SITE INFORMATION

Report Type: Work Plan 1RP-5255

General Site Information:						
Site:	**Stratocaster 20 Federal #3H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit O**	**Sec. 20**	**T 23S**	**R 34E**		
Lease Number:	**API No. 30-025-41447**					
County:	**Lea County**					
GPS:	**32.283769**			**-103.489961**		
Surface Owner:	**Federal**					
Mineral Owner:						
Directions:	From the intersection of HWY 128 and Delaware Basin Rd travel north on Delaware Basin Rd for 5.10 miles, turn east onto lease road and continue for 0.70 mi to Y in the road and continue northeast for 0.10 mi, turn east for 0.50 mi to location..					

Release Data:	
Date Released:	10/22/2018
Type Release:	Oil and Produced Water
Source of Contamination:	Wellhead
Fluid Released:	3 bbls oil & 3 bbls water
Fluids Recovered:	2 bbls oil & 2 bbls water

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:	*345' below surface*

Recommended Remedial Action Levels (RRALs)				
Benzene	***Total BTEX***	***TPH (GRO+DRO)***	***TPH (GRO+DRO+MRO)***	***Chlorides***
10 mg/kg	*50 mg/kg*	*1,000 mg/kg*	*2,500 mg/kg*	*20,000 mg/kg*

TETRA TECH

January 10, 2019

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

Re: Work Plan for the COG Operating, LLC, Stratocaster 20 Federal #3H, Unit O, Section 20, Township 23 South, Range 34 East, Lea County, New Mexico. 1RP-5255

Ms. Hernandez:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess a release that occurred at the Stratocaster 20 Federal #3H, Unit O, Section 20, Township 23 South, Range 34 East, Lea County, New Mexico (Site). The spill site coordinates are 32.283769°, -103.489961 °. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Report, the release occurred on October 22, 2018, and released approximately 3 barrels of oil and 3 barrels of produced water while tripping out of the hole. A vacuum truck was used to remove all freestanding fluids, recovering approximately 2 barrels of oil and 2 barrels of produced water. The release impacted an area on the pad measuring approximately 45' x 45' and 110' x 160' and overspray from the release impacted an area in the pasture measuring approximately 80' x 145'. 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. Additionally, the site is located in a low karst potential area. No wells are listed in Section 20 on the New Mexico Office of the State Engineer's (NMOSE) database, USGS National Water Information System, or the Geology and Ground-Water Conditions in Southern Lea County, New Mexico (Report 6). The nearest well listed is in Section 16 on the USGS National Water Information System, approximately 0.7 miles north of the site, and has a reported depth to groundwater of 345 feet below surface. The site characterization data is shown in Appendix B.

Tetra Tech
901 West Wall St, 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 1,000 mg/kg (GRO + DRO) and 2,500 mg/kg (GRO+DRO+MRO). Additionally, based on the site characterization, the proposed RRAL for chlorides is 20,00 mg/kg.

Soil Assessment and Analytical Results

Auger Holes

On November 20, 2018, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of seven (7) auger holes (AH-1 through AH-7) were installed in the release footprint and overspray area to total depths ranging from 0-6" and 1.0'-1.5' below surface. Deeper samples were not collected due to a dense formation in the area. 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 C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, none of the samples collected showed benzene, total BTEX, or chloride concentrations above the RRALs. Additionally, the areas of auger holes (AH-1, AH-2, AH-5, AH-6, and AH-7) showed TPH concentrations below the RRALs. However, the areas of auger holes (AH-3 and AH-4) showed TPH (GRO+DRO) concentrations of 3,948 mg/kg (AH-3) and 6,556 mg/kg (AH-4) at 0-6" below surface.

Trenches

Based on the laboratory data, Tetra Tech personnel returned to the site on December 20, 2018 to install two (2) backhoe sample trenches (T-1 and T-2) in the areas of auger holes (AH-3 and AH-4) in order to vertically delineate the TPH concentrations detected. 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 C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, none of the samples analyzed showed TPH, benzene, or total BTEX concentrations above the laboratory reporting limits. Additionally, no chloride concentrations above the RRAL was detected.

TETRA TECH

Work Plan

Based on the laboratory results, COG proposes to scrape the areas of auger holes (AH-3 and AH-4) to approximately 6" below surface to remove the TPH concentrations detected in the surficial soils. Composite confirmation samples will be collected every 400 square feet, to be representative of the release area.

