SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site & Lease No:	**Copperhead 31 Federal Com #001H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit H**	**Sec. 31**	**T 26S**	**R 29E**		
Lease Number:	**API No. 30-015-38532**					
County:	**Eddy County**					
GPS:	**32.00035**			**-104.01626**		
Surface Owner:	**BLM**					
Mineral Owner:	**Federal**					
Directions:	From the intersection of Hwy 285 and Catfish Rd. head east on Catfish Rd. for 0.87 miles and arrive at location.					

Release Data:		
RP Number	**2RP- 4796**	**2RP-5034**
Date Released:	5/27/2018	10/21/2018
Type Release:	*Produced Water*	Produced Water
Source of Contamination:	*Flowline Rupture*	Flowline Leak at connection
Fluid Released:	*35 bbl*	10 bbls
Fluids Recovered:	*0 bbls*	2 bbls

Official Communication:			
Name:	Ike Tavarez		Clair Gonzales
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		901 West Wall Street
	600 W. Illinois Ave.		Suite 100
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	itavarez@concho.com		Clair.Gonzales@tetratech.com

Site Characterization	
Depth to Groundwater:	*50'-75'*
Karst Potential:	*Medium*

Recommended Remedial Action Levels (RRALs)			
Benzene	***Total BTEX***	***TPH (GRO+DRO+MRO)***	***Chlorides***
10 mg/kg	*50 mg/kg*	*100 mg/kg*	*600 mg/kg*

TETRA TECH

March 18, 2019

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

Re: Work Plan for the COG Operating, LLC, Copperhead 31 Federal Com #001H, Unit H, Section 31, Township 26 South, Range 29 East, Eddy County, New Mexico. 2RP-4796 and 2RP-5034

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess a release that occurred at the Copperhead 31 Federal #001H, Unit H, Section 31, Township 26 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.00035°, -104.01626°. The site location is shown on Figures 1 and 2.

Background

2RP-4796: According to the State of New Mexico C-141 Initial Report, the leak was discovered on May 27, 2018, and released approximately 35 barrels of produced water due to a flowline rupture. The release impacted areas measuring approximately 80' x 37'. The C-141 Form is included in Appendix A. A workplan was submitted and approved but prior to the implementation, a 2nd release occurred and overlapped the original spill print.

2RP-5034: According to the State of New Mexico C-141 Initial Report, the leak was discovered on October 21, 2018, and released approximately 10 barrels of produced water due to a flowline leak at connection. A vacuum truck was dispatched to remove all freestanding fluids. Approximately 2 barrels of produced was recovered. The release impacted areas measuring approximately 95' x 25'. The C-141 Form is included in Appendix A.

Site Characterization

A site characterization was performed for the site and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances.

However, the site is located in a medium karst potential area. No water wells were listed within Section 31 on the New Mexico Office of the State Engineer's (NMOSE) database, the Geology and Groundwater Resources of Eddy County (Report 3), or the USGS National Water Information database. The nearest well is listed in Section 26 on the USGS database, approximately 3.35 miles northeast of the site, and has a reported depth to groundwater of 54.30' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is 25'-50' below surface. The groundwater data is shown in Appendix B

Tetra Tech
901 West Wall, Suite 100, Midland, TX 79701
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, updated August 14, 2018. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the site characterization the proposed RRAL for TPH is 100 mg/kg (GRO+DRO+MRO). Additionally, the proposed RRAL for chlorides is 600 mg/kg.

Soil Assessment and Analytical Results

Tetra Tech personnel were onsite on February14-15 2019, to re-assess the release area. A total of four (4) boreholes (BH-1, BH-2, BH-3, and BH-4) were installed in the spill path area to total depths ranging from 19'-20- to 49'-50' below surface in order to vertically define the chloride concentrations. In addition, a background bore hole was installed to assess the native soils to a total depth of 34'-35' below surface. Selected soil samples were collected and submitted to the laboratory for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix D. Copies of the boring log is included in Appendix C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, the areas of boreholes (BH-1, BH-2, BH-3, and BH-4) showed TPH, benzene, and total BTEX below the laboratory reporting limits. Horizontal samples were taken (HA-1 through HA-10) and showed TPH, benzene, total BTEX, and chloride below the RRALs. The area of borehole (BH-1) showed a high chloride concentration of 6,260 mg/kg at 0-1.0' and 1,190 mg/kg at 24'-25' which declined with depth at 29'-30' with a concentration of 258 mg/kg and showed a concentration of 159 mg/kg at 49'-50' below surface, respectively. The area of borehole (BH-2) showed chloride concentrations ranging from 234 mg/kg to 409 mg/kg from surface to 4'-5' below surface, however, at depths of 6'-7' and 9'-10' showed spiked concentrations of 1,440 mg/kg and 2,020 mg/kg, were detected, which appears to be historical. The chloride concentrations then declined with depth at 14'-15' below surface with a concentration of 157 mg/kg. The areas of boreholes (BH-3 and BH-4) showed chloride concentrations ranging from 543 mg/kg to 4,750 mg/kg, then both declining with depth at 14'-15' below surface with concentrations of 247 mg/kg and 269 mg/kg.

Also, the boreholes (BH-1 through BH-4) showed no moisture or groundwater at any of the borehole locations with the deepest depth at (BH-1) 49'-50' below surface. A background sample was taken to assess the natural soils showing chloride concentrations of 113 mg/kg at 0-1' and 161 mg/kg at 34'-35' below surface, the background bore had no moisture and didn't encounter groundwater.

Work Plan

Based on the laboratory results, COG proposes to remove the chloride impacted soils as shown on Figure 4 and highlighted (green) on Table 1. Due to access issues and safely concerns, the proposed excavation will be performed to remove the impacted soil to the maximum extent practicable. The areas of bore holes (BH-1, BH-2, BH-3, and BH-4) will be excavated to approximately 4.0' below surface.

Variance

Per rule 19.15.29.14, COG requests a variance to install a 20-mil liner at 4.0' below surface in the areas of boreholes (BH-1, BH-2, BH-3, and BH-4), to prevent vertical migration of the deeper chloride concentrations detected. Prior to the liner installation, composite sidewall samples will be collected every 600 square feet, to be representative of the release area, for documentation purposes.

Additionally, the areas of borehole (BH-2) will be excavated to 4'-5' below surface and capped with a 20-mil liner. The excavated material from borehole (BH-2) will be segregated every 50 cubic yards and will be sampled for chlorides by EPA method 300 to confirm and determine if the concentrations are below 600 mg/kg. If the segregated and stockpiled material shows chloride concentrations below 600 mg/kg, the soils will be used to backfill the excavation areas. If samples exceed threshold, the stockpile will be transported to proper disposal. Once completed, the excavated areas will be backfilled with clean material to surface grade. The area of borehole (BH-2) didn't show significant impact from the surface to approximately 4'-5' below surface. Once completed, the excavated areas will then be backfilled with clean material to surface grade.

All the excavated material will be transported offsite for proper disposal. COG estimates approximately 1,500 cubic yards will be excavated and will be implemented within ninety (90) days of the work plan being approved.

Sampling Plan

Five-point composite sidewall confirmation samples will be collected every 600 square feet in order to ensure proper removal of the impacted areas. The proposed excavation depths may not be reached due to wall cave-ins and safety concerns for onsite personnel. Also, impacted soil around oil and gas equipment, structures or lines may not be viable or practicable to be removed due to safely concerns for on-site personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Conclusion

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

Respectfully submitted,
TETRA TECH

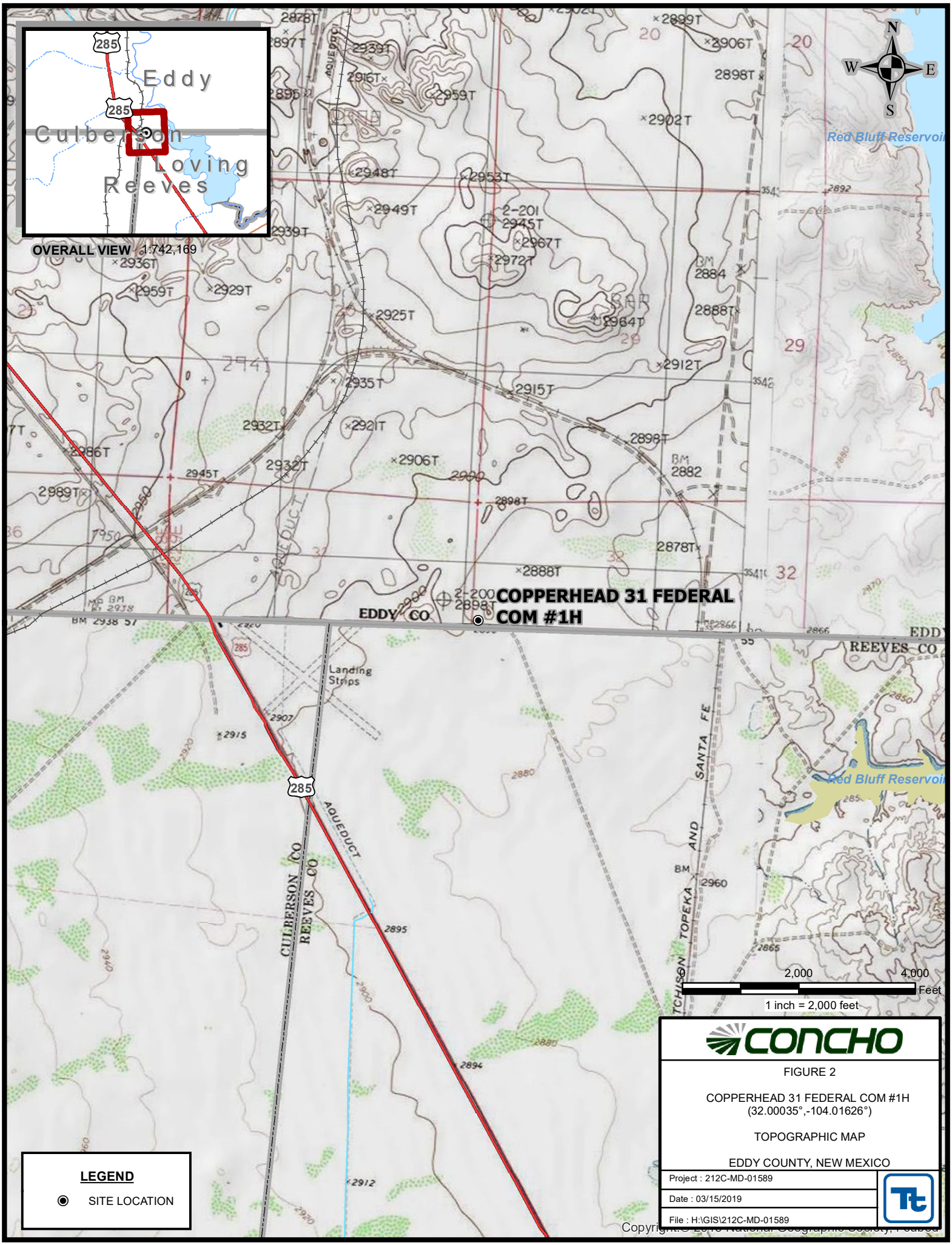
Clair Gonzales,
Project Manager

Mike Carmona,
Geologist

cc: Ike Tavarez - COG
Dakota Neel - COG
Rebecca Haskell - COG
Sheldon Hitchcock - COG
DeAnn Grant - COG

