area

Appendix A

C-141

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☐ The source of the release has been stopped.	
☐ The impacted area has been secured to protect human health and the environment.	
☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
☐ All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
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: _____	Title: _____
Signature: <u>Brittany Espinoza</u> _____	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: _____	Date: _____

Incident ID	
District RP	
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?	_____ (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
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: Each of the following items must be included in the report.

- ☐ 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.

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	
District RP	
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: _____ Title: _____

Signature: Jaqui Herrera Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

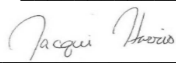
The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled 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

Site Assessment Data

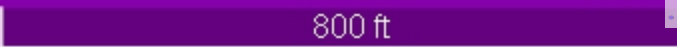
COG Operating

Karst Map
Columbus Fee 23-24 CTB

Legend

- High
- Low
- Medium

Site Location



National Flood Hazard Layer FIRMette



103°33'42"W 32°5'48"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

103°33'5"W 32°5'17"N

Released to Imaging: 3/23/2021 3:37:58 PM

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
OTHER FEATURES		Base Flood Elevation Line (BFE)
		Limit of Study
OTHER FEATURES		Jurisdiction Boundary
		Coastal Transect Baseline
OTHER FEATURES		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/30/2020 at 1:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



ArcGIS Web Map

Legend

◆ OSE_PODs

Columbus Fee 23/24 CTB

Columbus Federal 21/22 CTB

Distance: 0.5 Miles





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	Distance	Depth Well	Depth Water	Water Column
C 02313	CUB	LE		2	3	3	26	25S	33E	636971	3552098*	910	150	110	40

Average Depth to Water: **110 feet**

Minimum Depth: **110 feet**

Maximum Depth: **110 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 636215.7

Northing (Y): 3551589.36

Radius: 1610

*UTM location was derived from PLSS - see Help

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.

12/30/20 12:05 PM

Page 1 of 1

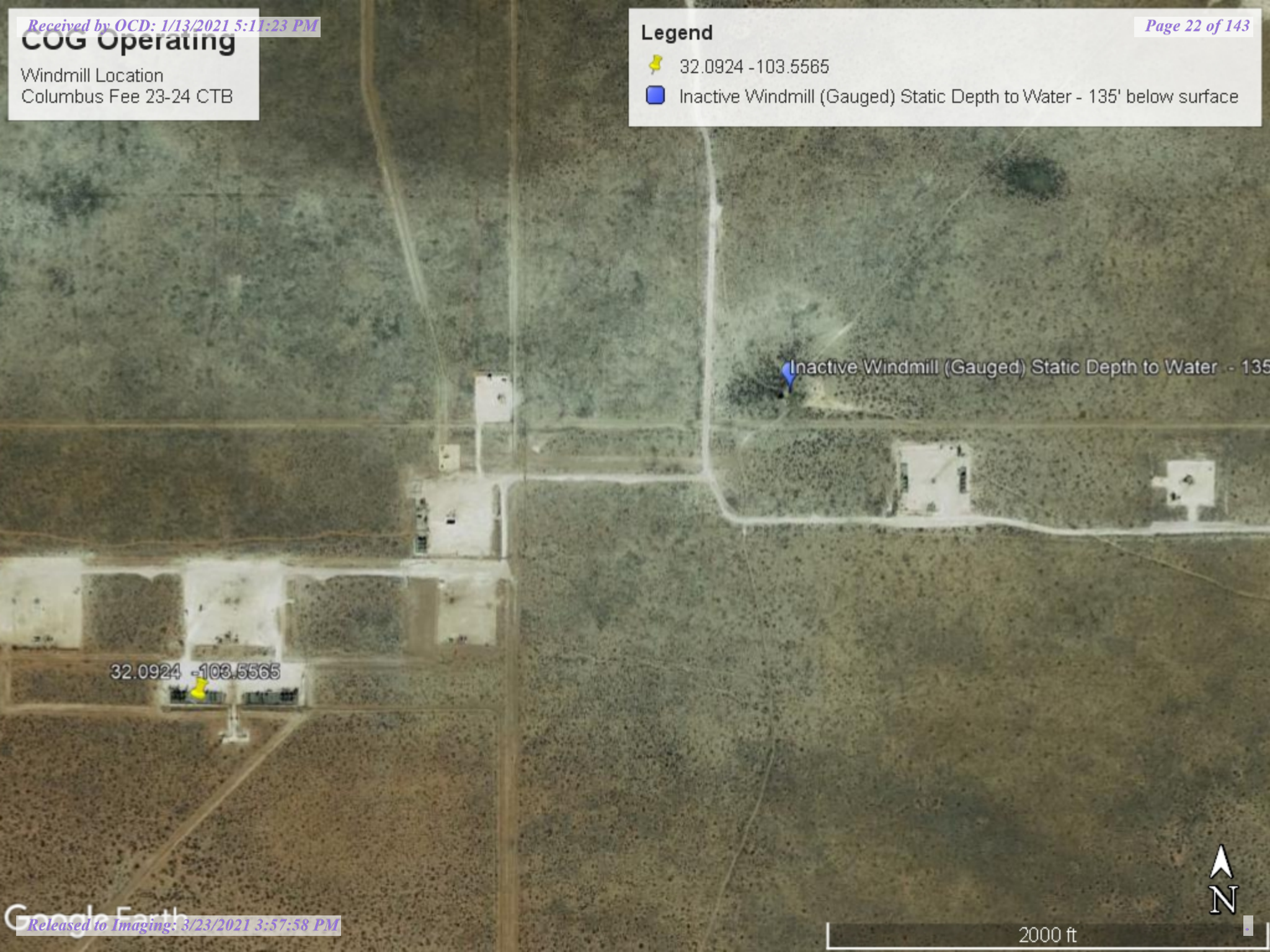
WATER COLUMN/ AVERAGE
DEPTH TO WATER

COG Operating

Windmill Location
Columbus Fee 23-24 CTB

Legend

-  32.0924 -103.5565
-  Inactive Windmill (Gauged) Static Depth to Water - 135' below surface



32.0924 -103.5565

Inactive Windmill (Gauged) Static Depth to Water - 135'



WSP USA

3300 North "A" Street
Building 1, Unit 222
Midland, Texas 79705
432.704.5178

December 9, 2020

Ike Tavaréz
COG Operating LLC
600 W Illinois Avenue
Midland, TX 79701

**Re: Electrical Resistivity Depth to Groundwater Survey
Columbus Federal 21H and 22H Central Tank Battery
Lea County, New Mexico**

Dear Mr. Tavaréz:

WSP USA Inc. (WSP) (formerly LT Environmental, Inc.), on behalf of Concho Operating LLC (COG), presents the following results of a depth to groundwater survey using electrical resistivity (ER) imaging at the Columbus Federal 21H and 22H Central Tank Battery (CTB) (Site) Figure 1. The Site is located in Units A and B of Section 34 in Township 25 South, Range 33 East, in Lea County, New Mexico.

WSP conducted a two-dimensional (2-D) ER survey on December 8, 2020, to provide supplemental information for depth to groundwater as part of site characterization requirements following a release at the Site. COG identified a nearby windmill and measured the depth to water below the windmill, which was approximately 135 feet bgs. An ER survey was selected as an alternative method to subsurface drilling for accurately confirming depth to groundwater using non-destructive ER imaging. The results of this survey correlate to the recent measurement at the windmill, providing additional subsurface information and supporting the use of the technology for site characterization purposes.

Electrical Resistivity Theory

The background for applying ER geophysical technique to identify groundwater is based on the flow of electrical current through the underlying media, creating measurements and producing a 2-D model, presented as a cross-section, of the subsurface. As the current migrates through the underlying media, a potential difference (apparent resistivity) in current is measured. The apparent resistivity is dependent on properties of the subsurface, including porosity, saturation, and concentration of total dissolved solids (TDS).

Because a controlling factor to the flow of electrical current through the subsurface is saturation, resistivity measurements can be correlated to water saturation and the connectivity of pore spaces between sediments. Using the resultant resistivity values with the visible presentation of the subsurface in the 2-D model, geophysicists are able to determine the depth of groundwater. A highly saturated lithology will enable the current to move with less resistance, resulting in lower resistivity values. When a material is completely saturated with fresh groundwater, the resistivity values typically range from 1 to 10 Ohm-Meter (ohm-m). As the salinity and TDS of the



Mr. Tavarez
Page 2

groundwater increases, resistivity values can decrease below 1 ohm-m. A lithology with low porosity can also decrease resistivity values without the presence of groundwater. However, groundwater can be differentiated from unsaturated, less-porous lithology based on the direct resistivity values higher than 10 ohm-m, as well as geometry/distribution of those values in the cross-sections and geologic setting.

Electrical Resistivity Survey Methods

The ER survey was conducted using an Advanced Geosciences, Inc. (AGI) SuperSting™ Wifi R8 with a multi-electrode switchbox, with a 56-electrode array configured to a dipole-dipole array. Locations for each electrode along the survey line were collected using a Trimble R1 Global Positioning System (GPS). EarthImager™ 2D software was utilized to process the data and produce the models required to make the interpretations. The data was processed, analyzed, and interpreted by a geophysicist at WSP.

For this Site, the 2-D ER line (CONL) was oriented north to south and was conducted using a 13-foot electrode spacing for a total length of 735 feet, allowing for a total depth of investigation of 161 feet bgs. The location of the survey line is presented on Figure 2. The ER survey line was placed off the well pad in order to prevent interference from metallic infrastructure. If the resistivity survey line is placed near metallic infrastructure, a large amount of error can be recorded, due to “signal sapping”. This means the electrical current being injected into the subsurface will be pulled to the infrastructure rather than the electrodes, creating inaccurate data.

