



July 29, 2019

Mike Bratcher  
Oil Conservation Division, District 2  
811 S First St.  
Artesia, NM 88210

**KBNX3-190729-C-1410**

Jim Amos  
Bureau of Land Management, CFO  
620 E. Green Street  
Carlsbad, NM 88220

**Closure Report**

**Copperhead 31 Federal Com #001H**  
**API#: 30-015-38532**  
**RP#: 2RP-4796 & 2RP-5034**  
**DOR: May 27, 2018 & October 21, 2018**  
**GPS: 32.000366 -104.016256**  
**Unit Letter H, Section 31, Township 26 South, Range 29 East**  
**Eddy County, New Mexico**

Mr. Bratcher/Mr. Amos,

COG Production, LLC (COG) is pleased to submit the following closure report for two overlapping releases that occurred on a flowline associated with the Copperhead 31 Federal Com #001H. The releases were located in Unit Letter H, Section 31, Township 26 South and Range 29 East in Eddy County, New Mexico. More specifically the latitude and longitude for the releases are 32.000366 North and -104.016256 West.

**BACKGROUND**

The first release was discovered on May 27, 2018. Prior to commencement of remediation activities for this release another release occurred on October 21, 2018 overlapping the May 27, 2018 release. The impacted area associated with both releases was delineated and a remediation work plan was drafted in order to address both releases simultaneously. The New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM) approved the remediation work plan.

## GROUNDWATER AND REGULATORY FRAMEWORK

According to the New Mexico Office of the State Engineer (NMOSE) groundwater in the project vicinity is approximately seventy-eight (78) feet below ground surface (BGS). The water well information is shown in Appendix B.

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, no other receptors (water wells, playas, karst, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The groundwater data and the site characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

### General Site Characterization and Groundwater:

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

### Delineation and Closure Criteria:

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

## REMEDIAL ACTIONS

- The impacted area was excavated to a depth of four (4) feet BGS.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.
- Confirmation soil samples were taken from the sidewalls of the excavation per NMAC 19.15.29.
- Per NMOCD request confirmation soil samples were taken from the bottom of the excavation every 200 square feet prior to installation of the liner.

- A 20-mil poly liner was installed in the bottom of the four (4) foot excavation in order to encapsulate the remaining chloride impacts at depth.
- The site was backfilled with clean “like” material and contoured to match the surrounding location.

## **SITE RECLAMATION AND RESTORATION**


Per NMED 19.15.29.13 reclamation of the pasture area has been performed by removing the impacted soil containing chloride concentrations greater than 600 mg/kg within the first four (4) feet BGS. Approximately one-thousand and twenty-six (1526) cubic yards of material was removed and hauled to an NMOCD approved solid waste disposal facility. Once excavated, soil samples were collected from the sidewalls to confirm the removal of impacted soil greater than 600 mg/kg of chlorides. A 20-mil poly liner was installed at the bottom of the excavation in order to encapsulate the remaining chloride impacts at depth. The backfill material was non-contaminated with concentrations below 600 mg/kg of chlorides. The surface was left in a rough condition to approximate natural surface deviations. The site will be mechanically seeded with the BLM #3 seed mixture.

## **CLOSURE REQUEST**

COG Production, LLC respectfully requests that the New Mexico Oil Conservation Division and the Bureau of Land Management grant closure approval for the Copperhead 31 Federal Com #001H incidents that occurred on May 27, 2018 (2RP-4796) and October 21, 2018 (2RP-5034).

Should you have any questions or concerns please do not hesitate to contact me.

Sincerely,



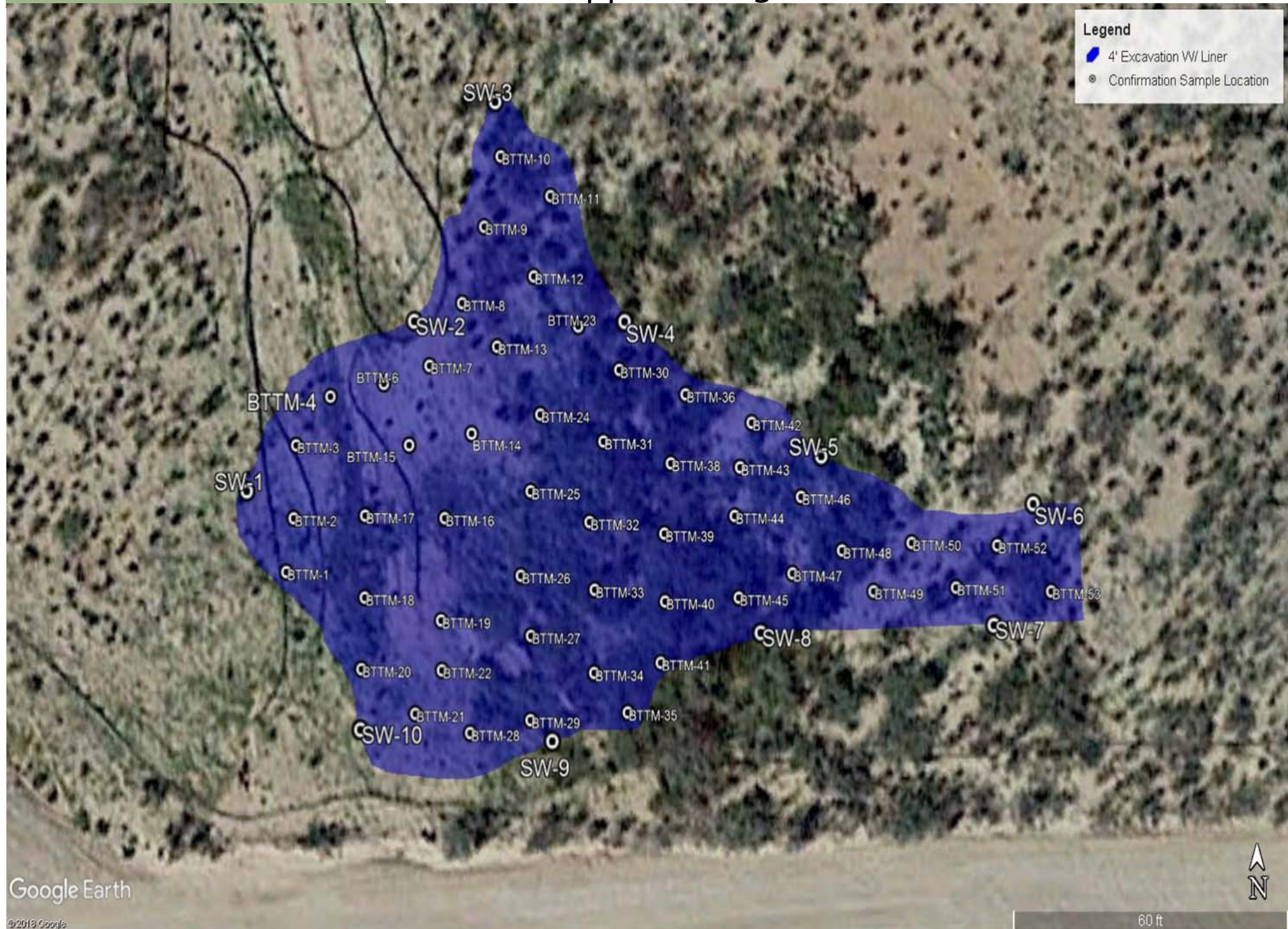
Sheldon L. Hitchcock  
HSE Coordinator  
[slhitchcock@concho.com](mailto:slhitchcock@concho.com)