Figures


COPPERHEAD 31
FEDERAL COM #1H
Eddy
Lea
Loving
Culberson
Reeves
NEW MEXICO
TEXAS
Malaga
Orla
Cavern City Air Termin
396
River Village Rd
285
128
652
FM 652 W
FM 652 E
Culberson
Reeves
N
S
E
W
0
20,833
41,666
Feet
1 inch = 20,833 feet
LEGEND
SITE LOCATION
CONCHO
FIGURE 1
COPPERHEAD 31 FEDERAL COM #1H
(32.00035°,-104.01626°)
OVERVIEW MAP
EDDY COUNTY, NEW MEXICO
Project : 212C-MD-01589
Date : 03/15/2019
File : H:\GIS\212C-MD-01589
Sources: Esri, HERE, Garmin,
Japan, METI, Esri China (Hong
OpenStreetMap contributors, and the GIS User Community
MAPPED BY: MISTI MORGAN



CONCHO

FIGURE 2

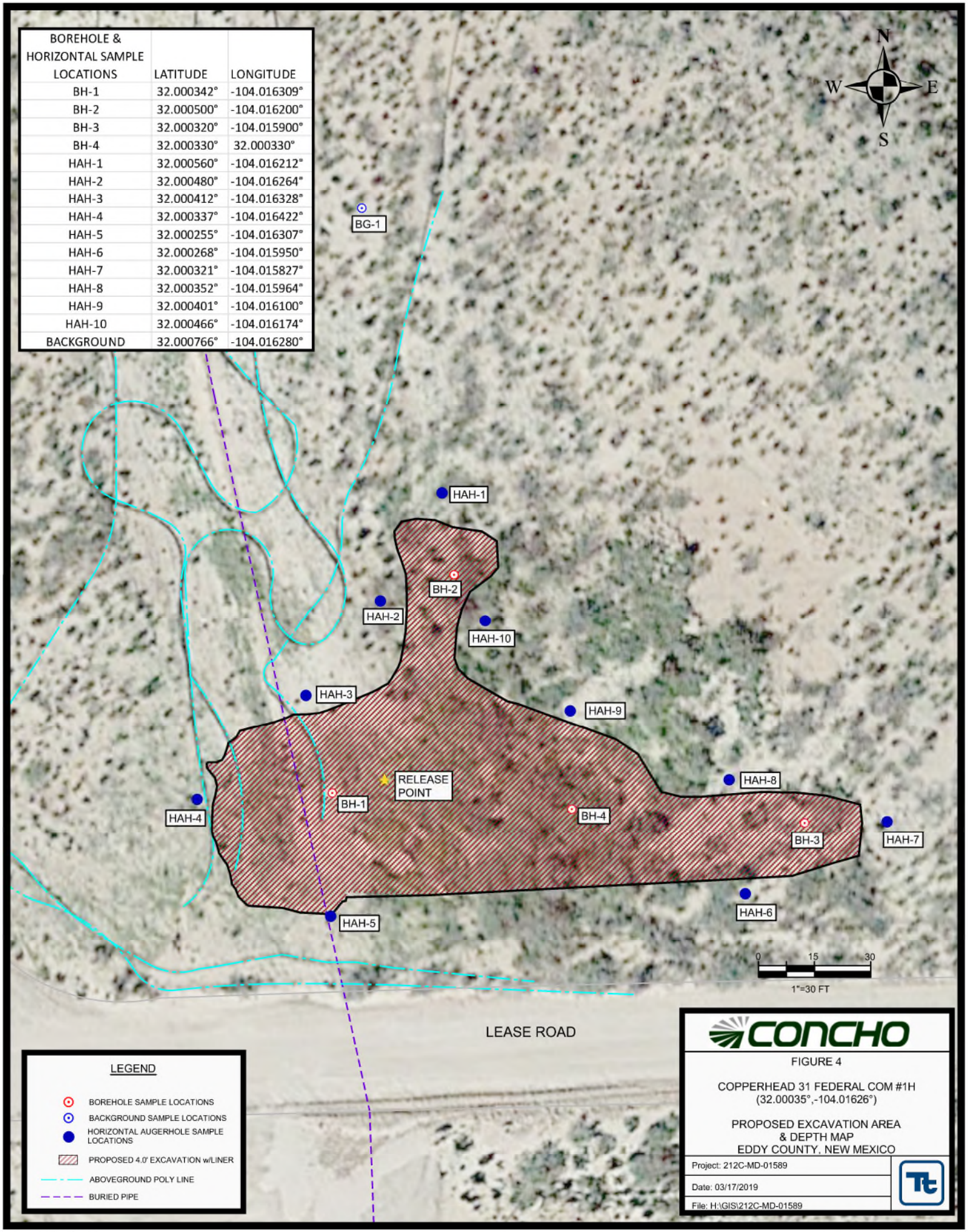
COPPERHEAD 31 FEDERAL COM #1H
(32.00035°,-104.01626°)

TOPOGRAPHIC MAP

EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01589	
Date : 03/15/2019	
File : H:\GIS\212C-MD-01589	

MAPPED BY: MISTI MORGAN


BOREHOLE & HORIZONTAL SAMPLE LOCATIONS | LATITUDE | LONGITUDE
BH-1 | 32.000342° | -104.016309°
BH-2 | 32.000500° | -104.016200°
BH-3 | 32.000320° | -104.015900°
BH-4 | 32.000330° | 32.000330°
HAH-1 | 32.000560° | -104.016212°
HAH-2 | 32.000480° | -104.016264°
HAH-3 | 32.000412° | -104.016328°
HAH-4 | 32.000337° | -104.016422°
HAH-5 | 32.000255° | -104.016307°
HAH-6 | 32.000268° | -104.015950°
HAH-7 | 32.000321° | -104.015827°
HAH-8 | 32.000352° | -104.015964°
HAH-9 | 32.000401° | -104.016100°
HAH-10 | 32.000466° | -104.016174°
BACKGROUND | 32.000766° | -104.016280°
N
W
E
S
BG-1
HAH-1
BH-2
HAH-2
HAH-10
HAH-3
HAH-9
RELEASE POINT
BH-1
HAH-4
BH-4
HAH-8
BH-3
HAH-7
HAH-6
HAH-5
0
15
30
1"=30 FT
LEASE ROAD
LEGEND
BOREHOLE SAMPLE LOCATIONS
BACKGROUND SAMPLE LOCATIONS
HORIZONTAL AUGERHOLE SAMPLE LOCATIONS
PROPOSED 4.0' EXCAVATION w/LINER
ABOVEGROUND POLY LINE
BURIED PIPE
CONCHO
FIGURE 4
COPPERHEAD 31 FEDERAL COM #1H
(32.00035°,-104.01626°)
PROPOSED EXCAVATION AREA
& DEPTH MAP
EDDY COUNTY, NEW MEXICO
Project: 212C-MD-01589
Date: 03/17/2019
File: H:\GIS\212C-MD-01589
Drawn By: MISTI MORGAN

Tables

Table 1
COG
Copperhead 31 Fed Com #1H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	ORO	Total						
BH-1	2/14/2019	0-1	X		<15.0	39.3	<15.0	39.3	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	**6,260**
	"	2-3	X		<14.9	<14.9	<14.9	<14.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	**7,610**
	"	4-5	X		-	-	-	-	-	-	-	-	-	**2,810**
	"	6-7	X		-	-	-	-	-	-	-	-	-	**1,710**
	"	9-10	X		-	-	-	-	-	-	-	-	-	287
	"	14-15	X		-	-	-	-	-	-	-	-	-	**1,140**
	"	19-20	X		-	-	-	-	-	-	-	-	-	**643**
	"	24-25	X		-	-	-	-	-	-	-	-	-	**1,190**
	"	29-30	X		-	-	-	-	-	-	-	-	-	258
	"	34-35	X		-	-	-	-	-	-	-	-	-	469
	"	39-40	X		-	-	-	-	-	-	-	-	-	229
	"	44-45	X		-	-	-	-	-	-	-	-	-	203
	"	49-50	X		-	-	-	-	-	-	-	-	-	159
BH-2	2/14/2019	0-1	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	409
	"	2-3	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	234
	"	4-5	X		-	-	-	-	-	-	-	-	-	259
	"	6-7	X		-	-	-	-	-	-	-	-	-	**1,440**
	"	9-10	X		-	-	-	-	-	-	-	-	-	**2,020**
	"	14-15	X		-	-	-	-	-	-	-	-	-	157
	"	19-20	X		-	-	-	-	-	-	-	-	-	136

Table 1
COG
Copperhead 31 Fed Com #1H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	ORO	Total						
BH-3	2/15/2019	0-1	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	**772**
	"	2-3	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	543
	"	4-5	X		-	-	-	-	-	-	-	-	-	**1,050**
	"	6-7	X		-	-	-	-	-	-	-	-	-	**2,080**
	"	9-10	X		-	-	-	-	-	-	-	-	-	**3,220**
	"	14-15	X		-	-	-	-	-	-	-	-	-	247
	"	19-20	X		-	-	-	-	-	-	-	-	-	93.8
BH-4	2/15/2019	0-1	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**4,750**
	"	2-3	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**2,310**
	"	4-5	X		-	-	-	-	-	-	-	-	-	**3,600**
	"	6-7	X		-	-	-	-	-	-	-	-	-	**3,060**
	"	9-10	X		-	-	-	-	-	-	-	-	-	**4,190**
	"	14-15	X		-	-	-	-	-	-	-	-	-	269
	"	19-20	X		-	-	-	-	-	-	-	-	-	528