Resolution is controlled by electrode spacing and higher resolution is obtained at the expense of depth. The goal of this survey was to confirm the presence or absence of groundwater in the top 100 feet of the subsurface and to provide enough resolution to distinguish any shallow groundwater near 50 feet or less. Resolution is between 4 and 6.5 feet and total depth reached 161 feet, allowing those goals to be met.

Electrical Resistivity Survey Results

The results of the survey are presented in a cross-section on Figure 2. The cross-section displays measured resistivity values with colors distinguishing resistivity ranges defined by the scale to the right of the profile. Reds and yellows represent the higher value resistivity data points and blues represent the lower value resistivity data points. Please note the range of values presented on the scale. Low resistivity values, or blue colors, do not necessarily represent presence of saturation. The blue values are simply lower resistivity values than the other colors presented. The scale provided for this survey was chosen for best demonstration of the materials identified in the subsurface and ranges from 13.5 to 3,795 ohm-m. Based on the numerical resistivity values measured and the range and distribution of those resistivity values in the subsurface, the



Mr. Tavarez
Page 3

following model of the subsurface is presented and illustrated on Figure 2 with dashed lines on the cross-section separating the identified materials:

- A porous unconsolidated material exists from ground surface to a depth of approximately 30 feet bgs. This unit corresponds to resistivity values ranging from 227 to 3,795 ohm-m and is depicted by shades of red, orange, yellow, and green in the upper portion of the cross-section.
- The unconsolidated material is underlain by a thin layer of finer grained sediment to a depth of approximately 60.5 feet bgs. This is represented by resistivity values ranging from 40 to 68 ohm-m and is depicted by the light to dark blue colors between 30 to 60.5 feet bgs. The bottom surface is undulating and appears to extend as deep as 78 feet bgs in some places. When a lithology contains more fine-grained and tightly compacted material, the ER values will demonstrate a decrease in resistivity due to the decrease in pore space. Although the values are lower than the overlying sediments, they are still demonstrating values well above the threshold for sediment saturation.
- From approximately 60.5 feet to 131 feet, a thick porous material is identified. This is represented by resistivity values ranging from 70 to 928 ohm-m and corresponds to the predominant yellow and green colors in the middle portion of the cross-section.
- At approximately 131 feet, the resistivity values decrease to approximately 13.5 ohm-m, indicating sediments that are at full saturation. This is represented by the dark blue colors along the bottom portion of the cross-section.

The ER survey identified the presence of groundwater at a depth of approximately 131 feet below ground surface. With the vertical resolution of 4 to 6.5 feet, the results of the ER survey correspond to the measured depth to water obtained by COG at the windmill of approximately 135 feet bgs and confirms groundwater is greater than 100 feet deep at the Site.

If you have any questions or comments, please do not hesitate to contact Ms. Ashley Ager at (970) 385-1096.

Sincerely,

WSP USA Inc.

A handwritten signature in black ink that reads "Kaleb Henry".

Kaleb Henry
Assistant Consultant, Geophysicist

A handwritten signature in black ink that reads "Ashley L. Ager".

Ashley L. Ager, P.G.
Managing Director, Geologist



Mr. Tavaréz
Page 4

Attachments:

Figure 1 Survey Location
Figure 2 Inverted Resistivity Cross-Section

FIGURES



IMAGE COURTESY OF ESRI

LEGEND

- ELECTRODE POINT
- ELECTRICAL RESISTIVITY SURVEY LINE

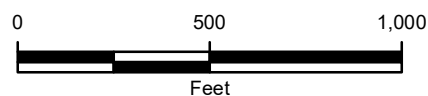


FIGURE 1
ELECTRICAL RESISTIVITY SURVEY LINE LOCATION
COLUMBUS FEDERAL 21H & 22H CTB
UNIT A SEC 34 T25S R33E
LEA COUNTY, NEW MEXICO
COG OPERATING LLC.



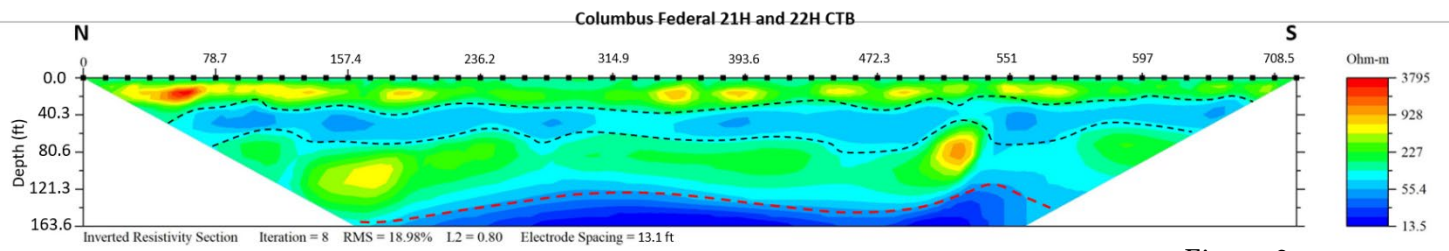


Figure 2

Appendix C

Analytical Reports

Certificate of Analysis Summary 670686

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project Id:

Date Received in Lab: Fri 08.21.2020 11:10

Contact: Ike Tavaréz

Report Date: 08.24.2020 15:08

Project Location:

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	670686-001	670686-002	670686-003	670686-004	670686-005	670686-006
	Field Id:	T-2 3'	T-2 4'	T-2 6'	T-2 8'	T-2 10'	T-2 12'
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00
Chloride by EPA 300	Extracted:	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20
	Analyzed:	08.21.2020 15:58	08.21.2020 16:13	08.21.2020 16:19	08.21.2020 16:35	08.21.2020 16:40	08.21.2020 16:45
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3490 25.0	7660 49.6	4790 49.9	1580 25.2	153 5.00	146 5.00

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Certificate of Analysis Summary 670686

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project Id:

Date Received in Lab: Fri 08.21.2020 11:10

Contact: Ike Tavaréz

Report Date: 08.24.2020 15:08

Project Location:

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	670686-007	670686-008	670686-009	670686-010		
	Field Id:	T-3 1'	T-3 2'	T-3 3'	T-3 4'		
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL		
	Sampled:	08.20.2020 00:00	08.20.2020 00:00	08.20.2020 00:00	08.20.2020 00:00		
BTEX by EPA 8021B	Extracted:	08.21.2020 12:45	08.21.2020 12:45				
	Analyzed:	08.21.2020 17:01	08.21.2020 17:22				
	Units/RL:	mg/kg RL	mg/kg RL				
		<0.00201 0.00201	<0.00200 0.00200				
Benzene		<0.00201 0.00201	<0.00200 0.00200				
Toluene		<0.00201 0.00201	<0.00200 0.00200				
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200				
m,p-Xylenes		<0.00402 0.00402	<0.00400 0.00400				
o-Xylene		<0.00201 0.00201	<0.00200 0.00200				
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200				
Total BTEX		<0.00201 0.00201	<0.00200 0.00200				
Chloride by EPA 300	Extracted:	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20		
	Analyzed:	08.21.2020 16:51	08.21.2020 16:56	08.21.2020 17:01	08.21.2020 17:06		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		2500 25.0	2150 25.2	3900 24.9	6630 49.5		
TPH By SW8015 Mod	Extracted:	08.21.2020 12:00	08.21.2020 12:00				
	Analyzed:	08.21.2020 15:38	08.21.2020 16:00				
	Units/RL:	mg/kg RL	mg/kg RL				
		mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons		<49.9 49.9	<49.8 49.8				
Diesel Range Organics		<49.9 49.9	<49.8 49.8				
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8				
Total TPH		<49.9 49.9	<49.8 49.8				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Analytical Report 670686

for

COG Operating LLC

Project Manager: Ike Tavaréz

Columbus Fee 023 & 024 CT (7-11-20)

08.24.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-37), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



08.24.2020

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: Eurofins Xenco, LLC Report No(s): **670686**

Columbus Fee 023 & 024 CT (7-11-20)

Project Address:

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 Eurofins Xenco, LLC Report Number(s) 670686. 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 Eurofins Xenco, LLC. 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. 670686 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads "Jessica Kramer".