Once the excavation is complete, the areas will be backfilled with clean material to surface grade. COG estimates approximately 200 cubic yards will be excavated, and the remediation to be implemented 90 days after the work plan is approved.

Conclusion

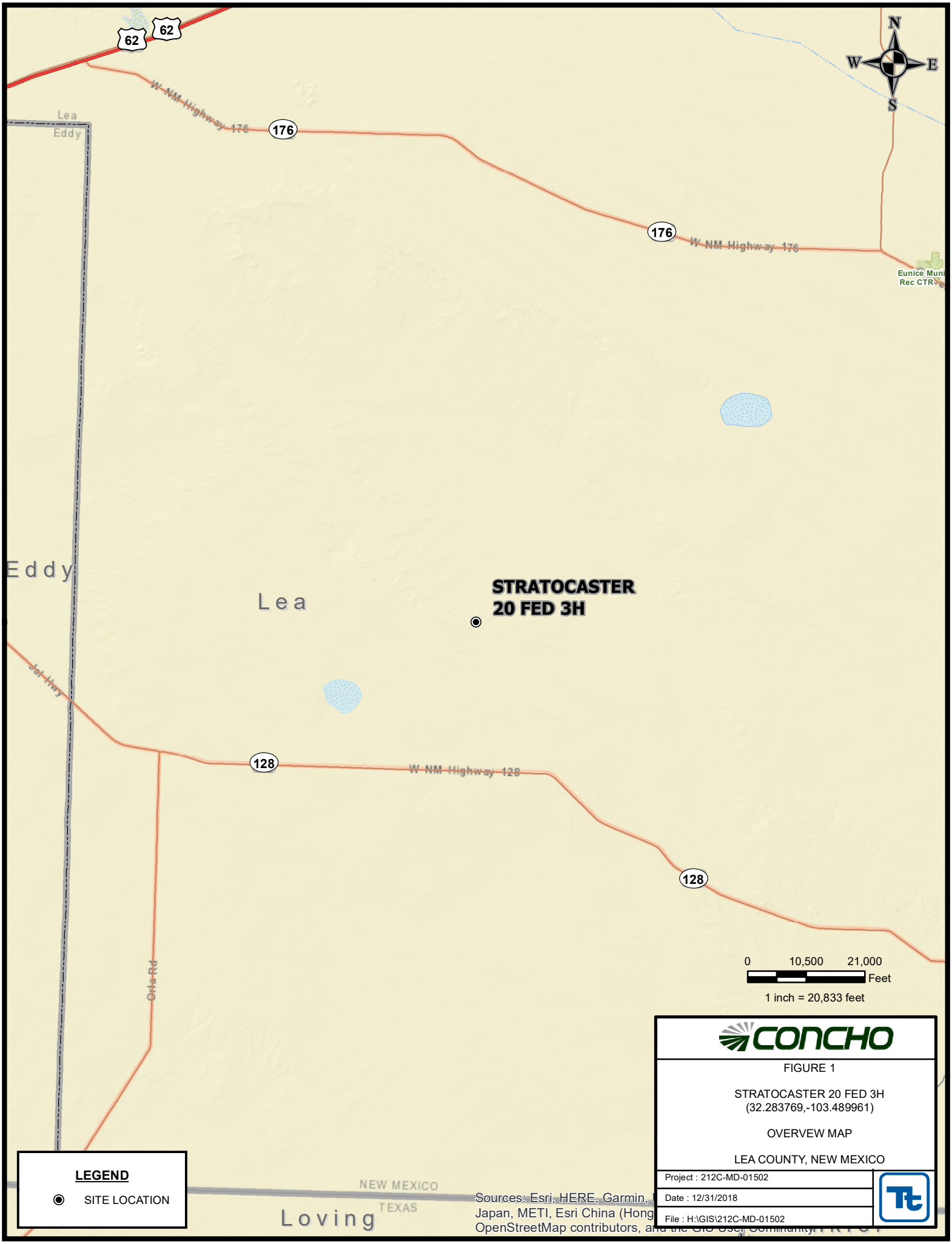
Once the remediation activities have been completed, a final report will be submitted. If you have any questions or comments concerning the assessment or remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