Table 1
COG
Copperhead 31 Fed Com #1H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	ORO	Total						
HA-1	2/15/2019	-	X		<14.9	<14.9	<14.9	<14.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	224
HA-2	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	202
HA-3	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	57.6
HA-4	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	122
HA-5	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	54.0
HA-6	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	74.6
HA-7	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<5.00
HA-8	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	191
HA-9	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	143
HA-10	2/15/2019	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	55.1
BG-1	2/15/2019	0-1	X		-	-	-	-	-	-	-	-	-	113
	"	2-3	X		-	-	-	-	-	-	-	-	-	193
	"	4-5	X		-	-	-	-	-	-	-	-	-	58.8
	"	6-7	X		-	-	-	-	-	-	-	-	-	167
	"	9-10	X		-	-	-	-	-	-	-	-	-	185
	"	14-15	X		-	-	-	-	-	-	-	-	-	98.8
	"	19-20	X		-	-	-	-	-	-	-	-	-	181
	"	24-25	X		-	-	-	-	-	-	-	-	-	164
	"	29-20	X		-	-	-	-	-	-	-	-	-	123
	"	34-35	X		-	-	-	-	-	-	-	-	-	161

(-) Not Analyzed

Proposed Excavation Depth

Proposed Liner

Photos

COG
Copperhead 31 Fed Com
#1H
Eddy County, New Mexico

View East – Area of BH-1, BH-3, and BH-4

View North – Area of BH-2

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating, LLC (OGRID #229137)	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland, TX 79701	Telephone No. 432-683-7443
Facility Name: **Copperhead 31 Federal Com #001H**	Facility Type: Flowline

Surface Owner: BLM	Mineral Owner: Federal	API No. 30-015-38532

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	31	26S	29E	480	South	480	East	Eddy

Latitude 32.000323 **Longitude** -104.016294 NAD83

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 35 bbl.	Volume Recovered 0 bbl.
Source of Release Flowline Rupture	Date and Hour of Occurrence May 27, 2018 7:30am	Date and Hour of Discovery May 27, 2018 7:30am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher – NMOCD Shelley Tucker – BLM	
By Whom? Dakota Neel	Date and Hour May 27, 2018 12:52pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The release was caused by a pressure rupture in the poly flowline. The flowline is being replaced.

Describe Area Affected and Cleanup Action Taken.*

The release was in the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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

Signature: DeAnn Grant	OIL CONSERVATION DIVISION
Printed Name: DeAnn Grant	Approved by Environmental Specialist:
Title: HSE Administrative Assistant	Approval Date: / Expiration Date:
E-mail Address: agrant@concho.com	Conditions of Approval: / Attached ☐
Date: May 29, 2018 Phone: (432) 253-4513	

* Attach Additional Sheets If Necessary

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	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@concho.com	Incident # *(assigned by OCD)*	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.00035 Longitude -104.01626

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Copperhead 31 Federal Com #001H	Site Type	Tank Battery
Date Release Discovered	October 21, 2018	API# *(if applicable)*	30-015-38532

Unit Letter	Section	Township	Range	County
H	31	26S	29E	Eddy

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
■ Produced Water	Volume Released (bbls) 10	Volume Recovered (bbls) 2
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	■ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a flowline leak at a connection. The connector is being replaced.
The release was in the pasture. A vacuum truck was dispatched to remove all freestanding fluids.
Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

- ■ The source of the release has been stopped.
- ■ The impacted area has been secured to protect human health and the environment.
- ■ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ■ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not 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: DeAnn Grant Title: HSE Administrative Assistant

Signature: DeAnn Grant Date: 10/23/2018

email: agrant@concho.com Telephone: (432) 253-4513

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5034
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?	54' (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☑ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☑ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☑ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☑ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☑ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☑ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☑ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☑ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☑ Yes ☐ No

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

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☑ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☑ Data table of soil contaminant concentration data
- ☑ Depth to water determination
- ☑ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☑ Boring or excavation logs
- ☑ Photographs including date and GIS information
- ☑ Topographic/Aerial maps
- ☑ Laboratory data including chain of custody

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5034
Facility ID	
Application ID	

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature: Date: 3-19-19

email: itavarez@concho.com Telephone: 432-687-2573

OCD Only

Received by: Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5034
Facility ID	
Application ID	

Remediation Plan

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

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

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

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 3-19-19

email: itavarez@concho.com Telephone: 432-685-2573

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

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

25 South 29 East

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

25 South 30 East

6	5	4	3	2 295	1
7 264	8	9 295	10	11	12 390
18	17	16	15	14	13
19	20	21 265 268	22	23	24
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	12 100
18	17	16	15	14 120	13 56
19	20	21	22 120	23	24
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	16 125	15	14	13
19	20	21	22 57 57 69	23	24
30	29	28	27	26 54.30	25
31 Site	32	33	34	35	36

26 South 30 East

6	5 179 180	4	3	2	1
7	8 172	9	10	11	12
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		Depth Well	Depth Water	Water Column
C 01354 X-3		CUB	ED	2	1	3	23	26S	29E	598323	3543837		170		
C 02038		C	ED	3	2	4	26	26S	29E	599204	3541992*		200		
C 03507 POD1		C	ED	1	3	3	05	26S	29E	593064	3548313		140	78	62
C 03508 POD1		C	ED	1	3	3	05	26S	29E	593063	3548361		140	75	65
C 03605 POD1		CUB	ED	4	2	3	27	26S	29E	596990	3541983		45	0	45

Average Depth to Water: **51 feet**

Minimum Depth: **0 feet**

Maximum Depth: **78 feet**

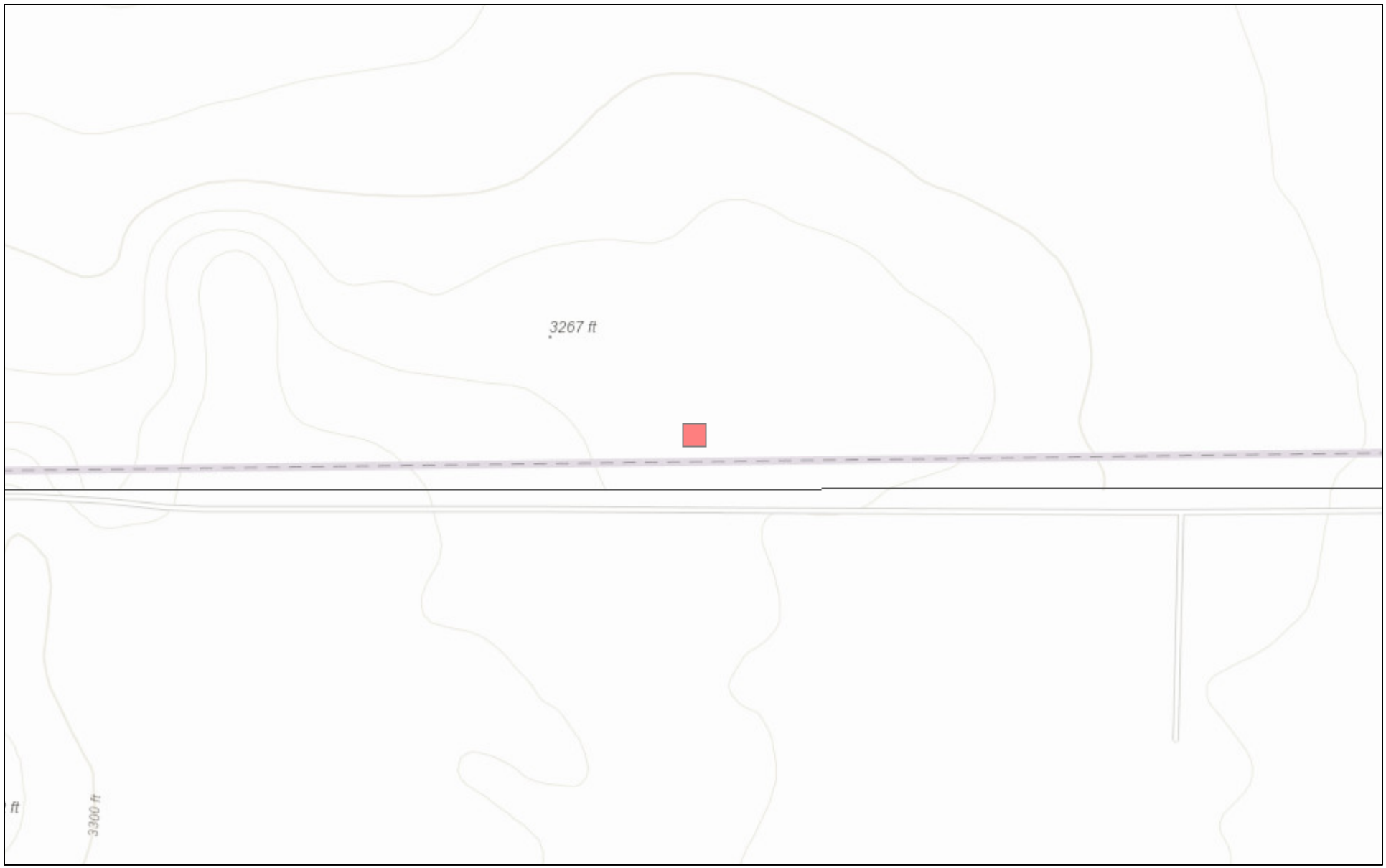
Record Count: 5

PLSS Search:

Township: 26S **Range:** 29E

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

New Mexico NFHL Data



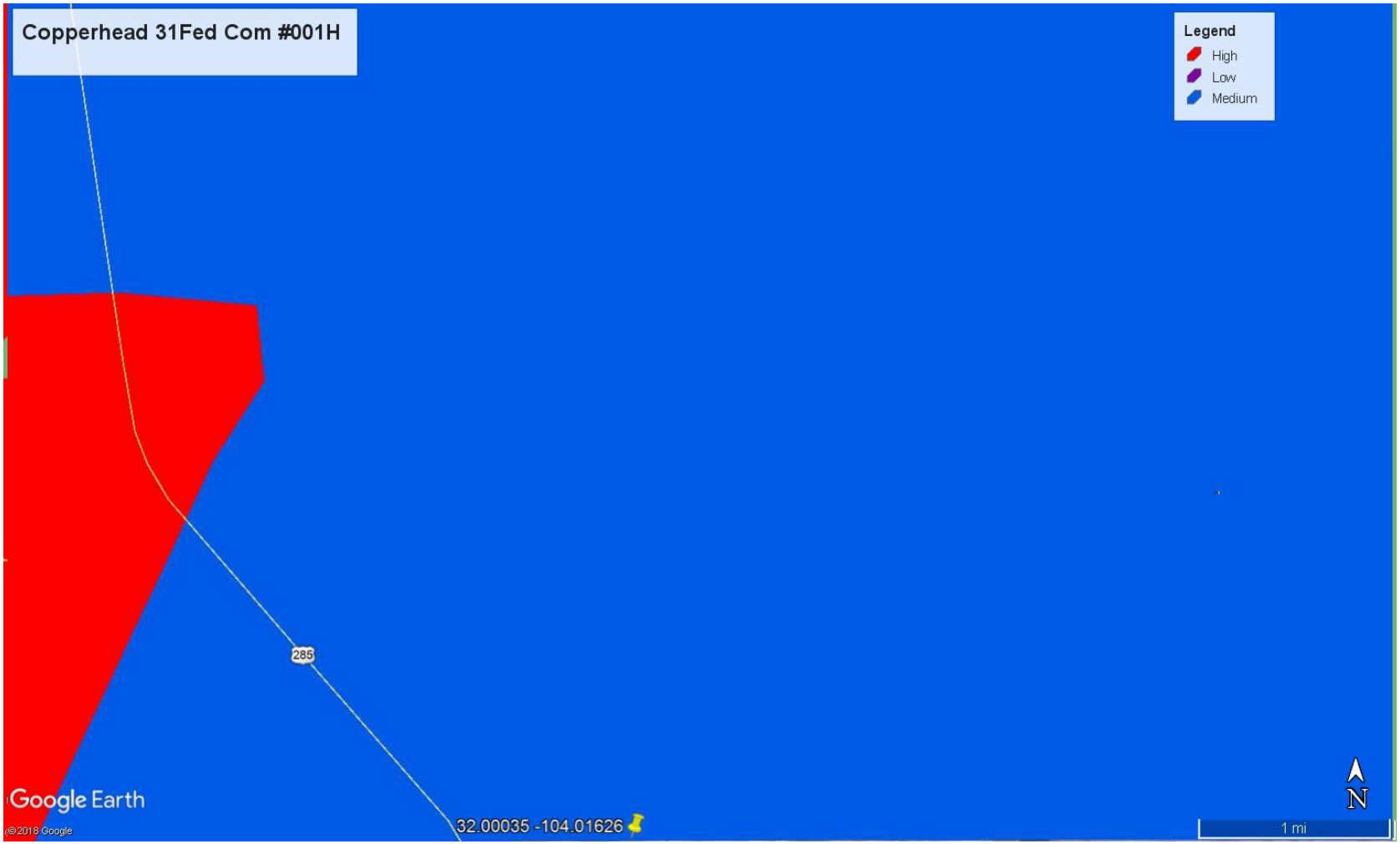
March 18, 2019

1:4,514

0 0.0375 0.075 0.15 mi

0 0.05 0.1 0.2 km

FEMA
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,


Copperhead 31Fed Com #001H
Legend
High
Low
Medium
285
Google Earth
©2018 Google
32.00035 -104.01626
N
1 mi

Appendix C

Client:	**COG**			
Site Name	**Copperhead 31 Fed Com #001H**			
Boring/Well:	**BH-1**			
GPS	**32.000342° -104.016309°**			
Project #:	**212C-MD-01589**			
Total Depth	**50'**			
Date Installed:	**2/15/2019**			
DEPTH (Ft)	**Lithology/Sample Description**	**NOTES**	**Chloride(PPM)**	**Titration (ppm)**
0-1	***Red Silty Sand***	***No odor or Odor***	**4.48 PPT**	**-**
2-3	***Red Silty Sand***	***No Stain or odor***	***6.39 PPT***	**-**
4-5	***Red Silty Sand***	***No Stain or odor***	***5.52 PPT***	**-**
6-7	***Red Silty Sand***	***No Stain or odor***	***3.50 PPT***	**-**
9-10	***Red Silty Sand w/minor rock fragments, Dry***	***No Stain or odor***	***1.64 PPT***	**-**
14-15	***Red Clayey Sand , Dry***	***No Stain or odor***	***2.46 PPT***	**-**
19-20	***Red Silt Sand Clay w/gypsum fragments, Dry***	***No Stain or odor***	***1.93 PPT***	***1,040***
24-25	***Red Silt Sand Clay w/gypsum fragments, Dry***	***No Stain or odor***	***1.67 PPT***	***1,120***
29-30	***Red Silt Sand Clay w/gypsum fragments, Dry***	***No Stain or odor***	***1.51 PPT***	***960***
34-35	***Red Silt Sand Clay w/gypsum fragments, Dry***	***No Stain or odor***	***969 PPT***	***920***
39-40	***Red Silt Sand Clay w/gypsum fragments, Dry***	***No Stain or odor***	***1.12 PPT***	***800***
44-45	***Red Silt Sand Clay w/gypsum fragments,Dry***	***No Stain or odor***	***1.34 PPT***	***600***
49-50	***Red Silt Sand Clay w/gypsum fragments/Dry***	***No Stain or odor***	***1.29 PPT***	***520***

Client:	COG			
Site Name	Copperhead 31 Fed Com #001H			
Boring/Well:	BH-2			
GPS	32.000500° -104.016200°			
Project #:	212C-MD-01589			
Total Depth	20'			
Date Installed:	2/15/2019			
DEPTH (Ft)	**Lithology/Sample Description**	**NOTES**	**Chloride(PPM)**	**Titration (ppm)**
0-1	*Brown Silty Sandy Clay/Dry*	*No odor or Odor*	1.92 PPT	-
2-3	*Brown Silty Sandy Clay/Dry*	*No Stain or odor*	*942 PPM*	-
4-5	*Red Silty Sandy Clay/Dry*	*No Stain or odor*	*2.81 PPT*	-
6-7	*Red Silty Sandy Clay/Dry*	*No Stain or odor*	*3.14 PPT*	-
9-10	*Red Silty Sandy Clay/Dry*	*No Stain or odor*	*3.44 PPT*	-
14-15	*Red Silty Sandy Clay/Dry*	*No Stain or odor*	*595 PPM*	360
19-20	*Red Silty Sandy Clay/Dry*	*No Stain or odor*	*598 PPM*	*320*

Client:	**COG**			
Site Name	**Copperhead 31 Fed Com #001H**			
Boring/Well:	**BH-3**			
GPS	**32.000320° -104.015900°**			
Project #:	**212C-MD-01589**			
Total Depth	**20'**			
Date Installed:	**2/15/2019**			

DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Titration (ppm)
0-1	***Brown Sandy Silt w/gravel fragments/Dry***	***No odor or Odor***	**1.70 PPT**	**-**
2-3	***Red Sand Clayey Silt/Dry***	***No Stain or odor***	***1.39 PPT***	**-**
4-5	***Red Sandy Silty Clay/Dry***	***No Stain or odor***	***2.24 PPT***	**-**
6-7	***Red Sandy Silty Clay/Dry***	***No Stain or odor***	***3.10 PPT***	**-**
9-10	***Red Sandy Silty Clay/Dry***	***No Stain or odor***	***3.95 PPT***	**-**
14-15	***White Chalkey Gypsum/Dry***	***No Stain or odor***	***1.23 PPT***	**480**
19-20	***White Chalkey Gypsum/Dry***	***No Stain or odor***	***1.11 PPT***	***320***

Client:	COG			
Site Name	Copperhead 31 Fed Com #001H			
Boring/Well:	BH-4			
GPS	32.000330° -104.016100°			
Project #:	212C-MD-01589			
Total Depth	20'			
Date Installed:	2/15/2019			

DEPTH (Ft)	Lithology/Sample Description	NOTES	Chloride(PPM)	Titration (ppm)
0-1	*Brown Sandy Silt w/gravel fragments/Dry*	*No odor or Odor*	1.92 PPT	-
2-3	*Red Sandy Silty Clay/Dry*	*No Stain or odor*	*2.04 PPT*	-
4-5	*Red Sandy Silty Clay/Dry*	*No Stain or odor*	*2.25 PPT*	-
6-7	*Red Sandy Silty Clay/Dry*	*No Stain or odor*	*4.22 PPT*	-
9-10	*Red Sandy Silty Clay/Dry*	*No Stain or odor*	*4.38 PPT*	-
14-15	*Red Sandy Silty Clay w/gypsum/Dry*	*No Stain or odor*	*1.35 PPT*	520
19-20	*Red Sandy Silty Clay w/gypsum/Dry*	*No Stain or odor*	*1.29 PPT*	*520*

Appendix D

Analytical Report 614869

for

Tetra Tech- Midland

Project Manager: Clair Gonzales

Copperhead 31 Fed Com #15H (10-21-18)

212C-MD-01589

21-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

21-FEB-19

Project Manager: **Clair Gonzales**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **614869**
Copperhead 31 Fed Com #15H (10-21-18)
Project Address: Eddy County, New Mexico

Clair Gonzales:

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) 614869. 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. 614869 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