Jessica Kramer

Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

**Sample Cross Reference 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-2 3'	S	08.19.2020 00:00		670686-001
T-2 4'	S	08.19.2020 00:00		670686-002
T-2 6'	S	08.19.2020 00:00		670686-003
T-2 8'	S	08.19.2020 00:00		670686-004
T-2 10'	S	08.19.2020 00:00		670686-005
T-2 12'	S	08.19.2020 00:00		670686-006
T-3 1'	S	08.20.2020 00:00		670686-007
T-3 2'	S	08.20.2020 00:00		670686-008
T-3 3'	S	08.20.2020 00:00		670686-009
T-3 4'	S	08.20.2020 00:00		670686-010



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project ID:
Work Order Number(s): 670686

Report Date: 08.24.2020
Date Received: 08.21.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 3'**
Lab Sample Id: 670686-001

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3490	25.0	mg/kg	08.21.2020 15:58		5

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 4'**
Lab Sample Id: 670686-002

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7660	49.6	mg/kg	08.21.2020 16:13		10

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 6'**
Lab Sample Id: 670686-003

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4790	49.9	mg/kg	08.21.2020 16:19		10

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 8'**
Lab Sample Id: 670686-004

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1580	25.2	mg/kg	08.21.2020 16:35		5

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 10'**
Lab Sample Id: 670686-005

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	153	5.00	mg/kg	08.21.2020 16:40		1

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 12'**
Lab Sample Id: 670686-006

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	146	5.00	mg/kg	08.21.2020 16:45		1



Certificate of Analytical Results 670686

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 1'** Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670686-007 Date Collected: 08.20.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2500	25.0	mg/kg	08.21.2020 16:51		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	08.21.2020 15:38	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	08.21.2020 15:38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.21.2020 15:38	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.21.2020 15:38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	86	%	70-130	08.21.2020 15:38	
o-Terphenyl	84-15-1	95	%	70-130	08.21.2020 15:38	



Certificate of Analytical Results 670686

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 1'**
Lab Sample Id: 670686-007

Matrix: Soil
Date Collected: 08.20.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.21.2020 17:01	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.21.2020 17:01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	08.21.2020 17:01		
4-Bromofluorobenzene	460-00-4	104	%	70-130	08.21.2020 17:01		



Certificate of Analytical Results 670686

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 2'** Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670686-008 Date Collected: 08.20.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2150	25.2	mg/kg	08.21.2020 16:56		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	08.21.2020 16:00	U	1
Diesel Range Organics	C10C28DRO	<49.8	49.8	mg/kg	08.21.2020 16:00	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	08.21.2020 16:00	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	08.21.2020 16:00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-130	08.21.2020 16:00	
o-Terphenyl	84-15-1	98	%	70-130	08.21.2020 16:00	



Certificate of Analytical Results 670686

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 2'**
Lab Sample Id: 670686-008

Matrix: Soil
Date Collected: 08.20.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	08.21.2020 17:22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.21.2020 17:22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	70-130	08.21.2020 17:22		
4-Bromofluorobenzene	460-00-4	103	%	70-130	08.21.2020 17:22		

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 3'**

Matrix: Soil

Date Received: 08.21.2020 11:10

Lab Sample Id: 670686-009

Date Collected: 08.20.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3900	24.9	mg/kg	08.21.2020 17:01		5

**Certificate of Analytical Results 670686****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 4'**
Lab Sample Id: 670686-010

Matrix: Soil
Date Collected: 08.20.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6630	49.5	mg/kg	08.21.2020 17:06		10

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

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

Columbus Fee 023 & 024 CT (7-11-20)

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

MB Sample Id: 7709939-1-BLK

Matrix: Solid

LCS Sample Id: 7709939-1-BKS

Prep Method: E300P

Date Prep: 08.21.2020

LCSD Sample Id: 7709939-1-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	300	324	108	322	107	90-110	1	20	mg/kg	08.21.2020 14:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

Parent Sample Id: 670686-001

Matrix: Soil

MS Sample Id: 670686-001 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670686-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	3490	1250	4740	100	4740	100	90-110	0	20	mg/kg	08.21.2020 16:03	

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

Parent Sample Id: 670689-001

Matrix: Soil

MS Sample Id: 670689-001 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670689-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2830	1260	4160	106	4170	106	90-110	0	20	mg/kg	08.21.2020 14:49	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

MB Sample Id: 7709953-1-BLK

Matrix: Solid

LCS Sample Id: 7709953-1-BKS

Prep Method: SW8015P

Date Prep: 08.21.2020

LCSD Sample Id: 7709953-1-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	<50.0	1000	883	88	876	88	70-130	1	20	mg/kg	08.21.2020 13:27	
Diesel Range Organics	<50.0	1000	937	94	932	93	70-130	1	20	mg/kg	08.21.2020 13:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		88		88		70-130	%	08.21.2020 13:27
o-Terphenyl	102		93		95		70-130	%	08.21.2020 13:27

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

Matrix: Solid

MB Sample Id: 7709953-1-BLK

Prep Method: SW8015P

Date Prep: 08.21.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	08.21.2020 13:05	

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 Result

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

COG Operating LLC

Columbus Fee 023 & 024 CT (7-11-20)

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

Parent Sample Id: 670668-001

Matrix: Soil

MS Sample Id: 670668-001 S

Prep Method: SW8015P

Date Prep: 08.21.2020

MSD Sample Id: 670668-001 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	<49.9	997	963	97	932	94	70-130	3	20	mg/kg	08.21.2020 14:33	
Diesel Range Organics	<49.9	997	966	97	1000	100	70-130	3	20	mg/kg	08.21.2020 14:33	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		92		70-130	%	08.21.2020 14:33
o-Terphenyl	94		97		70-130	%	08.21.2020 14:33

Analytical Method: BTEX by EPA 8021B

Seq Number: 3135301

MB Sample Id: 7709982-1-BLK

Matrix: Solid

LCS Sample Id: 7709982-1-BKS

Prep Method: SW5035A

Date Prep: 08.21.2020

LCSD Sample Id: 7709982-1-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	0.106	106	0.110	110	70-130	4	35	mg/kg	08.21.2020 13:13	
Toluene	<0.00200	0.100	0.109	109	0.110	110	70-130	1	35	mg/kg	08.21.2020 13:13	
Ethylbenzene	<0.00200	0.100	0.101	101	0.105	105	70-130	4	35	mg/kg	08.21.2020 13:13	
m,p-Xylenes	<0.00400	0.200	0.202	101	0.210	105	70-130	4	35	mg/kg	08.21.2020 13:13	
o-Xylene	<0.00200	0.100	0.0984	98	0.103	103	70-130	5	35	mg/kg	08.21.2020 13:13	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		99		70-130	%	08.21.2020 13:13
4-Bromofluorobenzene	100		100		99		70-130	%	08.21.2020 13:13

Analytical Method: BTEX by EPA 8021B

Seq Number: 3135301

Parent Sample Id: 670668-001

Matrix: Soil

MS Sample Id: 670668-001 S

Prep Method: SW5035A

Date Prep: 08.21.2020

MSD Sample Id: 670668-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.101	100	70-130	6	35	mg/kg	08.21.2020 13:54	
Toluene	<0.00200	0.100	0.105	105	0.0941	93	70-130	11	35	mg/kg	08.21.2020 13:54	
Ethylbenzene	<0.00200	0.100	0.0929	93	0.0833	82	70-130	11	35	mg/kg	08.21.2020 13:54	
m,p-Xylenes	<0.00401	0.200	0.185	93	0.164	82	70-130	12	35	mg/kg	08.21.2020 13:54	
o-Xylene	<0.00200	0.100	0.0909	91	0.0812	80	70-130	11	35	mg/kg	08.21.2020 13:54	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		99		70-130	%	08.21.2020 13:54
4-Bromofluorobenzene	101		102		70-130	%	08.21.2020 13:54

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 Result

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



CONCHO

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

Page 1 of 1

Client Name:

COG

Site Manager:

Ike Tavaraz itavaraz@concho.com
Robert Grubbs Jr rgrubbs@concho.com

Project Name:

Columbus Fee 023 & 24 CTB (7-11-20)

Project Location:
(county, state)

Lea County, NM

Project #:

Invoice to:

COG

Receiving Laboratory:

Xenico

Sampler Signature:

Robert Grubbs Jr

Comments:

LAB #
(USE ONLY)

SAMPLE IDENTIFICATION

LAB # (USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX	PRESERVATIVE METHOD				# CONTAINERS	FILTERED (Y/N)
		YEAR: 2020			WATER	SOIL	HCL	HNO ₃		
		DATE	TIME							

TPH TX1005 (Ext to C35)
BTEX 8021B
TPH 8015M (GRO - DRO - MRO)
Chloride

Hold

ANALYSIS REQUEST
(Circle or Specify Method No.)

10700684

Reinquished by: Robert Grubbs Jr
Date: 8/21/2020
Time: 11:05

Reinquished by:

Date:

Time:

Reinquished by: [Signature]

Reinquished by:

Date:

Time:

LAB USE ONLY

REMARKS:

X

RUSH Same Day 24 hr 48 hr 72 hr

Rush Charges Authorized

Special Report Limits or TRRP Report

Reinquished by:

Date:

Time:

Reinquished by:

Date:

Time:

ORIGINAL COPY

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

Sample Temperature
27.23

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 08.21.2020 11.10.51 AM

Work Order #: 670686

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.3
#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 BTEX was in bulk container
#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

Date: 08.21.2020

Checklist reviewed by:



Jessica Kramer

Date: 08.21.2020

Certificate of Analysis Summary 670688

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project Id:

Date Received in Lab: Fri 08.21.2020 11:10

Contact: Ike Tavaréz

Report Date: 08.24.2020 15:09

Project Location:

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	670688-001	670688-002				
	Field Id:	T-3 6'	T-3 8'				
	Depth:						
	Matrix:	SOIL	SOIL				
	Sampled:	08.20.2020 00:00	08.20.2020 00:00				
Chloride by EPA 300	Extracted:	08.21.2020 15:45	08.21.2020 15:45				
	Analyzed:	08.21.2020 18:10	08.21.2020 18:26				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		745 4.96	150 5.03				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Analytical Report 670688

for

COG Operating LLC

Project Manager: Ike Tavaréz

Columbus Fee 023 & 024 CT (7-11-20)

08.24.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-37), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



08.24.2020

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: Eurofins Xenco, LLC Report No(s): **670688**

Columbus Fee 023 & 024 CT (7-11-20)

Project Address:

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 Eurofins Xenco, LLC Report Number(s) 670688. 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 Eurofins Xenco, LLC. 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. 670688 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads "Jessica Kramer".