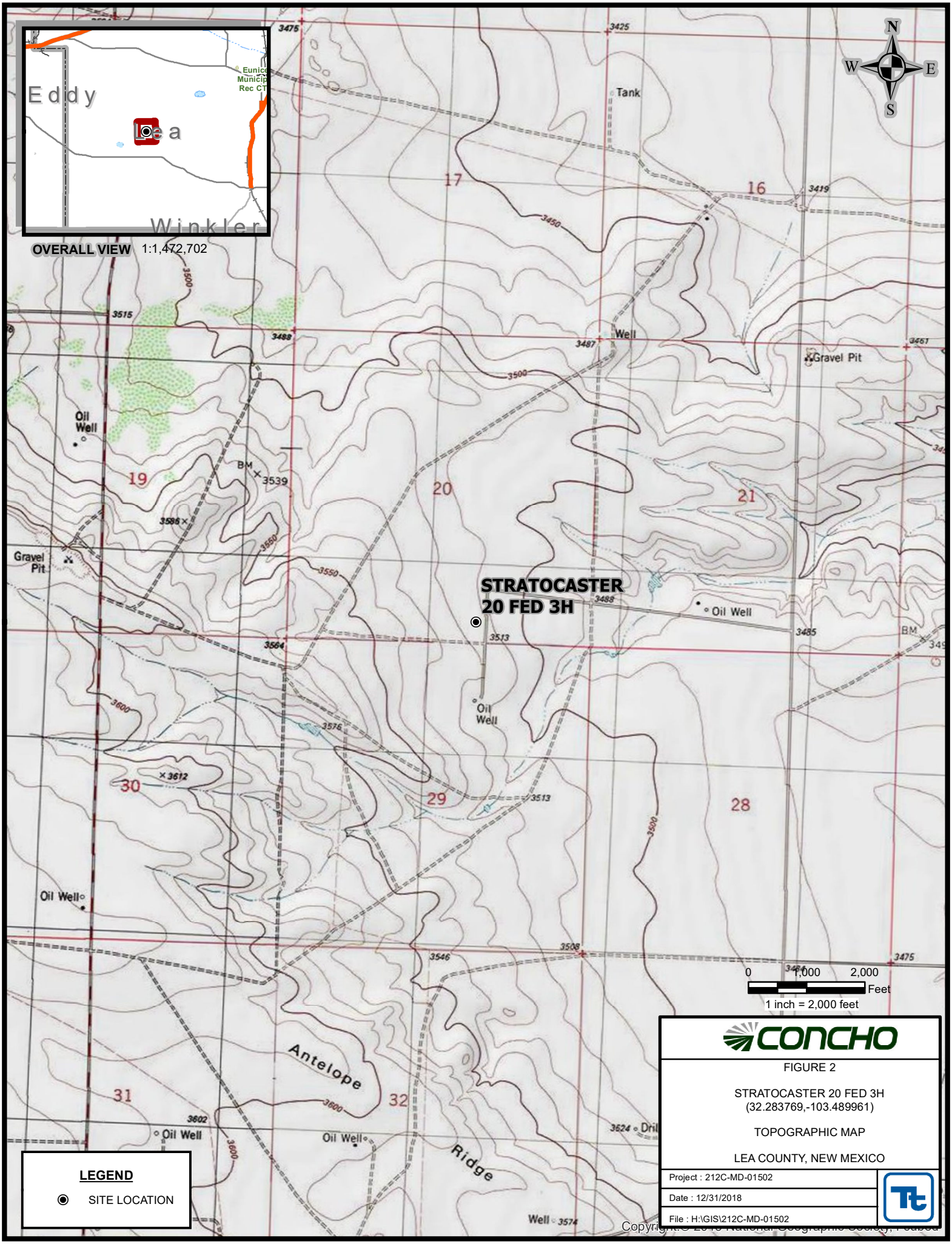
Clair Gonzales,
Project Manager

cc: Shelly Tucker – BLM
Ike Tavarez – COG
Rebecca Haskell – COG
Dakota Neel – COG
Sheldon Hitchcock – COG
Deann Grant - COG