# FIGURES



July 29, 2019

Copperhead 31 Federal Com #001H



# TABLES

**Table 1**  
**COG Operating LLC.**  
**Copperhead 31 Federal #001H**  
**Eddy County, New Mexico**

Sample ID	Sample 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
NMOCD RRAL Limits (mg/kg)					-	-	-	2,500	-	-	1,000	10	50	10,000
Bttm-1	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,800.0
Bttm-2	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	2,020.0
Bttm-3	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	2,160.0
Bttm-4	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	2,270.0
Bttm-5	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,940.0
Bttm-6	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,860.0
Bttm-7	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,800.0
Bttm-8	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,680.0
Bttm-9	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,920.0
Bttm-10	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,870.0
Bttm-11	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,820.0
Bttm-12	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,840.0
Bttm-13	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,270.0
Bttm-14	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,110.0
Bttm-15	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,350.0
Bttm-16	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,310.0
Bttm-17	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,340.0
Bttm-18	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,250.0
Bttm-19	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,320.0
Bttm-20	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,200.0
Bttm-21	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,290.0
Bttm-22	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,230.0
Bttm-23	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,150.0
Bttm-24	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,270.0
Bttm-25	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,250.0
Bttm-26	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,220.0
Bttm-27	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,740.0
Bttm-28	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,460.0
Bttm-29	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	4,450.0
Bttm-30	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	7,270.0
Bttm-31	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	7,510.0
Bttm-32	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	6,480.0
Bttm-33	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	5,500.0
Bttm-34	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	5,570.0
Bttm-35	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	6,610.0
Bttm-36	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	7,930.0
Bttm-37	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	7,150.0
Bttm-38	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	5,380.0
Bttm-39	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	3,100.0
Bttm-40	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	3,430.0
Bttm-41	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	4,170.0
Bttm-42	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	3,550.0
Bttm-43	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	3,200.0

**Table 1**  
**COG Operating LLC.**  
**Copperhead 31 Federal #001H**  
**Eddy County, New Mexico**

Sample ID	Sample 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			
Bttm-44	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	2,170.0
Bttm-45	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	941.0
Bttm-46	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,070.0
Bttm-47	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	893.0
Bttm-48	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	453.0
Bttm-49	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	903.0
Bttm-50	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	865.0
Bttm-51	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,980.0
Bttm-52	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	2,030.0
Bttm-53	4	6/12/2019	X		#	#	#	N/A	#	#	N/A	#	#	1,970.0
SW-1	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	92.3
SW-2	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	104.0
SW-3	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	30.5
SW-4	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	5.1
SW-5	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	21.8
SW-6	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	5.0
SW-7	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	524.0
SW-8	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	32.0
SW-9	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	14.9
SW-10	N/A	6/12/2019	X		<15.0	<15.0	<15.0		<15.0	<15.0		<0.002	<0.002	120.0

( # ) Not Analyzed



# APPENDIX A

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

State of New Mexico  
Energy Minerals and Natural  
Resources 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 # <i>(assigned by OCD)</i>
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# <i>(if applicable)</i>

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)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> 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?  <input type="checkbox"/> Yes <input type="checkbox"/> 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*

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> 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>Sheldon Nitan</u>	Date: _____
email: _____	Telephone: _____
<b><u>OCD Only</u></b>	
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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> 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.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input type="checkbox"/> Field data</li><li><input type="checkbox"/> Data table of soil contaminant concentration data</li><li><input type="checkbox"/> Depth to water determination</li><li><input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input type="checkbox"/> Boring or excavation logs</li><li><input type="checkbox"/> Photographs including date and GIS information</li><li><input type="checkbox"/> Topographic/Aerial maps</li><li><input type="checkbox"/> Laboratory data including chain of custody</li></ul>
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If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	
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: Sheldon Nitan Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	
District RP	
Facility ID	
Application ID	

## Remediation Plan

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

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

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

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

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

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: Sheldon Nitan Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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

Signature: \_\_\_\_\_ 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: Sheldon Hittman 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: \_\_\_\_\_

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)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> 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?  <input type="checkbox"/> Yes <input type="checkbox"/> 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*

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> 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>Sheldon Nitan</u>	Date: _____
email: _____	Telephone: _____
<b><u>OCD Only</u></b>	
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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> 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.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input type="checkbox"/> Field data</li><li><input type="checkbox"/> Data table of soil contaminant concentration data</li><li><input type="checkbox"/> Depth to water determination</li><li><input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input type="checkbox"/> Boring or excavation logs</li><li><input type="checkbox"/> Photographs including date and GIS information</li><li><input type="checkbox"/> Topographic/Aerial maps</li><li><input type="checkbox"/> Laboratory data including chain of custody</li></ul>
--

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

Incident ID	
District RP	
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: Sheldon Nitan Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	
District RP	
Facility ID	
Application ID	

## Remediation Plan

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

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

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

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

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

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: Sheldon Nitan Date: \_\_\_\_\_

email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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

Signature: \_\_\_\_\_ 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: Sheldon Hittman 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

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG Copperhead 31 Fed Com #1H**  
**Eddy County, New Mexico**

25 South			28 East		
6	5	4	35	3	32
	59			2	1
7	8	9	10	11	12
18	17	16	15	48	14
67			49		13
19	20	21	22	23	24
	96				
30	29	28	27	26	40
	15	90			25
31	32	33	34	35	36
					40

25 South			29 East		
6	5	4	3	2	1
40					
7	8	9	10	11	12
18	17	16	15	14	13
			40		
19	20	21	22	23	24
			60		
30	29	28	27	26	25
30					
31	32	115	33	34	35
					36

25 South			30 East		
6	5	4	3	2	295
				1	
7	264	8	9	295	10
18	17	16	15	14	13
					390
19	20	21	22	23	24
		265	268		
30	29	28	27	26	25
31	32	33	34	35	36

26 South			28 East		
6	5	4	3	2	120
				21	1
7	8	9	10	11	12
18	17	16	15	14	13
				120	56
19	20	21	22	23	24
			120		
30	29	28	27	26	25
31	32	33	34	35	36

26 South			29 East		
6	5	78	4	3	2
					1
7	8	9	10	11	12
18	17	16	15	14	13
			125		
19	20	21	22	57	23
			57	69	24
30	29	28	27	26	25
				54.30	
31	32	33	34	35	36
Site					

26 South			30 East		
6	5	179	4	3	2
	180				1
7	8	9	10	11	12
	172				
18	17	16	15	14	13
19	20	21	22	23	24
					180
30	29	28	27	26	25
31	32	33	34	35	36

- 88** New Mexico State Engineers Well Reports
- 105** USGS Well Reports
- 90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
- Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34** NMOCD - Groundwater Data
- 123 Tetra Tech installed temporary wells and field water level
- 143** NMOCD Groundwater map well location

# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
<a href="#">C 01354 X-3</a>		CUB	ED	2	1	3	23	26S	29E	598323	3543837	<input type="text"/>	170	
<a href="#">C 02038</a>		C	ED	3	2	4	26	26S	29E	599204	3541992*	<input type="text"/>	200	
<a href="#">C 03507 POD1</a>		C	ED	1	3	3	05	26S	29E	593064	3548313	<input type="text"/>	140	78 62
<a href="#">C 03508 POD1</a>		C	ED	1	3	3	05	26S	29E	593063	3548361	<input type="text"/>	140	75 65
<a href="#">C 03605 POD1</a>		CUB	ED	4	2	3	27	26S	29E	596990	3541983	<input type="text"/>	45	0 45

Average Depth to Water: **51 feet**

Minimum Depth: **0 feet**

Maximum Depth: **78 feet**

Record Count: 5

PLSS Search:

Township: 26S Range: 29E

\*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.