Jessica Kramer

Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Sample Cross Reference 670688

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-3 6'	S	08.20.2020 00:00		670688-001
T-3 8'	S	08.20.2020 00:00		670688-002



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project ID:
Work Order Number(s): 670688

Report Date: 08.24.2020
Date Received: 08.21.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

**Certificate of Analytical Results 670688****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 6'**
Lab Sample Id: 670688-001

Matrix: Soil
Date Collected: 08.20.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 15:45

Basis: Wet Weight

Seq Number: 3135316

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	745	4.96	mg/kg	08.21.2020 18:10		1

**Certificate of Analytical Results 670688****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-3 8'**
Lab Sample Id: 670688-002

Matrix: Soil
Date Collected: 08.20.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 15:45

Basis: Wet Weight

Seq Number: 3135316

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	150	5.03	mg/kg	08.21.2020 18:26		1

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

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
Columbus Fee 023 & 024 CT (7-11-20)

Analytical Method: Chloride by EPA 300

Seq Number: 3135316

MB Sample Id: 7709954-1-BLK

Matrix: Solid

LCS Sample Id: 7709954-1-BKS

Prep Method: E300P

Date Prep: 08.21.2020

LCSD Sample Id: 7709954-1-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	300	323	108	323	108	90-110	0	20	mg/kg	08.21.2020 17:28	

Analytical Method: Chloride by EPA 300

Seq Number: 3135316

Parent Sample Id: 670679-001

Matrix: Soil

MS Sample Id: 670679-001 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670679-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8.80	250	264	102	264	102	90-110	0	20	mg/kg	08.21.2020 17:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3135316

Parent Sample Id: 670715-054

Matrix: Soil

MS Sample Id: 670715-054 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670715-054 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	9.13	253	269	103	266	102	90-110	1	20	mg/kg	08.21.2020 18:57	

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 Result

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



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

910688

[illegible]

ORIGINAL COPY

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 08.21.2020 11.10.00 AM

Work Order #: 670688

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.3
#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

Date: 08.21.2020

Checklist reviewed by:



Jessica Kramer

Date: 08.21.2020

Certificate of Analysis Summary 670689

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project Id:

Date Received in Lab: Fri 08.21.2020 11:10

Contact: Ike Tavaréz

Report Date: 08.24.2020 15:09

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	670689-001	670689-002	670689-003	670689-004	670689-005	670689-006
	<i>Field Id:</i>	T-1 1'	T-1 2'	T-1 3'	T-1 4'	T-1 6'	T-1 8'
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	08.21.2020 12:45	08.21.2020 12:45				
	<i>Analyzed:</i>	08.21.2020 17:42	08.21.2020 18:03				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Benzene		<0.00200 0.00200	<0.00201 0.00201				
Toluene		<0.00200 0.00200	<0.00201 0.00201				
Ethylbenzene		<0.00200 0.00200	<0.00201 0.00201				
m,p-Xylenes		<0.00401 0.00401	<0.00402 0.00402				
o-Xylene		<0.00200 0.00200	<0.00201 0.00201				
Total Xylenes		<0.00200 0.00200	<0.00201 0.00201				
Total BTEX		<0.00200 0.00200	<0.00201 0.00201				
Chloride by EPA 300	<i>Extracted:</i>	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20
	<i>Analyzed:</i>	08.21.2020 14:44	08.21.2020 15:00	08.21.2020 15:05	08.21.2020 15:10	08.21.2020 15:15	08.21.2020 15:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		2830 25.2	1770 24.8	4820 25.0	6500 49.9	8370 50.5	3650 25.3
TPH By SW8015 Mod	<i>Extracted:</i>	08.21.2020 12:00	08.21.2020 12:00				
	<i>Analyzed:</i>	08.21.2020 16:25	08.21.2020 16:47				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons		<50.0 50.0	<49.9 49.9				
Diesel Range Organics		<50.0 50.0	<49.9 49.9				
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9				
Total TPH		<50.0 50.0	<49.9 49.9				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Certificate of Analysis Summary 670689

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project Id:

Date Received in Lab: Fri 08.21.2020 11:10

Contact: Ike Tavarez

Report Date: 08.24.2020 15:09

Project Location:

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	670689-007	670689-008	670689-009	670689-010		
	<i>Field Id:</i>	T-1 10'	T-1 12'	T-2 1'	T-2 2'		
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00	08.19.2020 00:00		
BTEX by EPA 8021B	<i>Extracted:</i>			08.21.2020 12:45	08.21.2020 12:45		
	<i>Analyzed:</i>			08.21.2020 18:23	08.21.2020 18:43		
	<i>Units/RL:</i>			mg/kg RL	mg/kg RL		
Benzene				<0.00202 0.00202	<0.00202 0.00202		
Toluene				<0.00202 0.00202	<0.00202 0.00202		
Ethylbenzene				<0.00202 0.00202	<0.00202 0.00202		
m,p-Xylenes				<0.00404 0.00404	<0.00404 0.00404		
o-Xylene				<0.00202 0.00202	<0.00202 0.00202		
Total Xylenes				<0.00202 0.00202	<0.00202 0.00202		
Total BTEX				<0.00202 0.00202	<0.00202 0.00202		
Chloride by EPA 300	<i>Extracted:</i>	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20	08.21.2020 14:20		
	<i>Analyzed:</i>	08.21.2020 15:37	08.21.2020 15:42	08.21.2020 15:47	08.21.2020 15:52		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		187 5.00	169 4.97	2220 24.8	3010 25.2		
TPH By SW8015 Mod	<i>Extracted:</i>			08.21.2020 12:00	08.21.2020 12:00		
	<i>Analyzed:</i>			08.21.2020 17:08	08.21.2020 17:30		
	<i>Units/RL:</i>			mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons				<49.8 49.8	<49.9 49.9		
Diesel Range Organics				<49.8 49.8	<49.9 49.9		
Motor Oil Range Hydrocarbons (MRO)				<49.8 49.8	<49.9 49.9		
Total TPH				<49.8 49.8	<49.9 49.9		

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Analytical Report 670689

for

COG Operating LLC

Project Manager: Ike Tavaréz

Columbus Fee 023 & 024 CT (7-11-20)

08.24.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-37), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



08.24.2020

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: Eurofins Xenco, LLC Report No(s): **670689**

Columbus Fee 023 & 024 CT (7-11-20)

Project Address:

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 Eurofins Xenco, LLC Report Number(s) 670689. 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 Eurofins Xenco, LLC. 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. 670689 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads "Jessica Kramer".

Jessica Kramer

Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

**Sample Cross Reference 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-1 1'	S	08.19.2020 00:00		670689-001
T-1 2'	S	08.19.2020 00:00		670689-002
T-1 3'	S	08.19.2020 00:00		670689-003
T-1 4'	S	08.19.2020 00:00		670689-004
T-1 6'	S	08.19.2020 00:00		670689-005
T-1 8'	S	08.19.2020 00:00		670689-006
T-1 10'	S	08.19.2020 00:00		670689-007
T-1 12'	S	08.19.2020 00:00		670689-008
T-2 1'	S	08.19.2020 00:00		670689-009
T-2 2'	S	08.19.2020 00:00		670689-010



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Columbus Fee 023 & 024 CT (7-11-20)

Project ID:

Report Date: 08.24.2020

Work Order Number(s): 670689

Date Received: 08.21.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 1'** Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670689-001 Date Collected: 08.19.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2830	25.2	mg/kg	08.21.2020 14:44		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	08.21.2020 16:25	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	08.21.2020 16:25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	08.21.2020 16:25	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	08.21.2020 16:25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-130	08.21.2020 16:25	
o-Terphenyl	84-15-1	97	%	70-130	08.21.2020 16:25	



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 1'**
Lab Sample Id: 670689-001

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.21.2020 17:42	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.21.2020 17:42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	104	%	70-130	08.21.2020 17:42	
1,4-Difluorobenzene	540-36-3	102	%	70-130	08.21.2020 17:42	



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 2'** Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670689-002 Date Collected: 08.19.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1770	24.8	mg/kg	08.21.2020 15:00		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	08.21.2020 16:47	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	08.21.2020 16:47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.21.2020 16:47	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.21.2020 16:47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	83	%	70-130	08.21.2020 16:47	
o-Terphenyl	84-15-1	88	%	70-130	08.21.2020 16:47	



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 2'**
Lab Sample Id: 670689-002

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.21.2020 18:03	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.21.2020 18:03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	70-130	08.21.2020 18:03		
4-Bromofluorobenzene	460-00-4	104	%	70-130	08.21.2020 18:03		

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 3'**
Lab Sample Id: 670689-003

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4820	25.0	mg/kg	08.21.2020 15:05		5

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 4'**
Lab Sample Id: 670689-004

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6500	49.9	mg/kg	08.21.2020 15:10		10

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 6'**
Lab Sample Id: 670689-005

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8370	50.5	mg/kg	08.21.2020 15:15		10

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 8'**
Lab Sample Id: 670689-006

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3650	25.3	mg/kg	08.21.2020 15:31		5

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 10'**
Lab Sample Id: 670689-007

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	187	5.00	mg/kg	08.21.2020 15:37		1

**Certificate of Analytical Results 670689****COG Operating LLC, Artesia, NM**

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-1 12'**
Lab Sample Id: 670689-008

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 08.21.2020 14:20

Basis: Wet Weight

Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	169	4.97	mg/kg	08.21.2020 15:42		1