Jessica Kramer
Project Assistant

Sample Cross Reference 614869

Tetra Tech- Midland, Midland, TX

Copperhead 31 Fed Com #15H (10-21-18)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 (0-1)	S	02-14-19 00:00		614869-001
BH-1 (2-3)	S	02-14-19 00:00		614869-002
BH-1 (4-5)	S	02-14-19 00:00		614869-003
BH-1 (6-7)	S	02-14-19 00:00		614869-004
BH-1 (9-10)	S	02-14-19 00:00		614869-005
BH-1 (14-15)	S	02-14-19 00:00		614869-006
BH-1 (19-20)	S	02-14-19 00:00		614869-007
BH-1 (24-25)	S	02-14-19 00:00		614869-008
BH-1 (29-30)	S	02-14-19 00:00		614869-009
BH-1 (34-35)	S	02-14-19 00:00		614869-010
BH-1 (39-40)	S	02-14-19 00:00		614869-011
BH-1 (44-45)	S	02-14-19 00:00		614869-012
BH-1 (49-50)	S	02-14-19 00:00		614869-013
BH-2 (0-1)	S	02-14-19 00:00		614869-014
BH-2 (2-3)	S	02-14-19 00:00		614869-015
BH-2 (4-5)	S	02-14-19 00:00		614869-016
BH-2 (6-7)	S	02-14-19 00:00		614869-017
BH-2 (9-10)	S	02-14-19 00:00		614869-018
BH-2 (14-15)	S	02-14-19 00:00		614869-019
BH-2 (19-20)	S	02-14-19 00:00		614869-020
BH-3 (0-1)	S	02-15-19 00:00		614869-021
BH-3 (2-3)	S	02-15-19 00:00		614869-022
BH-3 (4-5)	S	02-15-19 00:00		614869-023
BH-3(6-7)	S	02-15-19 00:00		614869-024
BH-3 (9-10)	S	02-15-19 00:00		614869-025
BH-3 (14-15)	S	02-15-19 00:00		614869-026
BH-3 (19-20)	S	02-15-19 00:00		614869-027
BH-4 (0-1)	S	02-15-19 00:00		614869-028
BH-4 (2-3)	S	02-15-19 00:00		614869-029
BH-4 (4-5)	S	02-15-19 00:00		614869-030
BH-4(6-7)	S	02-15-19 00:00		614869-031
BH-4 (9-10)	S	02-15-19 00:00		614869-032
BH-4 (14-15)	S	02-15-19 00:00		614869-033
BH-4 (19-20)	S	02-15-19 00:00		614869-034
HAH-1	S	02-15-19 00:00		614869-035
HAH-2	S	02-15-19 00:00		614869-036
HAH-3	S	02-15-19 00:00		614869-037
HAH-4	S	02-15-19 00:00		614869-038
HAH-5	S	02-15-19 00:00		614869-039
HAH-6	S	02-15-19 00:00		614869-040
HAH-7	S	02-15-19 00:00		614869-041
HAH-8	S	02-15-19 00:00		614869-042
HAH-9	S	02-15-19 00:00		614869-043

HAH-10	S	02-15-19 00:00	614869-044

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3079640 Chloride by EPA 300
Nitrite as N Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits.
Samples in the analytical batch are: 614869-007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026

Lab Sample ID 614869-017 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 614869-007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3079649 Chloride by EPA 300
Lab Sample ID 614869-037 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 614869-027, -028, -029, -030, -031, -032, -033, -034, -035, -036, -037, -038, -039, -040, -041, -042, -043, -044.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3079858 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-001		614869-002		614869-003		614869-004		614869-005		614869-006	
	Field Id:	BH-1 (0-1)		BH-1 (2-3)		BH-1 (4-5)		BH-1 (6-7)		BH-1 (9-10)		BH-1 (14-15)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-20-19 13:00		Feb-20-19 13:00									
	Analyzed:	Feb-20-19 19:09		Feb-20-19 19:30									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		<0.00201	0.00201	<0.00199	0.00199								
Toluene		<0.00201	0.00201	<0.00199	0.00199								
Ethylbenzene		<0.00201	0.00201	<0.00199	0.00199								
m,p-Xylenes		<0.00402	0.00402	<0.00398	0.00398								
o-Xylene		<0.00201	0.00201	<0.00199	0.00199								
Total Xylenes		<0.00201	0.00201	<0.00199	0.00199								
Total BTEX		<0.00201	0.00201	<0.00199	0.00199								
Chloride by EPA 300	***Extracted:***	Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00	
	Analyzed:	Feb-18-19 17:22		Feb-18-19 17:28		Feb-18-19 17:34		Feb-18-19 17:41		Feb-19-19 09:17		Feb-18-19 17:53	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		6260	49.5	7610	49.9	2810	100	1710	49.9	287	4.97	1140	24.8
TPH by SW8015 Mod	***Extracted:***	Feb-18-19 15:00		Feb-18-19 15:00									
	Analyzed:	Feb-18-19 22:14		Feb-18-19 23:13									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<14.9	14.9								
Diesel Range Organics (DRO)		39.3	15.0	<14.9	14.9								
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<14.9	14.9								
Total TPH		39.3	15.0	<14.9	14.9								

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-007		614869-008		614869-009		614869-010		614869-011		614869-012	
	Field Id:	BH-1 (19-20)		BH-1 (24-25)		BH-1 (29-30)		BH-1 (34-35)		BH-1 (39-40)		BH-1 (44-45)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00	
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00	
	Analyzed:	Feb-18-19 18:33		Feb-18-19 18:52		Feb-18-19 18:58		Feb-18-19 19:04		Feb-18-19 19:10		Feb-18-19 19:32	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		643	24.9	1190	25.0	258	24.8	469	4.95	229	4.95	203	4.95

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-013		614869-014		614869-015		614869-016		614869-017		614869-018	
	Field Id:	BH-1 (49-50)		BH-2 (0-1)		BH-2 (2-3)		BH-2 (4-5)		BH-2 (6-7)		BH-2 (9-10)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00		Feb-14-19 00:00	
BTEX by EPA 8021B	***Extracted:***			Feb-20-19 13:00		Feb-20-19 13:00							
	Analyzed:			Feb-20-19 19:51		Feb-20-19 20:12							
	Units/RL:			mg/kg	RL	mg/kg	RL						
Benzene				<0.00200	0.00200	<0.00201	0.00201						
Toluene				<0.00200	0.00200	<0.00201	0.00201						
Ethylbenzene				<0.00200	0.00200	<0.00201	0.00201						
m,p-Xylenes				<0.00400	0.00400	<0.00402	0.00402						
o-Xylene				<0.00200	0.00200	<0.00201	0.00201						
Total Xylenes				<0.00200	0.00200	<0.00201	0.00201						
Total BTEX				<0.00200	0.00200	<0.00201	0.00201						
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00	
	Analyzed:	Feb-18-19 19:38		Feb-18-19 19:44		Feb-18-19 19:50		Feb-19-19 09:24		Feb-18-19 20:03		Feb-18-19 20:21	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		159	5.00	409	4.99	234	4.97	259	5.01	1440	25.0	2020	24.9
TPH by SW8015 Mod	***Extracted:***			Feb-18-19 15:00		Feb-18-19 15:00							
	Analyzed:			Feb-18-19 23:32		Feb-18-19 23:52							
	Units/RL:			mg/kg	RL	mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)				<15.0	15.0	<15.0	15.0						
Diesel Range Organics (DRO)				<15.0	15.0	<15.0	15.0						
Motor Oil Range Hydrocarbons (MRO)				<15.0	15.0	<15.0	15.0						
Total TPH				<15.0	15.0	<15.0	15.0						

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-019		614869-020		614869-021		614869-022		614869-023		614869-024	
	Field Id:	BH-2 (14-15)		BH-2 (19-20)		BH-3 (0-1)		BH-3 (2-3)		BH-3 (4-5)		BH-3(6-7)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-14-19 00:00		Feb-14-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00	
BTEX by EPA 8021B	***Extracted:***					Feb-20-19 13:00		Feb-20-19 13:00					
	Analyzed:					Feb-20-19 20:33		Feb-20-19 20:55					
	Units/RL:					mg/kg	RL	mg/kg	RL				
Benzene						<0.00199	0.00199	<0.00200	0.00200				
Toluene						<0.00199	0.00199	<0.00200	0.00200				
Ethylbenzene						<0.00199	0.00199	<0.00200	0.00200				
m,p-Xylenes						<0.00398	0.00398	<0.00401	0.00401				
o-Xylene						<0.00199	0.00199	<0.00200	0.00200				
Total Xylenes						<0.00199	0.00199	<0.00200	0.00200				
Total BTEX						<0.00199	0.00199	<0.00200	0.00200				
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:00	
	Analyzed:	Feb-18-19 20:27		Feb-18-19 20:49		Feb-18-19 20:55		Feb-18-19 21:01		Feb-18-19 21:07		Feb-18-19 21:14	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		157	4.98	136	4.98	772	4.98	543	4.96	1050	49.6	2080	24.8
TPH by SW8015 Mod	***Extracted:***					Feb-18-19 15:00		Feb-18-19 15:00					
	Analyzed:					Feb-19-19 00:11		Feb-19-19 00:31					
	Units/RL:					mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)						<15.0	15.0	<15.0	15.0				
Diesel Range Organics (DRO)						<15.0	15.0	<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)						<15.0	15.0	<15.0	15.0				
Total TPH						<15.0	15.0	<15.0	15.0				

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-025		614869-026		614869-027		614869-028		614869-029		614869-030	
	Field Id:	BH-3 (9-10)		BH-3 (14-15)		BH-3 (19-20)		BH-4 (0-1)		BH-4 (2-3)		BH-4 (4-5)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00	
BTEX by EPA 8021B	***Extracted:***							Feb-20-19 13:00		Feb-20-19 13:00			
	Analyzed:							Feb-20-19 21:16		Feb-20-19 21:38			
	Units/RL:							mg/kg	RL	mg/kg	RL		
Benzene								<0.00200	0.00200	<0.00202	0.00202		
Toluene								<0.00200	0.00200	<0.00202	0.00202		
Ethylbenzene								<0.00200	0.00200	<0.00202	0.00202		
m,p-Xylenes								<0.00399	0.00399	<0.00403	0.00403		
o-Xylene								<0.00200	0.00200	<0.00202	0.00202		
Total Xylenes								<0.00200	0.00200	<0.00202	0.00202		
Total BTEX								<0.00200	0.00200	<0.00202	0.00202		
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:00		Feb-18-19 16:00		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30	
	Analyzed:	Feb-18-19 21:20		Feb-19-19 09:30		Feb-19-19 09:36		Feb-18-19 22:31		Feb-18-19 22:37		Feb-18-19 22:43	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3220	24.8	247	4.99	93.8	4.96	4750	49.7	2310	24.8	3600	50.1
TPH by SW8015 Mod	***Extracted:***							Feb-18-19 15:00		Feb-18-19 15:00			
	Analyzed:							Feb-19-19 00:51		Feb-19-19 01:11			
	Units/RL:							mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)								<15.0	15.0	<15.0	15.0		
Diesel Range Organics (DRO)								<15.0	15.0	<15.0	15.0		
Motor Oil Range Hydrocarbons (MRO)								<15.0	15.0	<15.0	15.0		
Total TPH								<15.0	15.0	<15.0	15.0		