2/12/19 3:20 PM

WATER COLUMN/ AVERAGE DEPTH  
TO WATER

# APPENDIX C



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-001	627516-002	627516-003	627516-004	627516-005	627516-006
	<i>Field Id:</i>	Bttm-1	Bttm-2	Bttm-3	Bttm-4	Bttm-5	Bttm-6
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 07:02	Jun-12-19 07:04	Jun-12-19 07:06	Jun-12-19 07:08	Jun-12-19 07:10	Jun-12-19 07:12
Chloride by EPA 300	<i>Extracted:</i>	Jun-13-19 16:45	Jun-13-19 16:45	Jun-13-19 16:45	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30
	<i>Analyzed:</i>	Jun-13-19 22:32	Jun-13-19 22:37	Jun-13-19 22:41	Jun-14-19 10:07	Jun-14-19 10:12	Jun-14-19 10:17
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1800 49.9	2020 49.5	2160 50.1	2270 50.0	1940 50.3	1860 50.5

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

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Version: 1.9%

Jessica Kramer

Jessica Kramer  
Project Assistant





# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-007	627516-008	627516-009	627516-010	627516-011	627516-012
	<i>Field Id:</i>	Bttm-7	Bttm-8	Bttm-9	Bttm-10	Bttm-11	Bttm-12
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 07:14	Jun-12-19 07:16	Jun-12-19 07:18	Jun-12-19 07:20	Jun-12-19 07:22	Jun-12-19 07:24
Chloride by EPA 300	<i>Extracted:</i>	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30
	<i>Analyzed:</i>	Jun-14-19 10:22	Jun-14-19 10:36	Jun-14-19 10:41	Jun-14-19 10:46	Jun-14-19 10:51	Jun-14-19 10:56
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1800 50.5	1680 50.5	1920 50.5	1870 49.8	1820 49.9	1840 50.2

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Version: 1.9%

Jessica Kramer

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-013	627516-014	627516-015	627516-016	627516-017	627516-018
	<i>Field Id:</i>	Bttm-13	Bttm-14	Bttm-15	Bttm-16	Bttm-17	Bttm-18
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 07:26	Jun-12-19 07:28	Jun-12-19 07:30	Jun-12-19 07:32	Jun-12-19 07:34	Jun-12-19 07:36
Chloride by EPA 300	<i>Extracted:</i>	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30
	<i>Analyzed:</i>	Jun-14-19 11:15	Jun-14-19 11:20	Jun-14-19 11:35	Jun-14-19 11:39	Jun-14-19 11:44	Jun-14-19 11:49
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1270 49.9	1110 50.5	1350 49.8	1310 49.5	1340 50.5	1250 50.5

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Version: 1.9%

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-019	627516-020	627516-021	627516-022	627516-023	627516-024
	<i>Field Id:</i>	Bttm-19	Bttm-20	Bttm-21	Bttm-22	Bttm-23	Bttm-24
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 07:38	Jun-12-19 07:40	Jun-12-19 07:42	Jun-12-19 07:44	Jun-12-19 07:46	Jun-12-19 07:48
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 09:30	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00
	<i>Analyzed:</i>	Jun-14-19 11:54	Jun-14-19 11:59	Jun-14-19 12:04	Jun-14-19 12:47	Jun-14-19 12:52	Jun-14-19 12:57
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1320 49.8	1200 50.0	1290 50.4	1230 49.6	1150 50.0	1270 50.4

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Version: 1.9%

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-025	627516-026	627516-027	627516-028	627516-029	627516-030
	<i>Field Id:</i>	Bttm-25	Bttm-26	Bttm-27	Bttm-28	Bttm-29	Bttm-30
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 07:50	Jun-12-19 07:52	Jun-12-19 07:54	Jun-12-19 07:56	Jun-12-19 07:58	Jun-12-19 08:00
Chloride by EPA 300	<i>Extracted:</i>	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00
	<i>Analyzed:</i>	Jun-14-19 13:02	Jun-14-19 13:16	Jun-14-19 13:21	Jun-14-19 13:26	Jun-14-19 13:31	Jun-14-19 13:36
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1250 49.9	1220 49.5	1740 49.6	1460 50.1	4450 99.2	7270 50.3

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

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Version: 1.9%

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-031	627516-032	627516-033	627516-034	627516-035	627516-036
	<i>Field Id:</i>	Bttm-31	Bttm-32	Bttm-33	Bttm-34	Bttm-35	Bttm-36
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 08:02	Jun-12-19 08:04	Jun-12-19 08:06	Jun-12-19 08:08	Jun-12-19 08:10	Jun-12-19 08:12
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00
	<i>Analyzed:</i>	Jun-14-19 13:55	Jun-14-19 14:00	Jun-14-19 14:14	Jun-14-19 14:19	Jun-14-19 14:24	Jun-14-19 14:29
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7510 49.9	6480 50.3	5500 49.8	5570 50.1	6610 49.7	7930 100

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Version: 1.9%

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-037	627516-038	627516-039	627516-040	627516-041	627516-042
	<i>Field Id:</i>	Bttm-37	Bttm-38	Bttm-39	Bttm-40	Bttm-41	Bttm-42
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 08:14	Jun-12-19 08:16	Jun-12-19 08:18	Jun-12-19 08:20	Jun-12-19 08:22	Jun-12-19 08:24
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 10:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00
	<i>Analyzed:</i>	Jun-14-19 14:34	Jun-14-19 14:39	Jun-14-19 14:44	Jun-14-19 15:27	Jun-14-19 15:32	Jun-14-19 15:37
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7150 50.0	5380 50.0	3100 50.0	3430 49.9	4170 49.7	3550 24.8

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Version: 1.9%

*Jessica Kramer*

Jessica Kramer  
Project Assistant





# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-043	627516-044	627516-045	627516-046	627516-047	627516-048
	<i>Field Id:</i>	Bttm-43	Bttm-44	Bttm-45	Bttm-46	Bttm-47	Bttm-48
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 08:26	Jun-12-19 08:28	Jun-12-19 08:30	Jun-12-19 08:32	Jun-12-19 08:34	Jun-12-19 08:36
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00
	<i>Analyzed:</i>	Jun-14-19 15:42	Jun-14-19 15:56	Jun-14-19 16:01	Jun-14-19 16:06	Jun-14-19 15:13	Jun-14-19 16:20
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3200 24.8	2170 24.8	941 25.1	1070 25.0	893 5.03	453 5.00

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Version: 1.9%

*Jessica Kramer*

Jessica Kramer  
Project Assistant



# Certificate of Analysis Summary 627516

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627516-049	627516-050	627516-051	627516-052	627516-053	
	<i>Field Id:</i>	Bttm-49	Bttm-50	Bttm-51	Bttm-52	Bttm-53	
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	
	<i>Sampled:</i>	Jun-12-19 08:38	Jun-12-19 08:40	Jun-12-19 08:42	Jun-12-19 08:44	Jun-12-19 08:46	
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	Jun-14-19 11:00	
	<i>Analyzed:</i>	Jun-14-19 16:11	Jun-14-19 16:16	Jun-14-19 16:35	Jun-14-19 16:40	Jun-14-19 16:54	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		903 4.97	865 25.2	1980 25.1	2030 24.9	1970 24.8	

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Version: 1.9%

*Jessica Kramer*

Jessica Kramer  
Project Assistant

# Analytical Report 627516

for  
**COG Operating LLC**

**Project Manager: Sheldon Hitchcock**

**Copperhead 31 Fed Com #1**

**17-JUN-19**

Collected By: Client



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

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)  
Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-18-4)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



17-JUN-19

Project Manager: **Sheldon Hitchcock**  
**COG Operating LLC**  
2407 Pecos Avenue  
Artesia, NM 88210

Reference: XENCO Report No(s): **627516**  
**Copperhead 31 Fed Com #1**  
Project Address: Eddy, NM

**Sheldon Hitchcock:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 627516. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 627516 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