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 1'** Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670689-009 Date Collected: 08.19.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2220	24.8	mg/kg	08.21.2020 15:47		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	08.21.2020 17:08	U	1
Diesel Range Organics	C10C28DRO	<49.8	49.8	mg/kg	08.21.2020 17:08	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	08.21.2020 17:08	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	08.21.2020 17:08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-130	08.21.2020 17:08	
o-Terphenyl	84-15-1	100	%	70-130	08.21.2020 17:08	



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: **T-2 1'**
Lab Sample Id: 670689-009

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.21.2020 18:23	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.21.2020 18:23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	08.21.2020 18:23		
4-Bromofluorobenzene	460-00-4	104	%	70-130	08.21.2020 18:23		



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: T-2 2' Matrix: Soil Date Received: 08.21.2020 11:10
 Lab Sample Id: 670689-010 Date Collected: 08.19.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 08.21.2020 14:20 Basis: Wet Weight
 Seq Number: 3135315

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3010	25.2	mg/kg	08.21.2020 15:52		5

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 08.21.2020 12:00 Basis: Wet Weight
 Seq Number: 3135345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	08.21.2020 17:30	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	08.21.2020 17:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	08.21.2020 17:30	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	08.21.2020 17:30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-130	08.21.2020 17:30	
o-Terphenyl	84-15-1	102	%	70-130	08.21.2020 17:30	



Certificate of Analytical Results 670689

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 024 CT (7-11-20)

Sample Id: T-2 2'
Lab Sample Id: 670689-010

Matrix: Soil
Date Collected: 08.19.2020 00:00

Date Received: 08.21.2020 11:10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 08.21.2020 12:45

Basis: Wet Weight

Seq Number: 3135301

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.21.2020 18:43	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.21.2020 18:43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	70-130	08.21.2020 18:43	
1,4-Difluorobenzene	540-36-3	100	%	70-130	08.21.2020 18:43	

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

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

Columbus Fee 023 & 024 CT (7-11-20)

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

MB Sample Id: 7709939-1-BLK

Matrix: Solid

LCS Sample Id: 7709939-1-BKS

Prep Method: E300P

Date Prep: 08.21.2020

LCSD Sample Id: 7709939-1-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	300	324	108	322	107	90-110	1	20	mg/kg	08.21.2020 14:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

Parent Sample Id: 670686-001

Matrix: Soil

MS Sample Id: 670686-001 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670686-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	3490	1250	4740	100	4740	100	90-110	0	20	mg/kg	08.21.2020 16:03	

Analytical Method: Chloride by EPA 300

Seq Number: 3135315

Parent Sample Id: 670689-001

Matrix: Soil

MS Sample Id: 670689-001 S

Prep Method: E300P

Date Prep: 08.21.2020

MSD Sample Id: 670689-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2830	1260	4160	106	4170	106	90-110	0	20	mg/kg	08.21.2020 14:49	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

MB Sample Id: 7709953-1-BLK

Matrix: Solid

LCS Sample Id: 7709953-1-BKS

Prep Method: SW8015P

Date Prep: 08.21.2020

LCSD Sample Id: 7709953-1-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	<50.0	1000	883	88	876	88	70-130	1	20	mg/kg	08.21.2020 13:27	
Diesel Range Organics	<50.0	1000	937	94	932	93	70-130	1	20	mg/kg	08.21.2020 13:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		88		88		70-130	%	08.21.2020 13:27
o-Terphenyl	102		93		95		70-130	%	08.21.2020 13:27

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

Matrix: Solid

MB Sample Id: 7709953-1-BLK

Prep Method: SW8015P

Date Prep: 08.21.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	08.21.2020 13:05	

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 Result

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

COG Operating LLC

Columbus Fee 023 & 024 CT (7-11-20)

Analytical Method: TPH By SW8015 Mod

Seq Number: 3135345

Parent Sample Id: 670668-001

Matrix: Soil

MS Sample Id: 670668-001 S

Prep Method: SW8015P

Date Prep: 08.21.2020

MSD Sample Id: 670668-001 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	<49.9	997	963	97	932	94	70-130	3	20	mg/kg	08.21.2020 14:33	
Diesel Range Organics	<49.9	997	966	97	1000	100	70-130	3	20	mg/kg	08.21.2020 14:33	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		92		70-130	%	08.21.2020 14:33
o-Terphenyl	94		97		70-130	%	08.21.2020 14:33

Analytical Method: BTEX by EPA 8021B

Seq Number: 3135301

MB Sample Id: 7709982-1-BLK

Matrix: Solid

LCS Sample Id: 7709982-1-BKS

Prep Method: SW5035A

Date Prep: 08.21.2020

LCSD Sample Id: 7709982-1-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	0.106	106	0.110	110	70-130	4	35	mg/kg	08.21.2020 13:13	
Toluene	<0.00200	0.100	0.109	109	0.110	110	70-130	1	35	mg/kg	08.21.2020 13:13	
Ethylbenzene	<0.00200	0.100	0.101	101	0.105	105	70-130	4	35	mg/kg	08.21.2020 13:13	
m,p-Xylenes	<0.00400	0.200	0.202	101	0.210	105	70-130	4	35	mg/kg	08.21.2020 13:13	
o-Xylene	<0.00200	0.100	0.0984	98	0.103	103	70-130	5	35	mg/kg	08.21.2020 13:13	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		99		70-130	%	08.21.2020 13:13
4-Bromofluorobenzene	100		100		99		70-130	%	08.21.2020 13:13

Analytical Method: BTEX by EPA 8021B

Seq Number: 3135301

Parent Sample Id: 670668-001

Matrix: Soil

MS Sample Id: 670668-001 S

Prep Method: SW5035A

Date Prep: 08.21.2020

MSD Sample Id: 670668-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.101	100	70-130	6	35	mg/kg	08.21.2020 13:54	
Toluene	<0.00200	0.100	0.105	105	0.0941	93	70-130	11	35	mg/kg	08.21.2020 13:54	
Ethylbenzene	<0.00200	0.100	0.0929	93	0.0833	82	70-130	11	35	mg/kg	08.21.2020 13:54	
m,p-Xylenes	<0.00401	0.200	0.185	93	0.164	82	70-130	12	35	mg/kg	08.21.2020 13:54	
o-Xylene	<0.00200	0.100	0.0909	91	0.0812	80	70-130	11	35	mg/kg	08.21.2020 13:54	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		99		70-130	%	08.21.2020 13:54
4-Bromofluorobenzene	101		102		70-130	%	08.21.2020 13:54

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 Result

MS = 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**

Page 1 of 1

Client Name:		COG		Site Manager:		Ike Tevaraz itavarez@concho.com Robert Grubbs Jr rgrubbs@concho.com															
Project Name:		Columbus Fee 023 & 24 CTB (7-11-20)																			
Project Location:		Lea County, NM		Project #:																	
Invoice to:		COG																			
Receiving Laboratory:		Xenoco		Sampler Signature:		Robert Grubbs Jr															
Comments:																					
LAB # (USE ONLY Y)		SAMPLE IDENTIFICATION		SAMPLING		MATRIX		PRESERVATIVE		# CONTAINERS		FILTERED (Y/N)		TPH TX1005 (Ext to C35)		BTEX 8021B		TPH 8015M (GRO - DRO - MRO)		Chloride	
T-1 1'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 2'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 3'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 4'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 6'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 8'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 10'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-1 12'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-2 1'		8/19/2020		X		X		X		1		X		X		X		X		X	
T-2 2'		8/19/2020		X		X		X		1		X		X		X		X		X	
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		LAB USE ONLY		REMARKS:							
Robert Grubbs Jr		8/21/2020		11:53		Relinquished by:		8/21/2020		11:10		Sample Temperature		27.0.3							
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		RUSH: Same Day 24 hr 48 hr 72 hr									
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		Rush Charges Authorized									
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		Special Report Limits or TRRP Report									

ORIGINAL COPY

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 08.21.2020 11.10.00 AM

Work Order #: 670689

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.3
#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

BTEX was in bulk container

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Brianna Teel

Date: 08.21.2020

Checklist reviewed by:



Jessica Kramer

Date: 08.21.2020

Certificate of Analysis Summary 671699

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 24 CTB (7-11-20)

Project Id:

Date Received in Lab: Thu 09.03.2020 08:12

Contact: Ike Tavaréz

Report Date: 09.04.2020 16:55

Project Location: Lea County, NM

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	671699-001	671699-002	671699-003	671699-004	671699-005	671699-006
	<i>Field Id:</i>	CS Bottom Hole 1 4'	CS Bottom Hole 2 4'	CS Bottom Hole 3 4'	CS Bottom Hole 4 4'	CS Bottom Hole 5 4'	CS Bottom Hole 6 4'
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	09.03.2020 09:00	09.03.2020 09:45	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00
	<i>Analyzed:</i>	09.03.2020 12:05	09.03.2020 12:26	09.03.2020 12:46	09.03.2020 13:07	09.03.2020 13:27	09.03.2020 13:48
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
m,p-Xylenes		<0.00399 0.00399	<0.00404 0.00404	<0.00400 0.00400	<0.00399 0.00399	<0.00401 0.00401	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00
	<i>Analyzed:</i>	09.03.2020 19:24	09.03.2020 13:54	09.03.2020 13:59	09.03.2020 14:04	09.03.2020 14:09	09.03.2020 14:25
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		6770 49.7	7030 49.9	7460 50.3	7320 49.7	7470 49.5	7510 50.3
TPH By SW8015 Mod	<i>Extracted:</i>	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00
	<i>Analyzed:</i>	09.03.2020 12:54	09.03.2020 13:59	09.03.2020 14:21	09.03.2020 14:43	09.03.2020 15:05	09.03.2020 15:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8
Diesel Range Organics		<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8
Total TPH		<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8