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-031		614869-032		614869-033		614869-034		614869-035		614869-036	
	Field Id:	BH-4(6-7)		BH-4 (9-10)		BH-4 (14-15)		BH-4 (19-20)		HAH-1		HAH-2	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00	
BTEX by EPA 8021B	***Extracted:***									Feb-20-19 13:00		Feb-20-19 13:00	
	Analyzed:									Feb-20-19 23:02		Feb-20-19 23:23	
	Units/RL:									mg/kg	RL	mg/kg	RL
Benzene										<0.00199	0.00199	<0.00201	0.00201
Toluene										<0.00199	0.00199	<0.00201	0.00201
Ethylbenzene										<0.00199	0.00199	<0.00201	0.00201
m,p-Xylenes										<0.00398	0.00398	<0.00402	0.00402
o-Xylene										<0.00199	0.00199	<0.00201	0.00201
Total Xylenes										<0.00199	0.00199	<0.00201	0.00201
Total BTEX										<0.00199	0.00199	<0.00201	0.00201
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30	
	Analyzed:	Feb-18-19 23:05		Feb-18-19 23:11		Feb-18-19 23:17		Feb-18-19 23:23		Feb-18-19 22:06		Feb-18-19 23:30	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3060	50.0	4190	49.5	269	25.2	528	25.0	224	4.99	202	5.00
TPH by SW8015 Mod	***Extracted:***									Feb-18-19 15:00		Feb-18-19 15:00	
	Analyzed:									Feb-19-19 01:31		Feb-19-19 01:51	
	Units/RL:									mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)										<14.9	14.9	<15.0	15.0
Diesel Range Organics (DRO)										<14.9	14.9	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)										<14.9	14.9	<15.0	15.0
Total TPH										<14.9	14.9	<15.0	15.0

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614869-037		614869-038		614869-039		614869-040		614869-041		614869-042	
	Field Id:	HAH-3		HAH-4		HAH-5		HAH-6		HAH-7		HAH-8	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-20-19 13:00		Feb-20-19 13:00		Feb-20-19 13:00		Feb-20-19 13:00		Feb-20-19 13:00		Feb-20-19 13:00	
	Analyzed:	Feb-20-19 23:44		Feb-21-19 00:05		Feb-21-19 00:26		Feb-21-19 00:48		Feb-21-19 01:09		Feb-21-19 01:29	
	Units/RL:	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	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Toluene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Ethylbenzene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
m,p-Xylenes		<0.00398	0.00398	<0.00401	0.00401	<0.00399	0.00399	<0.00399	0.00399	<0.00400	0.00400	<0.00402	0.00402
o-Xylene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Total Xylenes		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Total BTEX		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30		Feb-18-19 16:30	
	Analyzed:	Feb-18-19 23:36		Feb-18-19 23:54		Feb-19-19 00:00		Feb-19-19 00:22		Feb-19-19 00:28		Feb-19-19 00:34	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		57.6	4.96	122	5.00	54.0	5.00	74.6	5.00	<5.00	5.00	191	5.00
TPH by SW8015 Mod	***Extracted:***	Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00		Feb-18-19 15:00		Feb-19-19 11:00		Feb-19-19 11:00	
	Analyzed:	Feb-19-19 02:51		Feb-19-19 03:11		Feb-19-19 03:31		Feb-19-19 03:51		Feb-19-19 19:15		Feb-19-19 19:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<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	<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	<15.0	15.0	<15.0	15.0

Certificate of Analysis Summary 614869

Tetra Tech- Midland, Midland, TX

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 21-FEB-19
Project Manager: Jessica Kramer

Analysis Requested									
	Lab Id:	614869-043		614869-044					
	Field Id:	HAH-9		HAH-10					
	Depth:								
	Matrix:	SOIL		SOIL					
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00					
BTEX by EPA 8021B	***Extracted:***	Feb-20-19 13:00		Feb-20-19 13:00					
	Analyzed:	Feb-21-19 01:50		Feb-21-19 02:12					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Benzene		<0.00199	0.00199	<0.00200	0.00200				
Toluene		<0.00199	0.00199	<0.00200	0.00200				
Ethylbenzene		<0.00199	0.00199	<0.00200	0.00200				
m,p-Xylenes		<0.00398	0.00398	<0.00400	0.00400				
o-Xylene		<0.00199	0.00199	<0.00200	0.00200				
Total Xylenes		<0.00199	0.00199	<0.00200	0.00200				
Total BTEX		<0.00199	0.00199	<0.00200	0.00200				
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:30		Feb-18-19 16:30					
	Analyzed:	Feb-19-19 00:41		Feb-19-19 00:47					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Chloride		143	4.98	55.1	4.96				
TPH by SW8015 Mod	***Extracted:***	Feb-19-19 11:00		Feb-19-19 11:00					
	Analyzed:	Feb-19-19 19:55		Feb-19-19 20:15					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0				
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0				
Total TPH		<15.0	15.0	<15.0	15.0				

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

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

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079622 **Sample:** 614869-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 22:14

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.0	99.7	98	70-135	
o-Terphenyl	49.5	49.9	99	70-135	

Lab Batch #: 3079622 **Sample:** 614869-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 23:13

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.9	99.6	100	70-135	
o-Terphenyl	49.7	49.8	100	70-135	

Lab Batch #: 3079622 **Sample:** 614869-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 23:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.2	99.9	98	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 3079622 **Sample:** 614869-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 23:52

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.9	100	70-135	
o-Terphenyl	49.7	50.0	99	70-135	

Lab Batch #: 3079622 **Sample:** 614869-021 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 00:11

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.8	99.7	95	70-135	
o-Terphenyl	47.4	49.9	95	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079622 **Sample:** 614869-022 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 00:31

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.5	100	99	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 3079622 **Sample:** 614869-028 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 00:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	55.9	50.0	112	70-135	

Lab Batch #: 3079622 **Sample:** 614869-029 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 01:11

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.7	99.8	93	70-135	
o-Terphenyl	45.9	49.9	92	70-135	

Lab Batch #: 3079622 **Sample:** 614869-035 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 01:31

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.1	99.6	95	70-135	
o-Terphenyl	45.9	49.8	92	70-135	

Lab Batch #: 3079622 **Sample:** 614869-036 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 01:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.3	99.8	90	70-135	
o-Terphenyl	42.9	49.9	86	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079622 **Sample:** 614869-037 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 02:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.6	99.9	92	70-135	
o-Terphenyl	42.9	50.0	86	70-135	

Lab Batch #: 3079622 **Sample:** 614869-038 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 03:11

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.9	99.7	94	70-135	
o-Terphenyl	45.0	49.9	90	70-135	

Lab Batch #: 3079622 **Sample:** 614869-039 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 03:31

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.2	99.9	91	70-135	
o-Terphenyl	42.0	50.0	84	70-135	

Lab Batch #: 3079622 **Sample:** 614869-040 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 03:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.2	99.8	97	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

Lab Batch #: 3079727 **Sample:** 614869-041 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 19:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.5	99.8	94	70-135	
o-Terphenyl	45.1	49.9	90	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079727 **Sample:** 614869-042 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 19:35

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.4	99.7	94	70-135	
o-Terphenyl	45.3	49.9	91	70-135	

Lab Batch #: 3079727 **Sample:** 614869-043 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 19:55

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.1	100	90	70-135	
o-Terphenyl	42.9	50.0	86	70-135	

Lab Batch #: 3079727 **Sample:** 614869-044 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 20:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.7	99.8	90	70-135	
o-Terphenyl	42.8	49.9	86	70-135	

Lab Batch #: 3079858 **Sample:** 614869-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 19:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	70-130	
4-Bromofluorobenzene	0.0282	0.0300	94	70-130	

Lab Batch #: 3079858 **Sample:** 614869-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 19:30

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0267	0.0300	89	70-130	
4-Bromofluorobenzene	0.0250	0.0300	83	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079858 **Sample:** 614869-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 19:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0260	0.0300	87	70-130	
4-Bromofluorobenzene	0.0283	0.0300	94	70-130	

Lab Batch #: 3079858 **Sample:** 614869-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 20:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0273	0.0300	91	70-130	
4-Bromofluorobenzene	0.0261	0.0300	87	70-130	

Lab Batch #: 3079858 **Sample:** 614869-021 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 20:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0263	0.0300	88	70-130	
4-Bromofluorobenzene	0.0278	0.0300	93	70-130	

Lab Batch #: 3079858 **Sample:** 614869-022 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 20:55

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	0.0300	86	70-130	
4-Bromofluorobenzene	0.0262	0.0300	87	70-130	

Lab Batch #: 3079858 **Sample:** 614869-028 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 21:16

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0266	0.0300	89	70-130	
4-Bromofluorobenzene	0.0263	0.0300	88	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079858 **Sample:** 614869-029 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 21:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0262	0.0300	87	70-130	
4-Bromofluorobenzene	0.0266	0.0300	89	70-130	

Lab Batch #: 3079858 **Sample:** 614869-035 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 23:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	0.0300	93	70-130	
4-Bromofluorobenzene	0.0270	0.0300	90	70-130	

Lab Batch #: 3079858 **Sample:** 614869-036 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 23:23

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	70-130	
4-Bromofluorobenzene	0.0293	0.0300	98	70-130	

Lab Batch #: 3079858 **Sample:** 614869-037 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 23:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	70-130	
4-Bromofluorobenzene	0.0272	0.0300	91	70-130	

Lab Batch #: 3079858 **Sample:** 614869-038 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 00:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0287	0.0300	96	70-130	
4-Bromofluorobenzene	0.0283	0.0300	94	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079858 **Sample:** 614869-039 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 00:26

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0281	0.0300	94	70-130	
4-Bromofluorobenzene	0.0280	0.0300	93	70-130	

Lab Batch #: 3079858 **Sample:** 614869-040 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 00:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	70-130	
4-Bromofluorobenzene	0.0289	0.0300	96	70-130	

Lab Batch #: 3079858 **Sample:** 614869-041 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 01:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	70-130	
4-Bromofluorobenzene	0.0255	0.0300	85	70-130	

Lab Batch #: 3079858 **Sample:** 614869-042 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 01:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0265	0.0300	88	70-130	
4-Bromofluorobenzene	0.0292	0.0300	97	70-130	

Lab Batch #: 3079858 **Sample:** 614869-043 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 01:50

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	70-130	
4-Bromofluorobenzene	0.0260	0.0300	87	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079858 **Sample:** 614869-044 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/19 02:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0256	0.0300	85	70-130	
4-Bromofluorobenzene	0.0288	0.0300	96	70-130	

Lab Batch #: 3079622 **Sample:** 7672047-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/18/19 21:14