---

**Jessica Kramer**  
Project Assistant

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

*Certified and approved by numerous States and Agencies.*

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

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## Sample Cross Reference 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bttm-1	S	06-12-19 07:02		627516-001
Bttm-2	S	06-12-19 07:04		627516-002
Bttm-3	S	06-12-19 07:06		627516-003
Bttm-4	S	06-12-19 07:08		627516-004
Bttm-5	S	06-12-19 07:10		627516-005
Bttm-6	S	06-12-19 07:12		627516-006
Bttm-7	S	06-12-19 07:14		627516-007
Bttm-8	S	06-12-19 07:16		627516-008
Bttm-9	S	06-12-19 07:18		627516-009
Bttm-10	S	06-12-19 07:20		627516-010
Bttm-11	S	06-12-19 07:22		627516-011
Bttm-12	S	06-12-19 07:24		627516-012
Bttm-13	S	06-12-19 07:26		627516-013
Bttm-14	S	06-12-19 07:28		627516-014
Bttm-15	S	06-12-19 07:30		627516-015
Bttm-16	S	06-12-19 07:32		627516-016
Bttm-17	S	06-12-19 07:34		627516-017
Bttm-18	S	06-12-19 07:36		627516-018
Bttm-19	S	06-12-19 07:38		627516-019
Bttm-20	S	06-12-19 07:40		627516-020
Bttm-21	S	06-12-19 07:42		627516-021
Bttm-22	S	06-12-19 07:44		627516-022
Bttm-23	S	06-12-19 07:46		627516-023
Bttm-24	S	06-12-19 07:48		627516-024
Bttm-25	S	06-12-19 07:50		627516-025
Bttm-26	S	06-12-19 07:52		627516-026
Bttm-27	S	06-12-19 07:54		627516-027
Bttm-28	S	06-12-19 07:56		627516-028
Bttm-29	S	06-12-19 07:58		627516-029
Bttm-30	S	06-12-19 08:00		627516-030
Bttm-31	S	06-12-19 08:02		627516-031
Bttm-32	S	06-12-19 08:04		627516-032
Bttm-33	S	06-12-19 08:06		627516-033
Bttm-34	S	06-12-19 08:08		627516-034
Bttm-35	S	06-12-19 08:10		627516-035
Bttm-36	S	06-12-19 08:12		627516-036
Bttm-37	S	06-12-19 08:14		627516-037
Bttm-38	S	06-12-19 08:16		627516-038
Bttm-39	S	06-12-19 08:18		627516-039
Bttm-40	S	06-12-19 08:20		627516-040
Bttm-41	S	06-12-19 08:22		627516-041
Bttm-42	S	06-12-19 08:24		627516-042
Bttm-43	S	06-12-19 08:26		627516-043



## Sample Cross Reference 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Bttm-44	S	06-12-19 08:28	627516-044
Bttm-45	S	06-12-19 08:30	627516-045
Bttm-46	S	06-12-19 08:32	627516-046
Bttm-47	S	06-12-19 08:34	627516-047
Bttm-48	S	06-12-19 08:36	627516-048
Bttm-49	S	06-12-19 08:38	627516-049
Bttm-50	S	06-12-19 08:40	627516-050
Bttm-51	S	06-12-19 08:42	627516-051
Bttm-52	S	06-12-19 08:44	627516-052
Bttm-53	S	06-12-19 08:46	627516-053



## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Copperhead 31 Fed Com #1*

Project ID:

Work Order Number(s): 627516

Report Date: 17-JUN-19

Date Received: 06/13/2019

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3092447 Chloride by EPA 300

Lab Sample ID 627516-048 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 627516-040, -041, -042, -043, -044, -045, -046, -047, -048, -049, -050, -051, -052, -053.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-1**  
Lab Sample Id: 627516-001

Matrix: Soil  
Date Collected: 06.12.19 07.02

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.13.19 16.45

Basis: Wet Weight

Seq Number: 3092275

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1800	49.9	mg/kg	06.13.19 22.32		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-2**  
Lab Sample Id: 627516-002

Matrix: Soil  
Date Collected: 06.12.19 07.04

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.13.19 16.45

Basis: Wet Weight

Seq Number: 3092275

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2020	49.5	mg/kg	06.13.19 22.37		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-3**  
Lab Sample Id: 627516-003

Matrix: Soil  
Date Collected: 06.12.19 07.06

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.13.19 16.45

Basis: Wet Weight

Seq Number: 3092275

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2160	50.1	mg/kg	06.13.19 22.41		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-4**  
Lab Sample Id: 627516-004

Matrix: Soil  
Date Collected: 06.12.19 07.08

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2270	50.0	mg/kg	06.14.19 10.07		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-5**  
Lab Sample Id: 627516-005

Matrix: Soil  
Date Collected: 06.12.19 07.10

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1940	50.3	mg/kg	06.14.19 10.12		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-6**  
Lab Sample Id: 627516-006

Matrix: Soil  
Date Collected: 06.12.19 07.12

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1860	50.5	mg/kg	06.14.19 10.17		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-7**  
Lab Sample Id: 627516-007

Matrix: Soil  
Date Collected: 06.12.19 07.14

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1800	50.5	mg/kg	06.14.19 10.22		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-8**  
Lab Sample Id: 627516-008

Matrix: Soil  
Date Collected: 06.12.19 07.16

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1680	50.5	mg/kg	06.14.19 10.36		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-9**  
Lab Sample Id: 627516-009

Matrix: Soil  
Date Collected: 06.12.19 07.18

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1920	50.5	mg/kg	06.14.19 10.41		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-10**  
Lab Sample Id: 627516-010

Matrix: Soil  
Date Collected: 06.12.19 07.20

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1870	49.8	mg/kg	06.14.19 10.46		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-11**  
Lab Sample Id: 627516-011

Matrix: Soil  
Date Collected: 06.12.19 07.22

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1820	49.9	mg/kg	06.14.19 10.51		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-12**  
Lab Sample Id: 627516-012

Matrix: Soil  
Date Collected: 06.12.19 07.24

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1840	50.2	mg/kg	06.14.19 10.56		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-13**  
Lab Sample Id: 627516-013

Matrix: Soil  
Date Collected: 06.12.19 07.26

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1270	49.9	mg/kg	06.14.19 11.15		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-14**  
Lab Sample Id: 627516-014

Matrix: Soil  
Date Collected: 06.12.19 07.28

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1110	50.5	mg/kg	06.14.19 11.20		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-15**  
Lab Sample Id: 627516-015

Matrix: Soil  
Date Collected: 06.12.19 07.30

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1350	49.8	mg/kg	06.14.19 11.35		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-16**  
Lab Sample Id: 627516-016

Matrix: Soil  
Date Collected: 06.12.19 07.32

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1310	49.5	mg/kg	06.14.19 11.39		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-17**  
Lab Sample Id: 627516-017

Matrix: Soil  
Date Collected: 06.12.19 07.34

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1340	50.5	mg/kg	06.14.19 11.44		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-18**  
Lab Sample Id: 627516-018

Matrix: Soil  
Date Collected: 06.12.19 07.36

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1250	50.5	mg/kg	06.14.19 11.49		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-19**  
Lab Sample Id: 627516-019

Matrix: Soil  
Date Collected: 06.12.19 07.38

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1320	49.8	mg/kg	06.14.19 11.54		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-20**  
Lab Sample Id: 627516-020

Matrix: Soil  
Date Collected: 06.12.19 07.40

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1200	50.0	mg/kg	06.14.19 11.59		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-21**  
Lab Sample Id: 627516-021

Matrix: Soil  
Date Collected: 06.12.19 07.42

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 09.30

Basis: Wet Weight

Seq Number: 3092426

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1290	50.4	mg/kg	06.14.19 12.04		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-22**  
Lab Sample Id: 627516-022

Matrix: Soil  
Date Collected: 06.12.19 07.44

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1230	49.6	mg/kg	06.14.19 12.47		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-23**  
Lab Sample Id: 627516-023

Matrix: Soil  
Date Collected: 06.12.19 07.46

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1150	50.0	mg/kg	06.14.19 12.52		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-24**  
Lab Sample Id: 627516-024

Matrix: Soil  
Date Collected: 06.12.19 07.48

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1270	50.4	mg/kg	06.14.19 12.57		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-25**  
Lab Sample Id: 627516-025

Matrix: Soil  
Date Collected: 06.12.19 07.50

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1250	49.9	mg/kg	06.14.19 13.02		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-26**  
Lab Sample Id: 627516-026

Matrix: Soil  
Date Collected: 06.12.19 07.52

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1220	49.5	mg/kg	06.14.19 13.16		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-27**  
Lab Sample Id: 627516-027

Matrix: Soil  
Date Collected: 06.12.19 07.54

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1740	49.6	mg/kg	06.14.19 13.21		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-28**  
Lab Sample Id: 627516-028

Matrix: Soil  
Date Collected: 06.12.19 07.56

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1460	50.1	mg/kg	06.14.19 13.26		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-29**  
Lab Sample Id: 627516-029

Matrix: Soil  
Date Collected: 06.12.19 07.58

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4450	99.2	mg/kg	06.14.19 13.31		20



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-30**  
Lab Sample Id: 627516-030

Matrix: Soil  
Date Collected: 06.12.19 08.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7270	50.3	mg/kg	06.14.19 13.36		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-31**  
Lab Sample Id: 627516-031

Matrix: Soil  
Date Collected: 06.12.19 08.02

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7510	49.9	mg/kg	06.14.19 13.55		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-32**  
Lab Sample Id: 627516-032