BRL - Below Reporting Limit



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 671699

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 24 CTB (7-11-20)

Project Id:

Date Received in Lab: Thu 09.03.2020 08:12

Contact: Ike Tavaréz

Report Date: 09.04.2020 16:55

Project Location: Lea County, NM

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	671699-007	671699-008	671699-009	671699-010	671699-011	671699-012
	<i>Field Id:</i>	CS Bottom Hole 7 4'	CS Bottom Hole 8 4'	CS Bottom Hole 9 4'	CS Bottom Hole 10 4'	CS Bottom Hole 11 4'	CS North Wall 1
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00
	<i>Analyzed:</i>	09.03.2020 14:08	09.03.2020 14:28	09.03.2020 14:49	09.03.2020 15:09	09.03.2020 16:33	09.03.2020 16:53
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
m,p-Xylenes		<0.00400 0.00400	<0.00396 0.00396	<0.00397 0.00397	<0.00398 0.00398	<0.00398 0.00398	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00
	<i>Analyzed:</i>	09.03.2020 14:30	09.03.2020 14:36	09.03.2020 14:41	09.03.2020 14:46	09.03.2020 19:40	09.03.2020 15:07
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7610 49.9	7450 50.0	2610 25.1	2470 24.9	2800 24.9	17.3 4.99
TPH By SW8015 Mod	<i>Extracted:</i>	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00
	<i>Analyzed:</i>	09.03.2020 15:48	09.03.2020 16:10	09.03.2020 16:31	09.03.2020 16:53	09.03.2020 17:37	09.03.2020 17:59
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0
Diesel Range Organics		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0
Total TPH		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0

BRL - Below Reporting Limit



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 671699

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 24 CTB (7-11-20)

Project Id:

Date Received in Lab: Thu 09.03.2020 08:12

Contact: Ike Tavaréz

Report Date: 09.04.2020 16:55

Project Location: Lea County, NM

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	671699-013	671699-014	671699-015	671699-016	671699-017	671699-018
	<i>Field Id:</i>	CS North Wall 2	CS North Wall 3	CS South Wall 1	CS South Wall 2	CS South Wall 3	CS East Wall
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00	09.02.2020 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00	09.03.2020 09:00
	<i>Analyzed:</i>	09.03.2020 17:14	09.03.2020 17:34	09.03.2020 17:55	09.03.2020 18:15	09.03.2020 18:35	09.03.2020 18:56
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
m,p-Xylenes		<0.00398 0.00398	<0.00401 0.00401	<0.00402 0.00402	<0.00399 0.00399	<0.00397 0.00397	<0.00397 0.00397
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00	09.03.2020 11:00
	<i>Analyzed:</i>	09.03.2020 15:12	09.03.2020 15:28	09.03.2020 15:33	09.03.2020 15:39	09.03.2020 15:44	09.03.2020 15:49
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		27.6 5.00	29.9 5.00	16.9 5.00	15.9 4.97	33.4 5.02	37.0 4.99
TPH By SW8015 Mod	<i>Extracted:</i>	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00	09.03.2020 12:00
	<i>Analyzed:</i>	09.03.2020 18:20	09.03.2020 18:42	09.03.2020 19:04	09.03.2020 19:26	09.03.2020 19:48	09.03.2020 20:10
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9
Diesel Range Organics		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9
Total TPH		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9

BRL - Below Reporting Limit



Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Certificate of Analysis Summary 671699

COG Operating LLC, Artesia, NM

Project Name: Columbus Fee 023 & 24 CTB (7-11-20)

Project Id:

Date Received in Lab: Thu 09.03.2020 08:12

Contact: Ike Tavaréz

Report Date: 09.04.2020 16:55

Project Location: Lea County, NM

Project Manager: Jessica Kramer

Analysis Requested	Lab Id: 671699-019 Field Id: CS West Wall Depth: Matrix: SOIL Sampled: 09.02.2020 00:00					
BTEX by EPA 8021B	Extracted: 09.03.2020 09:00 Analyzed: 09.03.2020 19:16 Units/RL: mg/kg RL					
Benzene	<0.00199 0.00199					
Toluene	<0.00199 0.00199					
Ethylbenzene	<0.00199 0.00199					
m,p-Xylenes	<0.00398 0.00398					
o-Xylene	<0.00199 0.00199					
Total Xylenes	<0.00199 0.00199					
Total BTEX	<0.00199 0.00199					
Chloride by EPA 300	Extracted: 09.03.2020 11:00 Analyzed: 09.03.2020 15:54 Units/RL: mg/kg RL					
Chloride	34.4 4.99					
TPH By SW8015 Mod	Extracted: 09.03.2020 12:00 Analyzed: 09.03.2020 20:32 Units/RL: mg/kg RL					
Gasoline Range Hydrocarbons	<49.8 49.8					
Diesel Range Organics	<49.8 49.8					
Motor Oil Range Hydrocarbons (MRO)	<49.8 49.8					
Total TPH	<49.8 49.8					

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Analytical Report 671699

for

COG Operating LLC

Project Manager: Ike Tavaréz

Columbus Fee 023 & 24 CTB (7-11-20)

09.04.2020

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)



09.04.2020

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: Eurofins Xenco, LLC Report No(s): **671699**

Columbus Fee 023 & 24 CTB (7-11-20)

Project Address: Lea County, NM

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 Eurofins Xenco, LLC Report Number(s) 671699. 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 Eurofins Xenco, LLC. 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. 671699 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads "Holly Taylor".

Holly Taylor
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



Sample Cross Reference 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
CS Bottom Hole 1 4'	S	09.02.2020 00:00		671699-001
CS Bottom Hole 2 4'	S	09.02.2020 00:00		671699-002
CS Bottom Hole 3 4'	S	09.02.2020 00:00		671699-003
CS Bottom Hole 4 4'	S	09.02.2020 00:00		671699-004
CS Bottom Hole 5 4'	S	09.02.2020 00:00		671699-005
CS Bottom Hole 6 4'	S	09.02.2020 00:00		671699-006
CS Bottom Hole 7 4'	S	09.02.2020 00:00		671699-007
CS Bottom Hole 8 4'	S	09.02.2020 00:00		671699-008
CS Bottom Hole 9 4'	S	09.02.2020 00:00		671699-009
CS Bottom Hole 10 4'	S	09.02.2020 00:00		671699-010
CS Bottom Hole 11 4'	S	09.02.2020 00:00		671699-011
CS North Wall 1	S	09.02.2020 00:00		671699-012
CS North Wall 2	S	09.02.2020 00:00		671699-013
CS North Wall 3	S	09.02.2020 00:00		671699-014
CS South Wall 1	S	09.02.2020 00:00		671699-015
CS South Wall 2	S	09.02.2020 00:00		671699-016
CS South Wall 3	S	09.02.2020 00:00		671699-017
CS East Wall	S	09.02.2020 00:00		671699-018
CS West Wall	S	09.02.2020 00:00		671699-019



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Columbus Fee 023 & 24 CTB (7-11-20)

Project ID:
Work Order Number(s): 671699

Report Date: 09.04.2020
Date Received: 09.03.2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3136324 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Samples affected are: 7710754-1-BKS,671699-002 SD.



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 1 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-001

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6770	49.7	mg/kg	09.03.2020 19:24		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 12:54	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 12:54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 12:54	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 12:54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-130	09.03.2020 12:54	
o-Terphenyl	84-15-1	89	%	70-130	09.03.2020 12:54	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 1 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-001

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.03.2020 12:05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 12:05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	107	%	70-130	09.03.2020 12:05	
1,4-Difluorobenzene	540-36-3	98	%	70-130	09.03.2020 12:05	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 2 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-002

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7030	49.9	mg/kg	09.03.2020 13:54		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 13:59	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 13:59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 13:59	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 13:59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-130	09.03.2020 13:59	
o-Terphenyl	84-15-1	95	%	70-130	09.03.2020 13:59	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 2 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-002

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:45

Basis: Wet Weight

Seq Number: 3136324

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.03.2020 12:26	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.03.2020 12:26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	09.03.2020 12:26		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.03.2020 12:26		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 3 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-003

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7460	50.3	mg/kg	09.03.2020 13:59		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 14:21	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 14:21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 14:21	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 14:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-130	09.03.2020 14:21	
o-Terphenyl	84-15-1	93	%	70-130	09.03.2020 14:21	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 3 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-003

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.03.2020 12:46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 12:46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 12:46		
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.03.2020 12:46		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 4 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-004

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7320	49.7	mg/kg	09.03.2020 14:04		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 14:43	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 14:43	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 14:43	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 14:43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 14:43	
o-Terphenyl	84-15-1	93	%	70-130	09.03.2020 14:43	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 4 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-004

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.03.2020 13:07	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 13:07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.03.2020 13:07		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.03.2020 13:07		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 5 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-005

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7470	49.5	mg/kg	09.03.2020 14:09		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 15:05	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 15:05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 15:05	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 15:05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-130	09.03.2020 15:05	
o-Terphenyl	84-15-1	95	%	70-130	09.03.2020 15:05	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 5 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-005

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.03.2020 13:27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 13:27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 13:27		
4-Bromofluorobenzene	460-00-4	111	%	70-130	09.03.2020 13:27		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 6 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-006

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7510	50.3	mg/kg	09.03.2020 14:25		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	09.03.2020 15:26	U	1
Diesel Range Organics	C10C28DRO	<49.8	49.8	mg/kg	09.03.2020 15:26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	09.03.2020 15:26	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	09.03.2020 15:26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-130	09.03.2020 15:26	
o-Terphenyl	84-15-1	93	%	70-130	09.03.2020 15:26	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 6 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-006