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	78.7	100	79	70-135	
o-Terphenyl	39.5	50.0	79	70-135	

Lab Batch #: 3079727 **Sample:** 7672124-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/19/19 12:23

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.2	100	96	70-135	
o-Terphenyl	48.4	50.0	97	70-135	

Lab Batch #: 3079858 **Sample:** 7672200-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/19 18:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	70-130	
4-Bromofluorobenzene	0.0230	0.0300	77	70-130	

Lab Batch #: 3079622 **Sample:** 7672047-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/18/19 21:34

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	59.2	50.0	118	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079727 **Sample:** 7672124-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/19/19 12:43

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	57.6	50.0	115	70-135	

Lab Batch #: 3079858 **Sample:** 7672200-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/19 16:17

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0294	0.0300	98	70-130	
4-Bromofluorobenzene	0.0278	0.0300	93	70-130	

Lab Batch #: 3079622 **Sample:** 7672047-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/18/19 21:54

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	52.4	50.0	105	70-135	

Lab Batch #: 3079727 **Sample:** 7672124-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/19/19 13:03

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	100	123	70-135	
o-Terphenyl	59.4	50.0	119	70-135	

Lab Batch #: 3079858 **Sample:** 7672200-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/19 16:39

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	0.0300	86	70-130	
4-Bromofluorobenzene	0.0285	0.0300	95	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,

Project ID: 212C-MD-01589

Lab Batch #: 3079622 **Sample:** 614869-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 22:34

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.7	118	70-135	
o-Terphenyl	50.6	49.9	101	70-135	

Lab Batch #: 3079727 **Sample:** 614850-021 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 13:42

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.8	119	70-135	
o-Terphenyl	57.0	49.9	114	70-135	

Lab Batch #: 3079858 **Sample:** 615142-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/19 17:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0368	0.0300	123	70-130	
4-Bromofluorobenzene	0.0301	0.0300	100	70-130	

Lab Batch #: 3079622 **Sample:** 614869-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/18/19 22:53

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	99.8	116	70-135	
o-Terphenyl	51.1	49.9	102	70-135	

Lab Batch #: 3079727 **Sample:** 614850-021 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/19/19 14:02

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	99.8	121	70-135	
o-Terphenyl	57.1	49.9	114	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Orders : 614869,
Project ID: 212C-MD-01589
Lab Batch #: 3079858 **Sample:** 615142-001 SD / MSD **Batch:** 1 **Matrix:** Soil
Units: mg/kg **Date Analyzed:** 02/20/19 17:22

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0360	0.0300	120	70-130	
4-Bromofluorobenzene	0.0302	0.0300	101	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order #: 614869 **Project ID:** 212C-MD-01589

Analyst: SCM **Date Prepared:** 02/20/2019 **Date Analyzed:** 02/20/2019

Lab Batch ID: 3079858 **Sample:** 7672200-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.118	118	0.101	0.107	106	10	70-130	35	
Toluene	<0.00200	0.100	0.0889	89	0.101	0.0971	96	9	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0977	98	0.101	0.0999	99	2	70-130	35	
m,p-Xylenes	<0.00400	0.200	0.212	106	0.201	0.218	108	3	70-130	35	
o-Xylene	<0.00200	0.100	0.0941	94	0.101	0.0946	94	1	70-130	35	

Analyst: CHE **Date Prepared:** 02/18/2019 **Date Analyzed:** 02/18/2019

Lab Batch ID: 3079634 **Sample:** 7672050-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	259	104	250	249	100	4	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order #: 614869 **Project ID:** 212C-MD-01589

Analyst: CHE **Date Prepared:** 02/18/2019 **Date Analyzed:** 02/18/2019

Lab Batch ID: 3079640 **Sample:** 7672051-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	249	100	250	272	109	9	90-110	20	

Analyst: CHE **Date Prepared:** 02/18/2019 **Date Analyzed:** 02/18/2019

Lab Batch ID: 3079649 **Sample:** 7672052-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	262	105	250	259	104	1	90-110	20	

Analyst: ARM **Date Prepared:** 02/18/2019 **Date Analyzed:** 02/18/2019

Lab Batch ID: 3079622 **Sample:** 7672047-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1020	102	1000	872	87	16	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1170	117	1000	979	98	18	70-135	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order #: 614869 **Project ID:** 212C-MD-01589

Analyst: ARM **Date Prepared:** 02/19/2019 **Date Analyzed:** 02/19/2019

Lab Batch ID: 3079727 **Sample:** 7672124-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	905	91	1000	947	95	5	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	902	90	1000	933	93	3	70-135	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order # : 614869 **Project ID:** 212C-MD-01589

Lab Batch ID: 3079858 **QC- Sample ID:** 615142-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/20/2019 **Date Prepared:** 02/20/2019 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0994	0.104	105	0.101	0.105	104	1	70-130	35	
Toluene	<0.00199	0.0994	0.0830	84	0.101	0.0825	82	1	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.0966	97	0.101	0.0922	91	5	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.190	95	0.202	0.176	87	8	70-130	35	
o-Xylene	<0.00199	0.0994	0.0869	87	0.101	0.0839	83	4	70-130	35	

Lab Batch ID: 3079634 **QC- Sample ID:** 614843-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	554	248	1900	543	248	1810	506	5	90-110	20	X

Lab Batch ID: 3079634 **QC- Sample ID:** 614864-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	29800	250	28700	0	250	30200	160	5	90-110	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order # : 614869 **Project ID:** 212C-MD-01589

Lab Batch ID: 3079640 **QC- Sample ID:** 614869-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	643	249	2050	565	249	1960	529	4	90-110	20	X

Lab Batch ID: 3079640 **QC- Sample ID:** 614869-017 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1440	250	2680	496	250	2620	472	2	90-110	20	X

Lab Batch ID: 3079649 **QC- Sample ID:** 614869-035 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	224	250	483	104	250	475	100	2	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Copperhead 31 Fed Com #15H (10-21-18)

Work Order # : 614869 **Project ID:** 212C-MD-01589

Lab Batch ID: 3079649 **QC- Sample ID:** 614869-037 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	57.6	248	359	122	248	344	115	4	90-110	20	X

Lab Batch ID: 3079622 **QC- Sample ID:** 614869-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<7.98	997	866	87	998	944	95	9	70-135	20	
Diesel Range Organics (DRO)	39.3	997	945	91	998	972	93	3	70-135	20	

Lab Batch ID: 3079727 **QC- Sample ID:** 614850-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2019 **Date Prepared:** 02/19/2019 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<7.99	998	964	97	998	975	98	1	70-135	20	
Diesel Range Organics (DRO)	<8.11	998	972	97	998	993	99	2	70-135	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

6148169

Tetra Tech. Inc.

900 West Wall Street, Ste 100
Midland, Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18)		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler

Comments: Run deeper samples if TPH (GRO + DRO + MRO) exceeds 100 mg/kg or mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None		# CONTAINERS	FILTERED (Y/N)	BTEX 8021B	BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride	Sulfate	TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD
	BH-1 (0-1)	2/14/2019			X				X			1	N	X			X											X								
	BH-1 (2-3)	2/14/2019			X				X			1	N	X			X											X								
	BH-1 (4-5)	2/14/2019			X				X			1	N															X								
	BH-1 (6-7)	2/14/2019			X				X			1	N															X								
	BH-1 (9-10)	2/14/2019			X				X			1	N															X								
	BH-1 (14-15)	2/14/2019			X				X			1	N															X								
	BH-1 (19-20)	2/14/2019			X				X			1	N															X								
	BH-1 (24-25)	2/14/2019			X				X			1	N															X								
	BH-1 (29-30)	2/14/2019			X				X			1	N															X								
	BH-1 (34-35)	2/14/2019			X				X			1	N															X								

Relinquished by: Miles Cannon	Date: 2-18-19	Time:	Received by: Robert Date: 2/18/19 Time: 1059
Relinquished by:	Date:	Time:	Received by: Date: Time:
Relinquished by:	Date:	Time:	Received by: Date: Time:

LAB USE ONLY

Sample Temperature 2.3 | 2.0 | -0.1 | 0.0

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

Final 1.000

Analysis Request of Chain of Custody Record

614869

Tetra Tech. Inc.

900 West Wall Street, Ste 100
Midland, Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18)		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler

Comments: Run deeper samples if TPH (GRO + DRO + MRO) exceeds 100 mg/kg or mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)
	BH-1 (39-40)	2/14/2019			X				X			1	N
	BH-1 (44-45)	2/14/2019			X				X			1	N
	BH-1 (49-50)	2/14/2019			X				X			1	N
	BH-2 (0-1)	2/14/2019			X				X			1	N
	BH-2 (2-3)	2/14/2019			X				X			1	N
	BH-2 (4-5)	2/14/2019			X				X			1	N
	BH-2 (6-7)	2/14/2019			X				X			1	N
	BH-2 (9-10)	2/14/2019			X				X			1	N
	BH-2 (14-15)	2/14/2019			X				X			1	N
	BH-2 (19-20)	2/14/2019			X				X			1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

	BTEX 8021B	BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD
																X						
																X						
																X						
	X		X													X						
	X		X													X						
																X						
																X						
																X						
																X						
																X						

Relinquished by: Date: Time: 2-18-19

Received by: Date: Time: 2/18/19 1054

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 2.3/2.2 -0.1 C

REMARKS:

- [ ] STANDARD
- [X] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Analysis Request of Chain of Custody Record

lel48169

Tetra Tech. Inc.

900 West Wall Street, Ste 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18)		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler

Comments: Run deeper samples if TPH (GRO + DRO + MRO) exceeds 100 mg/kg or mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD	
	BH-3 (0-1)	2/15/2019			X				X			1	N	X		X												X						
	BH-3 (2-3)	2/15/2019			X				X			1	N	X		X												X						
	BH-3 (4-5)	2/15/2019			X				X			1	N															X						
	BH-3 (6-7)	2/15/2019			X				X			1	N															X						
	BH-3 (9-10)	2/15/2019			X				X			1	N															X						
	BH-3 (14-15)	2/15/2019			X				X			1	N															X						
	BH-3 (19-20)	2/15/2019			X				X			1	N															X						
	BH-4 (0-1)	2/15/2019			X				X			1	N	X		X												X						
	BH-4 (2-3)	2/15/2019			X				X			1	N	X		X												X						
	BH-4 (4-5)	2/15/2019			X				X			1	N															X						

Relinquished by: mike	Date: 2-18-19	Time:	Received by:	Date: 2/18/19	Time: 1059
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature
2.3 | 2.2
-0.1 | 0

REMARKS:

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

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Analysis Request of Chain of Custody Record

lo149649

Tetra Tech, Inc.