Matrix: Soil  
Date Collected: 06.12.19 08.04

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6480	50.3	mg/kg	06.14.19 14.00		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-33**  
Lab Sample Id: 627516-033

Matrix: Soil  
Date Collected: 06.12.19 08.06

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5500	49.8	mg/kg	06.14.19 14.14		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-34**  
Lab Sample Id: 627516-034

Matrix: Soil  
Date Collected: 06.12.19 08.08

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5570	50.1	mg/kg	06.14.19 14.19		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-35**  
Lab Sample Id: 627516-035

Matrix: Soil  
Date Collected: 06.12.19 08.10

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6610	49.7	mg/kg	06.14.19 14.24		10



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-36**  
Lab Sample Id: 627516-036

Matrix: Soil  
Date Collected: 06.12.19 08.12

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7930	100	mg/kg	06.14.19 14.29		20



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-37**  
Lab Sample Id: 627516-037

Matrix: Soil  
Date Collected: 06.12.19 08.14

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7150	50.0	mg/kg	06.14.19 14.34		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-38**  
Lab Sample Id: 627516-038

Matrix: Soil  
Date Collected: 06.12.19 08.16

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5380	50.0	mg/kg	06.14.19 14.39		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-39**  
Lab Sample Id: 627516-039

Matrix: Soil  
Date Collected: 06.12.19 08.18

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 10.00

Basis: Wet Weight

Seq Number: 3092432

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3100	50.0	mg/kg	06.14.19 14.44		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-40**  
Lab Sample Id: 627516-040

Matrix: Soil  
Date Collected: 06.12.19 08.20

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3430	49.9	mg/kg	06.14.19 15.27		10



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-41**  
Lab Sample Id: 627516-041

Matrix: Soil  
Date Collected: 06.12.19 08.22

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4170	49.7	mg/kg	06.14.19 15.32		10





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-42**  
Lab Sample Id: 627516-042

Matrix: Soil  
Date Collected: 06.12.19 08.24

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3550	24.8	mg/kg	06.14.19 15.37		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-43**  
Lab Sample Id: 627516-043

Matrix: Soil  
Date Collected: 06.12.19 08.26

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3200	24.8	mg/kg	06.14.19 15.42		5



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-44**  
Lab Sample Id: 627516-044

Matrix: Soil  
Date Collected: 06.12.19 08.28

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2170	24.8	mg/kg	06.14.19 15.56		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-45**  
Lab Sample Id: 627516-045

Matrix: Soil  
Date Collected: 06.12.19 08.30

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	941	25.1	mg/kg	06.14.19 16.01		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-46**  
Lab Sample Id: 627516-046

Matrix: Soil  
Date Collected: 06.12.19 08.32

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1070	25.0	mg/kg	06.14.19 16.06		5



## Certificate of Analytical Results 627516



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-47**  
Lab Sample Id: 627516-047

Matrix: Soil  
Date Collected: 06.12.19 08.34

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	893	5.03	mg/kg	06.14.19 15.13		1



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-48**  
Lab Sample Id: 627516-048

Matrix: Soil  
Date Collected: 06.12.19 08.36

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	453	5.00	mg/kg	06.14.19 16.20		1



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-49**  
Lab Sample Id: 627516-049

Matrix: Soil  
Date Collected: 06.12.19 08.38

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	903	4.97	mg/kg	06.14.19 16.11		1





# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-50**  
Lab Sample Id: 627516-050

Matrix: Soil  
Date Collected: 06.12.19 08.40

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	865	25.2	mg/kg	06.14.19 16.16		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-51**  
Lab Sample Id: 627516-051

Matrix: Soil  
Date Collected: 06.12.19 08.42

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1980	25.1	mg/kg	06.14.19 16.35		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-52**  
Lab Sample Id: 627516-052

Matrix: Soil  
Date Collected: 06.12.19 08.44

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2030	24.9	mg/kg	06.14.19 16.40		5



# Certificate of Analytical Results 627516



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **Bttm-53**  
Lab Sample Id: 627516-053

Matrix: Soil  
Date Collected: 06.12.19 08.46

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 06.14.19 11.00

Basis: Wet Weight

Seq Number: 3092447

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1970	24.8	mg/kg	06.14.19 16.54		5

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

\*\* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

**MDL** Method Detection Limit

**SDL** Sample Detection Limit

**LOD** Limit of Detection

**PQL** Practical Quantitation Limit

**SQL** 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



## QC Summary 627516

### COG Operating LLC Copperhead 31 Fed Com #1

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092275

MB Sample Id: 7679886-1-BLK

Matrix: Solid

LCS Sample Id: 7679886-1-BKS

Prep Method: E300P

Date Prep: 06.13.19

LCSD Sample Id: 7679886-1-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	250	100	249	100	90-110	0	20	mg/kg	06.13.19 20:23	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092426

MB Sample Id: 7679888-1-BLK

Matrix: Solid

LCS Sample Id: 7679888-1-BKS

Prep Method: E300P

Date Prep: 06.14.19

LCSD Sample Id: 7679888-1-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	243	97	243	97	90-110	0	20	mg/kg	06.14.19 09:41	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092432

MB Sample Id: 7679889-1-BLK

Matrix: Solid

LCS Sample Id: 7679889-1-BKS

Prep Method: E300P

Date Prep: 06.14.19

LCSD Sample Id: 7679889-1-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	245	98	245	98	90-110	0	20	mg/kg	06.14.19 12:23	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092447

MB Sample Id: 7680023-1-BLK

Matrix: Solid

LCS Sample Id: 7680023-1-BKS

Prep Method: E300P

Date Prep: 06.14.19

LCSD Sample Id: 7680023-1-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	245	98	247	99	90-110	1	20	mg/kg	06.14.19 15:03	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092275

Parent Sample Id: 627513-016

Matrix: Soil

MS Sample Id: 627513-016 S

Prep Method: E300P

Date Prep: 06.13.19

MSD Sample Id: 627513-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	83.8	251	338	101	338	101	90-110	0	20	mg/kg	06.13.19 20:36	

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



## QC Summary 627516

### COG Operating LLC Copperhead 31 Fed Com #1

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092275

Parent Sample Id: 627514-006

Matrix: Soil

MS Sample Id: 627514-006 S

Prep Method: E300P

Date Prep: 06.13.19

MSD Sample Id: 627514-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	13.5	250	272	103	271	103	90-110	0	20	mg/kg	06.13.19 21:43	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092426

Parent Sample Id: 627619-001

Matrix: Soil

MS Sample Id: 627619-001 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627619-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.96	248	309	125	307	124	90-110	1	20	mg/kg	06.14.19 09:58	X

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092426

Parent Sample Id: 627619-002

Matrix: Soil

MS Sample Id: 627619-002 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627619-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.95	248	249	100	248	100	90-110	0	20	mg/kg	06.14.19 11:06	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092432

Parent Sample Id: 627619-003

Matrix: Soil

MS Sample Id: 627619-003 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627619-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	279	112	278	111	90-110	0	20	mg/kg	06.14.19 12:38	X

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092432

Parent Sample Id: 627619-004

Matrix: Soil

MS Sample Id: 627619-004 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627619-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.99	250	256	102	255	102	90-110	0	20	mg/kg	06.14.19 13:45	

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



## QC Summary 627516

### COG Operating LLC Copperhead 31 Fed Com #1

**Analytical Method:** Chloride by EPA 300

Seq Number: 3092447

Parent Sample Id: 627516-047

Matrix: Soil

MS Sample Id: 627516-047 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627516-047 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	893	252	1060	66	1060	66	90-110	0	20	mg/kg	06.14.19 15:17	X

**Analytical Method:** Chloride by EPA 300

Seq Number: 3092447

Parent Sample Id: 627516-048

Matrix: Soil

MS Sample Id: 627516-048 S

Prep Method: E300P

Date Prep: 06.14.19

MSD Sample Id: 627516-048 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	453	250	677	90	676	89	90-110	0	20	mg/kg	06.14.19 16:25	X