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 13:48	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 13:48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 13:48		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.03.2020 13:48		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 7 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-007

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7610	49.9	mg/kg	09.03.2020 14:30		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 15:48	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 15:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 15:48	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 15:48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-130	09.03.2020 15:48	
o-Terphenyl	84-15-1	96	%	70-130	09.03.2020 15:48	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 7 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-007

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.03.2020 14:08	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 14:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 14:08		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.03.2020 14:08		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 8 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-008

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7450	50.0	mg/kg	09.03.2020 14:36		10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 16:10	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 16:10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 16:10	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 16:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 16:10	
o-Terphenyl	84-15-1	93	%	70-130	09.03.2020 16:10	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 8 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-008

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	09.03.2020 14:28	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.03.2020 14:28	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.03.2020 14:28	
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.03.2020 14:28	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 9 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-009

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2610	25.1	mg/kg	09.03.2020 14:41		5

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 16:31	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 16:31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 16:31	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 16:31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-130	09.03.2020 16:31	
o-Terphenyl	84-15-1	86	%	70-130	09.03.2020 16:31	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 9 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-009

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	09.03.2020 14:49	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.03.2020 14:49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.03.2020 14:49		
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.03.2020 14:49		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 10 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-010

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2470	24.9	mg/kg	09.03.2020 14:46		5

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 16:53	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 16:53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 16:53	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 16:53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-130	09.03.2020 16:53	
o-Terphenyl	84-15-1	84	%	70-130	09.03.2020 16:53	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 10 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-010

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 15:09	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 15:09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 15:09		
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.03.2020 15:09		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 11 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-011

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2800	24.9	mg/kg	09.03.2020 19:40		5

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 17:37	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 17:37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 17:37	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 17:37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-130	09.03.2020 17:37	
o-Terphenyl	84-15-1	86	%	70-130	09.03.2020 17:37	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS Bottom Hole 11 4'**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-011

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 16:33	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 16:33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	107	%	70-130	09.03.2020 16:33	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 16:33	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 1**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-012

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	17.3	4.99	mg/kg	09.03.2020 15:07		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 17:59	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 17:59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 17:59	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 17:59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-130	09.03.2020 17:59	
o-Terphenyl	84-15-1	93	%	70-130	09.03.2020 17:59	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 1**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-012

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 16:53	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 16:53	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.03.2020 16:53		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 16:53		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 2** Matrix: Soil Date Received: 09.03.2020 08:12
 Lab Sample Id: 671699-013 Date Collected: 09.02.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 09.03.2020 11:00 Basis: Wet Weight
 Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	27.6	5.00	mg/kg	09.03.2020 15:12		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 09.03.2020 12:00 Basis: Wet Weight
 Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 18:20	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 18:20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 18:20	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 18:20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 18:20	
o-Terphenyl	84-15-1	92	%	70-130	09.03.2020 18:20	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 2**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-013

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 17:14	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 17:14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 17:14		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.03.2020 17:14		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 3** Matrix: Soil Date Received: 09.03.2020 08:12
 Lab Sample Id: 671699-014 Date Collected: 09.02.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 09.03.2020 11:00 Basis: Wet Weight
 Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	29.9	5.00	mg/kg	09.03.2020 15:28		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 09.03.2020 12:00 Basis: Wet Weight
 Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	09.03.2020 18:42	U	1
Diesel Range Organics	C10C28DRO	<49.8	49.8	mg/kg	09.03.2020 18:42	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	09.03.2020 18:42	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	09.03.2020 18:42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-130	09.03.2020 18:42	
o-Terphenyl	84-15-1	90	%	70-130	09.03.2020 18:42	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS North Wall 3**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-014

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.03.2020 17:34	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 17:34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 17:34		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.03.2020 17:34		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 1**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-015

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	16.9	5.00	mg/kg	09.03.2020 15:33		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 19:04	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 19:04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 19:04	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 19:04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 19:04	
o-Terphenyl	84-15-1	89	%	70-130	09.03.2020 19:04	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 1**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-015

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.03.2020 17:55	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.03.2020 17:55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 17:55		
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.03.2020 17:55		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 2** Matrix: Soil Date Received: 09.03.2020 08:12
 Lab Sample Id: 671699-016 Date Collected: 09.02.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 09.03.2020 11:00 Basis: Wet Weight
 Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.9	4.97	mg/kg	09.03.2020 15:39		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 09.03.2020 12:00 Basis: Wet Weight
 Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	09.03.2020 19:26	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	09.03.2020 19:26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	09.03.2020 19:26	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	09.03.2020 19:26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-130	09.03.2020 19:26	
o-Terphenyl	84-15-1	88	%	70-130	09.03.2020 19:26	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 2**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-016

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.03.2020 18:15	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.03.2020 18:15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 18:15		
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.03.2020 18:15		



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 3** Matrix: Soil Date Received: 09.03.2020 08:12
 Lab Sample Id: 671699-017 Date Collected: 09.02.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 09.03.2020 11:00 Basis: Wet Weight
 Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	33.4	5.02	mg/kg	09.03.2020 15:44		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 09.03.2020 12:00 Basis: Wet Weight
 Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 19:48	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 19:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 19:48	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 19:48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-130	09.03.2020 19:48	
o-Terphenyl	84-15-1	90	%	70-130	09.03.2020 19:48	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS South Wall 3**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-017

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	09.03.2020 18:35	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.03.2020 18:35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.03.2020 18:35	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 18:35	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS East Wall**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-018

Date Collected: 09.02.2020 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.03.2020 11:00

Basis: Wet Weight

Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	37.0	4.99	mg/kg	09.03.2020 15:49		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 09.03.2020 12:00

Basis: Wet Weight

Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	09.03.2020 20:10	U	1
Diesel Range Organics	C10C28DRO	<49.9	49.9	mg/kg	09.03.2020 20:10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	09.03.2020 20:10	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	09.03.2020 20:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 20:10	
o-Terphenyl	84-15-1	90	%	70-130	09.03.2020 20:10	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS East Wall**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-018

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	09.03.2020 18:56	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.03.2020 18:56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.03.2020 18:56	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.03.2020 18:56	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS West Wall** Matrix: Soil Date Received: 09.03.2020 08:12
 Lab Sample Id: 671699-019 Date Collected: 09.02.2020 00:00
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: SPC % Moisture:
 Analyst: SPC Date Prep: 09.03.2020 11:00 Basis: Wet Weight
 Seq Number: 3136409

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	34.4	4.99	mg/kg	09.03.2020 15:54		1

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 09.03.2020 12:00 Basis: Wet Weight
 Seq Number: 3136448

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	09.03.2020 20:32	U	1
Diesel Range Organics	C10C28DRO	<49.8	49.8	mg/kg	09.03.2020 20:32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	09.03.2020 20:32	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	09.03.2020 20:32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-130	09.03.2020 20:32	
o-Terphenyl	84-15-1	90	%	70-130	09.03.2020 20:32	



Certificate of Analytical Results 671699

COG Operating LLC, Artesia, NM

Columbus Fee 023 & 24 CTB (7-11-20)

Sample Id: **CS West Wall**

Matrix: Soil

Date Received: 09.03.2020 08:12

Lab Sample Id: 671699-019

Date Collected: 09.02.2020 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.03.2020 09:00

Basis: Wet Weight

Seq Number: 3136377

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.03.2020 19:16	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.03.2020 19:16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.03.2020 19:16	
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.03.2020 19:16	

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

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

Columbus Fee 023 & 24 CTB (7-11-20)

Analytical Method: Chloride by EPA 300

Seq Number: 3136409

MB Sample Id: 7710735-1-BLK

Matrix: Solid

LCS Sample Id: 7710735-1-BKS

Prep Method: E300P

Date Prep: 09.03.2020

LCSD Sample Id: 7710735-1-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	259	104	258	103	90-110	0	20	mg/kg	09.03.2020 13:27	

Analytical Method: Chloride by EPA 300

Seq Number: 3136409

Parent Sample Id: 671699-001

Matrix: Soil

MS Sample Id: 671699-001 S

Prep Method: E300P

Date Prep: 09.03.2020

MSD Sample Id: 671699-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6770	2490	9280	101	9290	101	90-110	0	20	mg/kg	09.03.2020 19:29	

Analytical Method: Chloride by EPA 300

Seq Number: 3136409

Parent Sample Id: 671699-011

Matrix: Soil

MS Sample Id: 671699-011 S

Prep Method: E300P

Date Prep: 09.03.2020

MSD Sample Id: 671699-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2800	1240	3980	95	3980	95	90-110	0	20	mg/kg	09.03.2020 19:45	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3136448

MB Sample Id: 7710807-1-BLK

Matrix: Solid

LCS Sample Id: 7710807-1-BKS

Prep Method: SW8015P

Date Prep: 09.03.2020

LCSD Sample Id: 7710807-1-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	<50.0	1000	894	89	934	93	70-130	4	20	mg/kg	09.03.2020 12:10	
Diesel Range Organics	<50.0	1000	915	92	928	93	70-130	1	20	mg/kg	09.03.2020 12:10	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	103		108		99		70-130	%	09.03.2020 12:10
o-Terphenyl	98		100		91		70-130	%	09.03.2020 12:10

Analytical Method: TPH By SW8015 Mod

Seq Number: 3136448

Matrix: Solid

MB Sample Id: 7710807-1-BLK

Prep Method: SW8015P

Date Prep: 09.03.2020

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	09.03.2020 11:49	

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 Result

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

COG Operating LLC

Columbus Fee 023 & 24 CTB (7-11-20)