900 West Wall Street, Ste 100
Midland, Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: COG	**Site Manager:** Clair Gonzales
Project Name: Copperhead 31 Fed Com #15H (10-21-18)	
Project Location: (county, state) Eddy County, New Mexico	**Project #:** 212C-MD-01589
Invoice to: COG - Ike Taveraz	
Receiving Laboratory: Xenco	**Sampler Signature:** Joe Tyler

Comments: Run deeper samples if TPH (GRO + DRO + MRO) exceeds 100 mg/kg or mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B / BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD
	BH-4 (6-7)	2/15/2019			X				X			1	N															X						
	BH-4 (9-10)	2/15/2019			X				X			1	N															X						
	BH-4 (14-15)	2/15/2019			X				X			1	N															X						
	BH-4 (19-20)	2/15/2019			X				X			1	N															X						
	HAH-1	2/15/2019			X				X			1	N	X		X												X						
	HAH-2	2/15/2019			X				X			1	N	X		X												X						
	HAH-3	2/15/2019			X				X			1	N	X		X												X						
	HAH-4	2/15/2019			X				X			1	N	X		X												X						
	HAH-5	2/15/2019			X				X			1	N	X		X												X						
	HAH-6	2/15/2019			X				X			1	N	X		X												X						

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Page 35 of 37

Relinquished by:	Date: 2-18-19	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: Date: 2/18/19 Time: 1059

LAB USE ONLY

Sample Temperature
2.3 | 2.2
-0.1 IR

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Analysis Request of Chain of Custody Record

6149169

Tetra Tech, Inc.

900 West Wall Street, Ste 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18)		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler

Comments: Run deeper samples if TPH (GRO + DRO + MRO) exceeds 100 mg/kg or mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg.

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)
	HAH-7	2/15/2019			X				X			1	N
	HAH-8	2/15/2019			X				X			1	N
	HAH-9	2/15/2019			X				X			1	N
	HAH-10	2/15/2019			X				X			1	N

BTEX 8021B / BTEX 8260B
TPH TX1005 (Ext to C35)
TPH 8015M (GRO - DRO - ORO - MRO)
PAH 8270C
Total Metals Ag As Ba Cd Cr Pb Se Hg
TCLP Metals Ag As Ba Cd Cr Pb Se Hg
TCLP Volatiles
TCLP Semi Volatiles
RCI
GC/MS Vol. 8260B / 624
GC/MS Semi. Vol. 8270C/625
PCB's 8082 / 608
NORM
PLM (Asbestos)
Chloride 300.0
Chloride Sulfate TDS
General Water Chemistry (see attached list)
Anion/Cation Balance
TPH 8015R
HOLD

Final 1.000

Relinquished by:	Date: 2-18-19	Time:	Received by: Date: 2/18/19 Time: 1559
Relinquished by:	Date:	Time:	Received by: Date: Time:
Relinquished by:	Date:	Time:	Received by: Date: Time:

LAB USE ONLY

Sample Temperature
2.3 / 2.2
-0.1 KE

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 02/18/2019 10:59:00 AM

Work Order #: 614869

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)?	2.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 02/18/2019

Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 02/18/2019

Jessica Kramer

Analytical Report 614870

for

Tetra Tech- Midland

Project Manager: Clair Gonzales

Cooperhead 31 Fed Com #15H (10-21-18)

212C-MD-01589

19-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

19-FEB-19

Project Manager: **Clair Gonzales**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **614870**
Cooperhead 31 Fed Com #15H (10-21-18)
Project Address: Eddy County, New Mexico

Clair Gonzales:

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) 614870. 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. 614870 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

Jessica Kramer
Project Assistant

Sample Cross Reference 614870

Tetra Tech- Midland, Midland, TX

Cooperhead 31 Fed Com #15H (10-21-18)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BG (0-1)	S	02-15-19 00:00		614870-001
BG (2-3)	S	02-15-19 00:00		614870-002
BG (4-5)	S	02-15-19 00:00		614870-003
BG (6-7)	S	02-15-19 00:00		614870-004
BG (9-10)	S	02-15-19 00:00		614870-005
BG (14-5)	S	02-15-19 00:00		614870-006
BG (19-20)	S	02-15-19 00:00		614870-007
BG (24-25)	S	02-15-19 00:00		614870-008
BG (29-30)	S	02-15-19 00:00		614870-009
BG (34-35)	S	02-15-19 00:00		614870-010

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 614870

Tetra Tech- Midland, Midland, TX

Project Name: Cooperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 19-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614870-001		614870-002		614870-003		614870-004		614870-005		614870-006	
	Field Id:	BG (0-1)		BG (2-3)		BG (4-5)		BG (6-7)		BG (9-10)		BG (14-5)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00	
Chloride by EPA 300	***Extracted:***	Feb-18-19 16:30		Feb-18-19 16:30		Feb-19-19 09:30		Feb-19-19 09:30		Feb-19-19 09:30		Feb-19-19 09:30	
	Analyzed:	Feb-19-19 00:53		Feb-19-19 00:59		Feb-19-19 13:31		Feb-19-19 11:21		Feb-19-19 11:27		Feb-19-19 13:37	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		113	4.99	293	24.9	58.8	4.95	167	49.5	185	49.5	98.8	4.95

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 614870

Tetra Tech- Midland, Midland, TX

Project Name: Cooperhead 31 Fed Com #15H (10-21-18)

Project Id: 212C-MD-01589
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Mon Feb-18-19 10:59 am
Report Date: 19-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	614870-007		614870-008		614870-009		614870-010					
	Field Id:	BG (19-20)		BG (24-25)		BG (29-30)		BG (34-35)					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00		Feb-15-19 00:00					
Chloride by EPA 300	***Extracted:***	Feb-19-19 09:30		Feb-19-19 09:30		Feb-19-19 09:30		Feb-19-19 09:30					
	Analyzed:	Feb-19-19 13:43		Feb-19-19 13:49		Feb-19-19 12:04		Feb-19-19 14:08					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		181	4.98	164	5.00	123	24.8	161	4.95				

Jessica Kramer
Project Assistant

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

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

BS / BSD Recoveries

Project Name: Cooperhead 31 Fed Com #15H (10-21-18)

Work Order #: 614870 **Project ID:** 212C-MD-01589

Analyst: CHE **Date Prepared:** 02/18/2019 **Date Analyzed:** 02/18/2019

Lab Batch ID: 3079649 **Sample:** 7672052-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	262	105	250	259	104	1	90-110	20	

Analyst: CHE **Date Prepared:** 02/19/2019 **Date Analyzed:** 02/19/2019

Lab Batch ID: 3079654 **Sample:** 7672053-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	234	94	250	253	101	8	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Cooperhead 31 Fed Com #15H (10-21-18)

Work Order # : 614870 **Project ID:** 212C-MD-01589

Lab Batch ID: 3079649 **QC- Sample ID:** 614869-035 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	224	250	483	104	250	475	100	2	90-110	20	

Lab Batch ID: 3079649 **QC- Sample ID:** 614869-037 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/18/2019 **Date Prepared:** 02/18/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	57.6	248	359	122	248	344	115	4	90-110	20	X

Lab Batch ID: 3079654 **QC- Sample ID:** 614870-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2019 **Date Prepared:** 02/19/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	164	250	438	110	250	417	101	5	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Cooperhead 31 Fed Com #15H (10-21-18)

Work Order # : 614870 **Project ID:** 212C-MD-01589

Lab Batch ID: 3079654 **QC- Sample ID:** 614952-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2019 **Date Prepared:** 02/19/2019 **Analyst:** CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	2160	252	3320	460	252	3440	NC	4	90-110	20	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

614870 Page 1 of 2

Tetra Tech. Inc.

900 West Wall Street, Ste 100
Midland, Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18_		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler
Comments:			

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)
	BG (0-1)	2/15/2019			X				X			1	N
	BG (2-3)	2/15/2019			X				X			1	N
	BG (4-5)	2/15/2019			X				X			1	N
	BG (6-7)	2/15/2019			X				X			1	N
	BG (9-10)	2/15/2019			X				X			1	N
	BG (14-15)	2/15/2019			X				X			1	N
	BG (19-20)	2/15/2019			X				X			1	N
	BG (24-25)	2/15/2019			X				X			1	N
	BG (29-30)	2/15/2019			X				X			1	N
	BG (34-35)	2/15/2019			X				X			1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD
														X						
														X						
														X						
														X						
														X						
														X						
														X						
														X						
														X						
														X						

Relinquished by: Mike Date: 2-18-19 Time:
Received by: Date: 2/18/19 Time: 1059

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

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

LAB USE ONLY

Sample Temperature
2.3 | 2.2
-0.1 NB

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Final 1.000

Page 11 of 13

Analysis Request of Chain of Custody Record

614870

Tetra Tech, Inc.

900 West Wall Street, Ste 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	COG	**Site Manager:**	Clair Gonzales
Project Name:	Copperhead 31 Fed Com #15H (10-21-18_		
Project Location: (county, state)	Eddy County, New Mexico	**Project #:**	212C-MD-01589
Invoice to:	COG - Ike Taveraz		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Joe Tyler
Comments:			

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None		# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R		HOLD	
	BG (0-1)	2/15/2019			X				X			1	N															X						
	BG (2-3)	2/15/2019			X				X			1	N															X						
	BG (4-5)	2/15/2019			X				X			1	N															X						
	BG (6-7)	2/15/2019			X				X			1	N															X						
	BG (9-10)	2/15/2019			X				X			1	N															X						
	BG (14-15)	2/15/2019			X				X			1	N															X						
	BG (19-20)	2/15/2019			X				X			1	N															X						
	BG (24-25)	2/15/2019			X				X			1	N															X						
	BG (29-30)	2/15/2019			X				X			1	N															X						
	BG (34-35)	2/15/2019			X				X			1	N															X						

Relinquished by: mike Cannon	Date: 2-18-19	Time:	Received by: [signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Date: 2/18/19 Time: 1050

LAB USE ONLY

Sample Temperature 3.3/2.2

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

Final 1.000

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 02/18/2019 10:59:00 AM

Work Order #: 614870

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)?	2.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 02/18/2019

Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 02/18/2019

Jessica Kramer