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

Client Name: COG-Artesia		Site Manager: Sheldon Hitchcock	
Project Name: Copperhead 31 Fed com #1			
Project Location: (county, state) Elder, NM		Project #:	
Invoice to: Sheldon Hitchcock			
Receiving Laboratory: Xenco		Sampler Name: Sheldon Hitchcock	
Comments:			

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD				# CONTAINERS	(G)rab/(C)omposit	ANALYSIS REQUEST (Circle or Specify Method No.)
		YEAR: 2019	DATE	TIME	WATER	SOIL	HCL	HNO <sub>3</sub>	ICE			
Bttn-1		6/12	7:02		X					1	C	TPH 8015M ( GRO - DRO - MRO)
Bttn-2			7:04									BTEX 8021B
Bttn-3			7:06									Chloride
Bttn-4			7:08									
Bttn-5			7:10									
Bttn-6			7:12									
Bttn-7			7:14									
Bttn-8			7:16									
Bttn-9			7:18									
Bttn-10			7:20									

Relinquished by: <u>Sheldon Hitchcock</u> Date: <u>6/12/19</u> Time: <u>12:55</u>	Received by: <u>Wade</u> Date: <u>06-12-19</u> Time: <u>12:55</u>
Relinquished by: <u>Sheldon Hitchcock</u> Date: <u>6/12/19</u> Time: <u>12:55</u>	Received by: <u>Wade</u> Date: <u>06-12-19</u> Time: <u>12:55</u>
Relinquished by: <u>Sheldon Hitchcock</u> Date: <u>6/12/19</u> Time: <u>12:55</u>	Received by: <u>Wade</u> Date: <u>06-12-19</u> Time: <u>12:55</u>

<b>LAB USE ONLY</b> Sample Temperature <u>06/16/19</u>	<b>REMARKS:</b> 5 days <input type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr <input type="checkbox"/> Rush Charges Authorized <input type="checkbox"/> Special Report Limits or TRRP Report
--	---

ORIGINAL COPY

# Analysis Request of Chain of Custody Record



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

Client Name: COG-Artesia Site Manager: Sheldon Hitchcock

Project Name: COPPERHEAD Field com #1

Project Location: (county, state) Eddy, NM Project #:

Invoice to: Sheldon Hitchcock

Receiving Laboratory: Xcuro Sampler Name: Sheldon Hitchcock

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(G)rab/(C)omposit	ANALYSIS REQUEST (Circle or Specify Method No.)									
		YEAR	DATE	TIME	WATER	SOIL	HCL	HNO <sub>3</sub>	ICE										
		2014																	
	Bttm - 11		6/12	2:22		X			X	1	C								
	Bttm - 12			7:24															
	Bttm - 13			7:26															
	Bttm - 14			7:28															
	Bttm - 15			7:30															
	Bttm - 16			7:32															
	Bttm - 17			7:34															
	Bttm - 18			7:36															
	Bttm - 19			7:38															
	Bttm - 20			7:40															

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

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

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

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

LAB USE ONLY

Sample Temperature

REMARKS:

☐ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

ORIGINAL COPY

(Circle) HAND DELIVERED FEDEX UPS Tracking #

# Analysis Request of Chain of Custody Record



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

Client Name: COG-Artesia		Site Manager: Sheldon Hitchcock	
Project Name: <u>COPPERHEAD SIFED CORN #1</u>			
Project Location: (county, state) <u>El Paso, NM</u>		Project #:	
Invoice to: Sheldon Hitchcock		Sampler Name: Sheldon Hitchcock	
Receiving Laboratory: <u>X CUCO</u>		Comments:	

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(G)rab/(C)omposit	TPH 8015M ( GRO - DRO - MRO)	BTEX 8021B	Chloride	ANALYSIS REQUEST (Circle or Specify Method No.)		
		YEAR:	DATE	TIME	WATER	SOIL	HCL							HNO <sub>3</sub>	ICE
		2014													
	Bt+m - 21		6/12	7:42		X		X							
	Bt+m - 22			7:44											
	Bt+m - 23			7:46											
	Bt+m - 24			7:48											
	Bt+m - 25			7:50											
	Bt+m - 26			7:52											
	Bt+m - 27			7:54											
	Bt+m - 28			7:56											
	Bt+m - 29			7:58											
	Bt+m - 30			8:00											

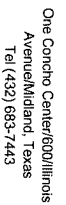
Relinquished by: <u>Sheldon Hitchcock</u>	Date: <u>6/12/14</u>	Time: <u>12:55</u>	Received by: <u>[Signature]</u>	Date: <u>06/12/14</u>	Time: <u>12:55</u>
Relinquished by: <u>[Signature]</u>	Date: <u>6/12/14</u>	Time: <u>11:30</u>	Received by: <u>[Signature]</u>	Date: <u>6/12/14</u>	Time: <u>11:30</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY	REMARKS:
Sample Temperature	<u>5 days.</u>
<input type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr	
<input type="checkbox"/> Rush Charges Authorized	
<input type="checkbox"/> Special Report Limits or TRRP Report	

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## 116



Sheldon Hitchcock

Copperhead 31 Fed con #1

Entry, PM

## Sheldon Hitchcock

Xrnc

## Sheldon Hitchcock

[illegible]

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Sheldon Davis

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Sample Temperature**

0.0000

REMARKS: 5 dogs

☐ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

#### ☐ Special Report Limits or TRRP Report

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(Circle) HAND DELIVERED FEDEX UPS Tracking #:

# Analysis Request of Chain of Custody Record



CONCHO

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

687514

Client Name:

COG-Artesia

Site Manager:

Sheldon Hitchcock

Project Name:

Copperhead 31 Fed Com #1

Project Location:

(county, state)  
Eddy, NM

Project #:

Invoice to:

Sheldon Hitchcock

Receiving Laboratory:

Xenoco

Sampler Name:

Sheldon Hitchcock

Comments:

LAB #

(LAB USE ONLY)

## SAMPLE IDENTIFICATION

### SAMPLING

YEAR: 2019

DATE: 6/12/19

TIME: 8:22

### MATRIX

WATER

SOIL

HCL

HNO<sub>3</sub>

ICE

### PRESERVATIVE METHOD

ICE

ICE

ICE

ICE

ICE

# CONTAINERS

(C)omposite/(G)rab

TPH 8015M ( GRO - DRO - MRO)

BTEX 8021B

Chloride

## ANALYSIS REQUEST

(Circle or Specify Method No.)

Relinquished by:

Date: 6/12/19

Time: 12:53

Received by: [Signature]

Date: 6/12/19

Time: 12:55

Relinquished by:

Date: 6/12/19

Time: 12:53

Received by: [Signature]

Date: 6/12/19

Time: 12:55

Relinquished by:

Date: 6/12/19

Time: 12:53

Received by: [Signature]

Date: 6/12/19

Time: 12:55

### LAB USE ONLY

Sample Temperature

REMARKS:

☐ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

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(Circle) HAND DELIVERED FEDEX UPS Tracking #

1027514

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# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 06/13/2019 11:20:00 AM

Work Order #: 627516

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

*Brianna Teel*

Brianna Teel

Date: 06/13/2019

Checklist reviewed by:

*Jessica Kramer*

Jessica Kramer

Date: 06/13/2019



# Certificate of Analysis Summary 627521

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627521-001	627521-002	627521-003	627521-004	627521-005	627521-006
	<i>Field Id:</i>	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00
	<i>Analyzed:</i>	Jun-14-19 08:59	Jun-14-19 09:18	Jun-14-19 09:37	Jun-14-19 09:56	Jun-14-19 15:19	Jun-14-19 15:36
	<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	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
m,p-Xylenes		<0.00398 0.00398	<0.00401 0.00401	<0.00399 0.00399	<0.00402 0.00402	<0.00400 0.00400	<0.00401 0.00401
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20
	<i>Analyzed:</i>	Jun-13-19 20:20	Jun-13-19 20:27	Jun-13-19 19:58	Jun-13-19 20:35	Jun-13-19 20:42	Jun-13-19 21:04
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		92.3 25.3	104 5.05	30.5 4.98	5.06 5.02	21.8 4.95	5.00 4.95
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00
	<i>Analyzed:</i>	Jun-14-19 14:59	Jun-14-19 16:14	Jun-14-19 16:39	Jun-14-19 17:04	Jun-14-19 17:30	Jun-14-19 17:55
	<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		<15.0 15.0	<14.9 14.9	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics		<15.0 15.0	<14.9 14.9	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<14.9 14.9	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		<15.0 15.0	<14.9 14.9	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0