Analytical Method: TPH By SW8015 Mod

Seq Number: 3136448

Parent Sample Id: 671699-001

Matrix: Soil

MS Sample Id: 671699-001 S

Prep Method: SW8015P

Date Prep: 09.03.2020

MSD Sample Id: 671699-001 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	<49.9	998	874	88	984	99	70-130	12	20	mg/kg	09.03.2020 13:16	
Diesel Range Organics	<49.9	998	865	87	925	93	70-130	7	20	mg/kg	09.03.2020 13:16	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	102		109		70-130	%	09.03.2020 13:16
o-Terphenyl	94		99		70-130	%	09.03.2020 13:16

Analytical Method: BTEX by EPA 8021B

Seq Number: 3136377

MB Sample Id: 7710801-1-BLK

Matrix: Solid

LCS Sample Id: 7710801-1-BKS

Prep Method: SW5035A

Date Prep: 09.03.2020

LCSD Sample Id: 7710801-1-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	0.104	104	0.0995	100	70-130	4	35	mg/kg	09.03.2020 09:44	
Toluene	<0.00200	0.100	0.0978	98	0.0932	93	70-130	5	35	mg/kg	09.03.2020 09:44	
Ethylbenzene	<0.00200	0.100	0.101	101	0.0956	96	70-130	5	35	mg/kg	09.03.2020 09:44	
m,p-Xylenes	<0.00400	0.200	0.201	101	0.191	96	70-130	5	35	mg/kg	09.03.2020 09:44	
o-Xylene	<0.00200	0.100	0.0968	97	0.0924	92	70-130	5	35	mg/kg	09.03.2020 09:44	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		97		98		70-130	%	09.03.2020 09:44
4-Bromofluorobenzene	110		102		103		70-130	%	09.03.2020 09:44

Analytical Method: BTEX by EPA 8021B

Seq Number: 3136324

MB Sample Id: 7710754-1-BLK

Matrix: Solid

LCS Sample Id: 7710754-1-BKS

Prep Method: SW5035A

Date Prep: 09.03.2020

LCSD Sample Id: 7710754-1-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	0.0899	90	0.0919	92	70-130	2	35	mg/kg	09.03.2020 10:05	
Toluene	<0.00200	0.100	0.0935	94	0.0934	93	70-130	0	35	mg/kg	09.03.2020 10:05	
Ethylbenzene	<0.00200	0.100	0.104	104	0.103	103	70-130	1	35	mg/kg	09.03.2020 10:05	
m,p-Xylenes	<0.00400	0.200	0.217	109	0.212	106	70-130	2	35	mg/kg	09.03.2020 10:05	
o-Xylene	<0.00200	0.100	0.109	109	0.106	106	70-130	3	35	mg/kg	09.03.2020 10:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		94		94		70-130	%	09.03.2020 10:05
4-Bromofluorobenzene	97		132	**	126		70-130	%	09.03.2020 10:05

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 Result

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

COG Operating LLC

Columbus Fee 023 & 24 CTB (7-11-20)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3136377

Parent Sample Id: 671699-001

Matrix: Soil

MS Sample Id: 671699-001 S

Prep Method: SW5035A

Date Prep: 09.03.2020

MSD Sample Id: 671699-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0966	97	0.0904	91	70-130	7	35	mg/kg	09.03.2020 10:24	
Toluene	<0.00200	0.100	0.0912	91	0.0880	89	70-130	4	35	mg/kg	09.03.2020 10:24	
Ethylbenzene	<0.00200	0.100	0.0933	93	0.0877	89	70-130	6	35	mg/kg	09.03.2020 10:24	
m,p-Xylenes	<0.00400	0.200	0.186	93	0.175	88	70-130	6	35	mg/kg	09.03.2020 10:24	
o-Xylene	<0.00200	0.100	0.0904	90	0.0850	86	70-130	6	35	mg/kg	09.03.2020 10:24	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		70-130	%	09.03.2020 10:24
4-Bromofluorobenzene	105		108		70-130	%	09.03.2020 10:24

Analytical Method: BTEX by EPA 8021B

Seq Number: 3136324

Parent Sample Id: 671699-002

Matrix: Soil

MS Sample Id: 671699-002 S

Prep Method: SW5035A

Date Prep: 09.03.2020

MSD Sample Id: 671699-002 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	0.0718	72	0.0853	85	70-130	17	35	mg/kg	09.03.2020 10:46	
Toluene	<0.00199	0.0996	0.0718	72	0.0866	87	70-130	19	35	mg/kg	09.03.2020 10:46	
Ethylbenzene	<0.00199	0.0996	0.0765	77	0.0929	93	70-130	19	35	mg/kg	09.03.2020 10:46	
m,p-Xylenes	<0.00398	0.199	0.156	78	0.191	96	70-130	20	35	mg/kg	09.03.2020 10:46	
o-Xylene	<0.00199	0.0996	0.0787	79	0.0955	96	70-130	19	35	mg/kg	09.03.2020 10:46	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	93		94		70-130	%	09.03.2020 10:46
4-Bromofluorobenzene	118		131	**	70-130	%	09.03.2020 10:46

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 Result

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



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

1071099

Client Name:		COG		Site Manager:		Ike Tavaraz itavaraz@concho.com Robert Grubbs Jr rgrubbs@concho.com									
Project Name:		Columbus Fee 023 & 24 CTB (7-11-20)				ANALYSIS REQUEST (Circle or Specify Method No.)									
Project Location: (county, state)		Lea County, NM		Project #:											
Invoice #:		COG		Receiving Laboratory:		Xenoco									
Comments:				Sampler Signature:		Robert Grubbs Jr									
LAB # (USE ONLY Y)	SAMPLE IDENTIFICATION	SAMPLING		DATE	TIME	MATRIX	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	TPH TX1005 (Ext to C35)	STEX 8021B	TPH 8015M (GRO - DRO - MRO)	Chloride	Hold	
		YEAR: 2020													
	CS Bottom Hole 1 4'			9/2/2020		X		X		1					
	CS Bottom Hole 2 4'			9/2/2020		X		X		1					
	CS Bottom Hole 3 4'			9/2/2020		X		X		1					
	CS Bottom Hole 4 4'			9/2/2020		X		X		1					
	CS Bottom Hole 5 4'			9/2/2020		X		X		1					
	CS Bottom Hole 6 4'			9/2/2020		X		X		1					
	CS Bottom Hole 7 4'			9/2/2020		X		X		1					
	CS Bottom Hole 8 4'			9/2/2020		X		X		1					
	CS Bottom Hole 9 4'			9/2/2020		X		X		1					
	CS Bottom Hole 10 4'			9/2/2020		X		X		1					
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		LAB USE ONLY		REMARKS:	
Robert Grubbs Jr		9/3/2020		08:2		BGR		9/3/2020				Sample Temperature		X RUSH: Same Day 24hr 48hr 72hr	
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:		Special Report Limits or TRRP Report			
Relinquished by:		Date:		Time:		Relinquished by:		Date:		Time:					

ORIGINAL COPY

Grubbs HAND DELIVERED FEDEX UPS Tracking #



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

Page 7 of 20

Project Name:		COG		Site Manager:		Ike Tavaraz itavaraz@concho.com Robert Grubbs Jr rgrubbs@concho.com											
Project Location:		Lea County, NM		Project #:		COG											
Invoice to:		Xenco		Receiving Laboratory:		Robert Grubbs Jr											
Comments:				Sampler Signature:													
LAB # (USE ONLY)		SAMPLE IDENTIFICATION		SAMPLING		MATRIX		PRESERVATIVE		# CONTAINERS		FILTERED (Y/N)					
				YEAR: 2020													
				DATE		TIME		WATER		SOIL		HCL		HNO ₃		ICE	
CS Bottom Hole 11 4'		9/2/2020						X		X		X		X		1	
CS North Wall 1		9/2/2020						X		X		X		X		1	
CS North Wall 2		9/2/2020						X		X		X		X		1	
CS North Wall 3		9/2/2020						X		X		X		X		1	
CS South Wall 1		9/2/2020						X		X		X		X		1	
CS South Wall 2		9/2/2020						X		X		X		X		1	
CS South Wall 3		9/2/2020						X		X		X		X		1	
CS East Wall		9/2/2020						X		X		X		X		1	
CS West Wall		9/2/2020						X		X		X		X		1	
Reinquished by:		Date:		Time:		Reinquished by:		Date:		Time:		Reinquished by:		Date:		Time:	
Robert Grubbs Jr		9/3/2020		9:22		[Signature]		9/3		0812		LAB USE ONLY		X		RUSH: Same Day 24 hr 48 hr 72 hr	
Reinquished by:		Date:		Time:		Reinquished by:		Date:		Time:		Sample Temperature		30/22		Rush Charges Authorized	
Reinquished by:		Date:		Time:		Reinquished by:		Date:		Time:		Special Report Limits or TRRP Report					
ORIGINAL COPY		FEDEX UPS		Tracking #:													

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 09.03.2020 08.12.00 AM

Work Order #: 671699

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#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

BTEX was in bulk container

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

Analyst:

PH Device/Lot#:

Checklist completed by:



Brianna Teel

Date: 09.03.2020

Checklist reviewed by:



Jessica Kramer

Date: 09.03.2020

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 14669

CONDITIONS OF APPROVAL

Operator:	COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	OGRID:	229137	Action Number:	14669	Action Type:	C-141
OCD Reviewer	Condition								
kcollins	None								