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

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

*Jessica Kramer*

Jessica Kramer  
Project Assistant





# Certificate of Analysis Summary 627521

COG Operating LLC, Artesia, NM

Project Name: Copperhead 31 Fed Com #1



Project Id:

Contact: Sheldon Hitchcock

Project Location: Eddy, NM

Date Received in Lab: Thu Jun-13-19 11:20 am

Report Date: 17-JUN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	627521-007	627521-008	627521-009	627521-010		
	<i>Field Id:</i>	SW-7	SW-8	SW-9	SW-10		
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL		
	<i>Sampled:</i>	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00	Jun-12-19 00:00		
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00	Jun-13-19 15:00		
	<i>Analyzed:</i>	Jun-14-19 15:53	Jun-14-19 16:10	Jun-14-19 16:28	Jun-14-19 16:45		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
Toluene		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
m,p-Xylenes		<0.00402 0.00402	<0.00399 0.00399	<0.00397 0.00397	<0.00400 0.00400		
o-Xylene		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
Total BTEX		<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200		
<b>Chloride by EPA 300</b>	<i>Extracted:</i>	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20	Jun-13-19 15:20		
	<i>Analyzed:</i>	Jun-13-19 21:11	Jun-13-19 21:18	Jun-13-19 21:26	Jun-13-19 21:33		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Chloride		524 4.97	32.0 5.01	14.9 5.05	120 4.97		
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00	Jun-14-19 07:00		
	<i>Analyzed:</i>	Jun-15-19 09:03	Jun-14-19 19:03	Jun-14-19 19:29	Jun-14-19 19:54		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Diesel Range Organics		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		

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

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*Jessica Kramer*

Jessica Kramer  
Project Assistant

# **Analytical Report 627521**

**for**  
**COG Operating LLC**

**Project Manager: Sheldon Hitchcock**

**Copperhead 31 Fed Com #1**

**17-JUN-19**

Collected By: Client



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

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)  
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



17-JUN-19

Project Manager: **Sheldon Hitchcock**  
**COG Operating LLC**  
2407 Pecos Avenue  
Artesia, NM 88210

Reference: XENCO Report No(s): **627521**  
**Copperhead 31 Fed Com #1**  
Project Address: Eddy, NM

**Sheldon Hitchcock:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 627521. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 627521 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Jessica Kramer**

Project Assistant

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

*Certified and approved by numerous States and Agencies.*

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## Sample Cross Reference 627521



### COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SW-1	S	06-12-19 00:00		627521-001
SW-2	S	06-12-19 00:00		627521-002
SW-3	S	06-12-19 00:00		627521-003
SW-4	S	06-12-19 00:00		627521-004
SW-5	S	06-12-19 00:00		627521-005
SW-6	S	06-12-19 00:00		627521-006
SW-7	S	06-12-19 00:00		627521-007
SW-8	S	06-12-19 00:00		627521-008
SW-9	S	06-12-19 00:00		627521-009
SW-10	S	06-12-19 00:00		627521-010



## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Copperhead 31 Fed Com #1*

Project ID:

Work Order Number(s): 627521

Report Date: 17-JUN-19

Date Received: 06/13/2019

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3092366 BTEX by EPA 8021B

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

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

Samples affected are: 627521-010,627521-007.

Batch: LBA-3092433 TPH By SW8015 Mod

Surrogate 1-Chlorooctane recovered below QC limits. Matrix interferences is suspected;.

Samples affected are: 627521-009.

Surrogate o-Terphenyl recovered above QC limits. Samples affected are: 7680002-1-BKS.



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-1**  
Lab Sample Id: 627521-001

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	92.3	25.3	mg/kg	06.13.19 20.20		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 14.59	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 14.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 14.59	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 14.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	06.14.19 14.59	
o-Terphenyl	84-15-1	99	%	70-135	06.14.19 14.59	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-1**  
Lab Sample Id: 627521-001

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.14.19 08.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.14.19 08.59	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	113	%	70-130	06.14.19 08.59		
1,4-Difluorobenzene	540-36-3	91	%	70-130	06.14.19 08.59		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-2**  
Lab Sample Id: 627521-002

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	104	5.05	mg/kg	06.13.19 20.27		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.14.19 16.14	U	1
Diesel Range Organics	C10C28DRO	<14.9	14.9	mg/kg	06.14.19 16.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	06.14.19 16.14	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	06.14.19 16.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	06.14.19 16.14	
o-Terphenyl	84-15-1	93	%	70-135	06.14.19 16.14	





# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-2**  
Lab Sample Id: 627521-002

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	06.14.19 09.18	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 09.18	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	92	%	70-130	06.14.19 09.18		
4-Bromofluorobenzene	460-00-4	115	%	70-130	06.14.19 09.18		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-3**  
Lab Sample Id: 627521-003

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	30.5	4.98	mg/kg	06.13.19 19.58		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.14.19 16.39	U	1
Diesel Range Organics	C10C28DRO	<14.9	14.9	mg/kg	06.14.19 16.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	06.14.19 16.39	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	06.14.19 16.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	114	%	70-135	06.14.19 16.39	
o-Terphenyl	84-15-1	103	%	70-135	06.14.19 16.39	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-3**  
Lab Sample Id: 627521-003

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	06.14.19 09.37	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 09.37	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	91	%	70-130	06.14.19 09.37		
4-Bromofluorobenzene	460-00-4	111	%	70-130	06.14.19 09.37		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-4**  
Lab Sample Id: 627521-004

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5.06	5.02	mg/kg	06.13.19 20.35		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 17.04	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 17.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 17.04	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 17.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	115	%	70-135	06.14.19 17.04	
o-Terphenyl	84-15-1	90	%	70-135	06.14.19 17.04	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-4**  
Lab Sample Id: 627521-004

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	06.14.19 09.56	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
Total BTEX		<0.00201	0.00201	mg/kg	06.14.19 09.56	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	90	%	70-130	06.14.19 09.56		
4-Bromofluorobenzene	460-00-4	123	%	70-130	06.14.19 09.56		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-5**  
Lab Sample Id: 627521-005

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.8	4.95	mg/kg	06.13.19 20.42		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 17.30	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 17.30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 17.30	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 17.30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	06.14.19 17.30	
o-Terphenyl	84-15-1	81	%	70-135	06.14.19 17.30	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-5**  
Lab Sample Id: 627521-005

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.14.19 15.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 15.19	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	99	%	70-130	06.14.19 15.19		
4-Bromofluorobenzene	460-00-4	117	%	70-130	06.14.19 15.19		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-6**  
Lab Sample Id: 627521-006

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5.00	4.95	mg/kg	06.13.19 21.04		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 17.55	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 17.55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 17.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 17.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	111	%	70-135	06.14.19 17.55	
o-Terphenyl	84-15-1	83	%	70-135	06.14.19 17.55	





# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-6**  
Lab Sample Id: 627521-006

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	06.14.19 15.36	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 15.36	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	118	%	70-130	06.14.19 15.36		
1,4-Difluorobenzene	540-36-3	97	%	70-130	06.14.19 15.36		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-7**  
Lab Sample Id: 627521-007

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 06.13.19 15.20

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	524	4.97	mg/kg	06.13.19 21.11		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Date Prep: 06.14.19 07.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.15.19 09.03	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.15.19 09.03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.15.19 09.03	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.15.19 09.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	06.15.19 09.03	
o-Terphenyl	84-15-1	77	%	70-135	06.15.19 09.03	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-7**  
Lab Sample Id: 627521-007

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	06.14.19 15.53	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
Total BTEX		<0.00201	0.00201	mg/kg	06.14.19 15.53	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	111	%	70-130	06.14.19 15.53		
4-Bromofluorobenzene	460-00-4	153	%	70-130	06.14.19 15.53	**	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-8**  
Lab Sample Id: 627521-008

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.0	5.01	mg/kg	06.13.19 21.18		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 19.03	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 19.03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 19.03	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 19.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	75	%	70-135	06.14.19 19.03	
o-Terphenyl	84-15-1	83	%	70-135	06.14.19 19.03	

## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-8**  
Lab Sample Id: 627521-008

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	06.14.19 16.10	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 16.10	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	124	%	70-130	06.14.19 16.10		
1,4-Difluorobenzene	540-36-3	94	%	70-130	06.14.19 16.10		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-9**  
Lab Sample Id: 627521-009

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Date Prep: 06.13.19 15.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.9	5.05	mg/kg	06.13.19 21.26		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Date Prep: 06.14.19 07.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 19.29	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 19.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 19.29	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 19.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	68	%	70-135	06.14.19 19.29	**
o-Terphenyl	84-15-1	70	%	70-135	06.14.19 19.29	



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-9**  
Lab Sample Id: 627521-009

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	06.14.19 16.28	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
Total BTEX		<0.00198	0.00198	mg/kg	06.14.19 16.28	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	114	%	70-130	06.14.19 16.28		
1,4-Difluorobenzene	540-36-3	96	%	70-130	06.14.19 16.28		



# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-10**  
Lab Sample Id: 627521-010

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3092257

Prep Method: E300P

% Moisture:

Date Prep: 06.13.19 15.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	120	4.97	mg/kg	06.13.19 21.33		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3092433

Prep Method: TX1005P

% Moisture:

Date Prep: 06.14.19 07.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.14.19 19.54	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.14.19 19.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.14.19 19.54	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.14.19 19.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	74	%	70-135	06.14.19 19.54	
o-Terphenyl	84-15-1	71	%	70-135	06.14.19 19.54	





# Certificate of Analytical Results 627521



## COG Operating LLC, Artesia, NM

Copperhead 31 Fed Com #1

Sample Id: **SW-10**  
Lab Sample Id: 627521-010

Matrix: Soil  
Date Collected: 06.12.19 00.00

Date Received: 06.13.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 06.13.19 15.00

Basis: Wet Weight

Seq Number: 3092366

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.14.19 16.45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.14.19 16.45	U	1
		% Recovery					
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		137	%	70-130	06.14.19 16.45	**
1,4-Difluorobenzene	540-36-3		91	%	70-130	06.14.19 16.45	

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

\*\* Surrogate recovered outside laboratory control limit.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

**MDL** Method Detection Limit      **SDL** Sample Detection Limit      **LOD** Limit of Detection

**PQL** Practical Quantitation Limit      **MQL** Method Quantitation Limit      **LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample      **BLK** Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample      **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate      **MS** Matrix Spike      **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



## QC Summary 627521

### COG Operating LLC Copperhead 31 Fed Com #1

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092257

MB Sample Id: 7679883-1-BLK

Matrix: Solid

LCS Sample Id: 7679883-1-BKS

Prep Method: E300P

Date Prep: 06.13.19

LCSD Sample Id: 7679883-1-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	239	96	239	96	90-110	0	20	mg/kg	06.13.19 19:44	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092257

Parent Sample Id: 627517-001

Matrix: Soil

MS Sample Id: 627517-001 S

Prep Method: E300P

Date Prep: 06.13.19

MSD Sample Id: 627517-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2.70	250	248	98	248	98	90-110	0	20	mg/kg	06.13.19 21:47	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3092257

Parent Sample Id: 627521-003

Matrix: Soil

MS Sample Id: 627521-003 S

Prep Method: E300P

Date Prep: 06.13.19

MSD Sample Id: 627521-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	30.5	249	274	98	274	98	90-110	0	20	mg/kg	06.13.19 20:06	

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3092433

MB Sample Id: 7680002-1-BLK

Matrix: Solid

LCS Sample Id: 7680002-1-BKS

Prep Method: TX1005P

Date Prep: 06.14.19

LCSD Sample Id: 7680002-1-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	<8.00	1000	1140	114	1070	107	70-135	6	20	mg/kg	06.14.19 14:08	
Diesel Range Organics	<8.13	1000	1190	119	1040	104	70-135	13	20	mg/kg	06.14.19 14:08	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	114		128		100		70-135	%	06.14.19 14:08
o-Terphenyl	94		136	**	105		70-135	%	06.14.19 14:08

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



## QC Summary 627521

### COG Operating LLC Copperhead 31 Fed Com #1

Analytical Method: TPH By SW8015 Mod

Seq Number: 3092433

Parent Sample Id: 627521-001

Matrix: Soil

MS Sample Id: 627521-001 S

Prep Method: TX1005P

Date Prep: 06.14.19

MSD Sample Id: 627521-001 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	14.7	999	954	94	916	90	70-135	4	20	mg/kg	06.14.19 15:24	
Diesel Range Organics	9.77	999	922	91	953	95	70-135	3	20	mg/kg	06.14.19 15:24	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	96		89		70-135	%	06.14.19 15:24
o-Terphenyl	77		94		70-135	%	06.14.19 15:24

Analytical Method: BTEX by EPA 8021B

Seq Number: 3092366

MB Sample Id: 7679954-1-BLK

Matrix: Solid

LCS Sample Id: 7679954-1-BKS

Prep Method: SW5030B

Date Prep: 06.13.19

LCSD Sample Id: 7679954-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.106	105	0.113	113	70-130	6	35	mg/kg	06.14.19 07:00	
Toluene	<0.00201	0.101	0.0758	75	0.0818	82	70-130	8	35	mg/kg	06.14.19 07:00	
Ethylbenzene	<0.00201	0.101	0.0896	89	0.0953	95	70-130	6	35	mg/kg	06.14.19 07:00	
m,p-Xylenes	<0.00402	0.201	0.178	89	0.190	95	70-130	7	35	mg/kg	06.14.19 07:00	
o-Xylene	<0.00201	0.101	0.0863	85	0.0923	92	70-130	7	35	mg/kg	06.14.19 07:00	

#### Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	91		87		88		70-130	%	06.14.19 07:00
4-Bromofluorobenzene	110		109		108		70-130	%	06.14.19 07:00

Analytical Method: BTEX by EPA 8021B

Seq Number: 3092366

Parent Sample Id: 627521-001

Matrix: Soil

MS Sample Id: 627521-001 S

Prep Method: SW5030B

Date Prep: 06.13.19

MSD Sample Id: 627521-001 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	0.0998	0.0757	76	0.107	108	70-130	34	35	mg/kg	06.14.19 07:38	
Toluene	<0.00200	0.0998	0.0843	84	0.0755	76	70-130	11	35	mg/kg	06.14.19 07:38	
Ethylbenzene	<0.00200	0.0998	0.0960	96	0.0874	88	70-130	9	35	mg/kg	06.14.19 07:38	
m,p-Xylenes	<0.00399	0.200	0.192	96	0.175	88	70-130	9	35	mg/kg	06.14.19 07:38	
o-Xylene	<0.00200	0.0998	0.0938	94	0.0867	87	70-130	8	35	mg/kg	06.14.19 07:38	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	89		89		70-130	%	06.14.19 07:38
4-Bromofluorobenzene	110		107		70-130	%	06.14.19 07:38

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

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

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

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

Page 1 of 1

[illegible]

Final 1.000



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 06/13/2019 11:20:00 AM

Work Order #: 627521

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

*Brianna Teel*

Brianna Teel

Date: 06/13/2019

Checklist reviewed by:

*Jessica Kramer*

Jessica Kramer

Date: 06/13/2019

# APPENDIX D



← Camera



Save

📍 WGS84  
±16ft

32.00049, -104.01645

ft  
±10ft

2894

📶 T  
±15

E96



Created with free  
version of GPS  
Camera 55



19Jun19 10:24 Ad-hoc  
© 19-Jun-19 10:24:25



Camera



Save

WGS84  
±16ft

32.00033, -104.01583

ft  
±10ft

2894

°T  
±15

W271



Created with free  
version of GPS  
Camera 55



19Jun19 10:25 Ad-hoc  
© 19-Jun-19 10:25:55

← Camera



Save

WGS84  
±16ft

32.00023, -104.01603

ft  
±10ft

2900

°T  
±15

NW303



Created with free  
version of GPS  
Camera 55



26Jun19 14:20 Ad-hoc  
© 26-Jun-19 14:20:18