Figures

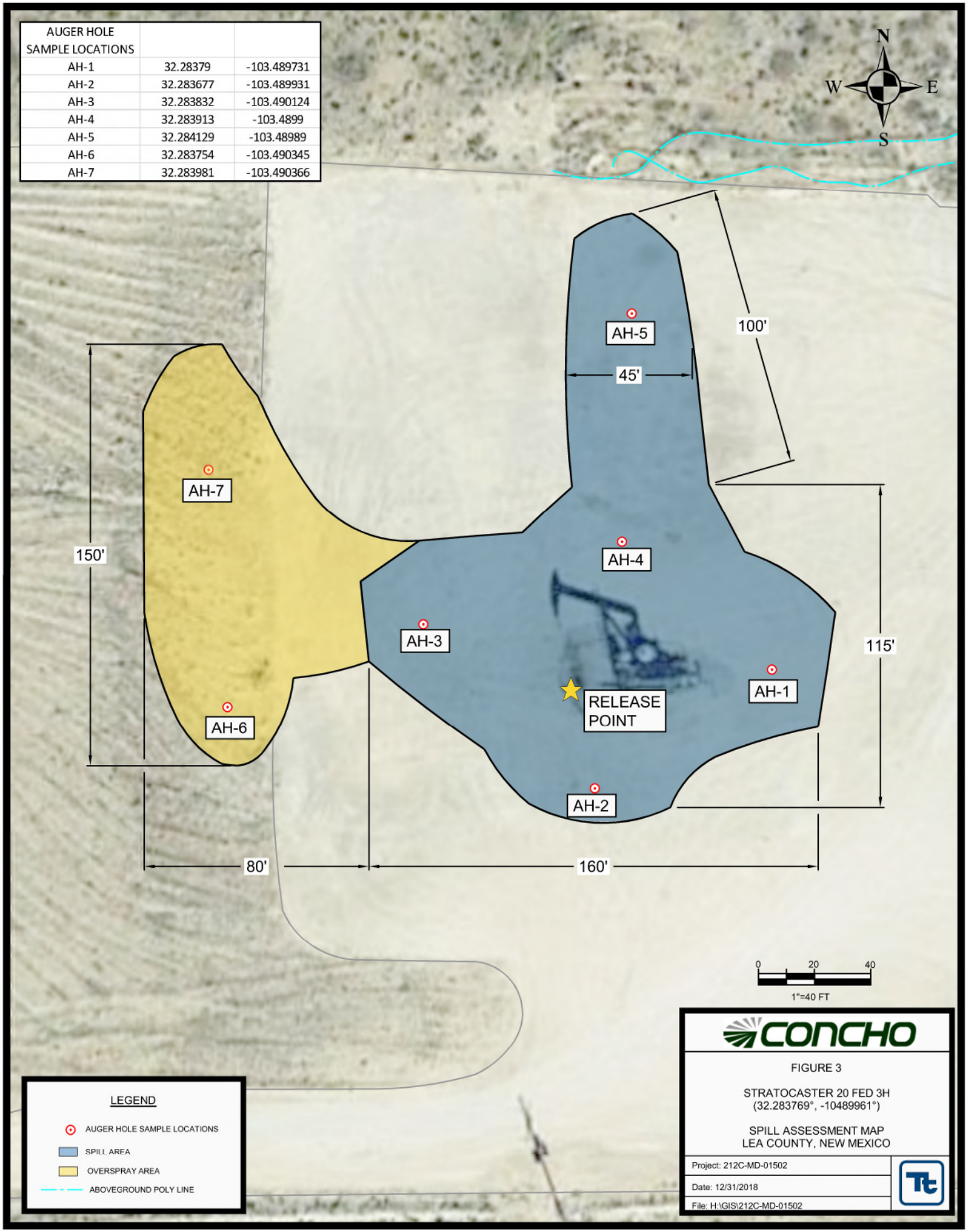


MAPPED BY: MISTI MORGAN



MAPPED BY: MISTI MORGAN

AUGER HOLE SAMPLE LOCATIONS		
AH-1	32.28379	-103.489731
AH-2	32.283677	-103.489931
AH-3	32.283832	-103.490124
AH-4	32.283913	-103.4899
AH-5	32.284129	-103.48989
AH-6	32.283754	-103.490345
AH-7	32.283981	-103.490366



LEGEND

- AUGER HOLE SAMPLE LOCATIONS
- SPILL AREA
- OVERSPRAY AREA
- ABOVEGROUND POLY LINE

CONCHO

FIGURE 3

STRATOCASTER 20 FED 3H
(32.283769°, -10489961°)

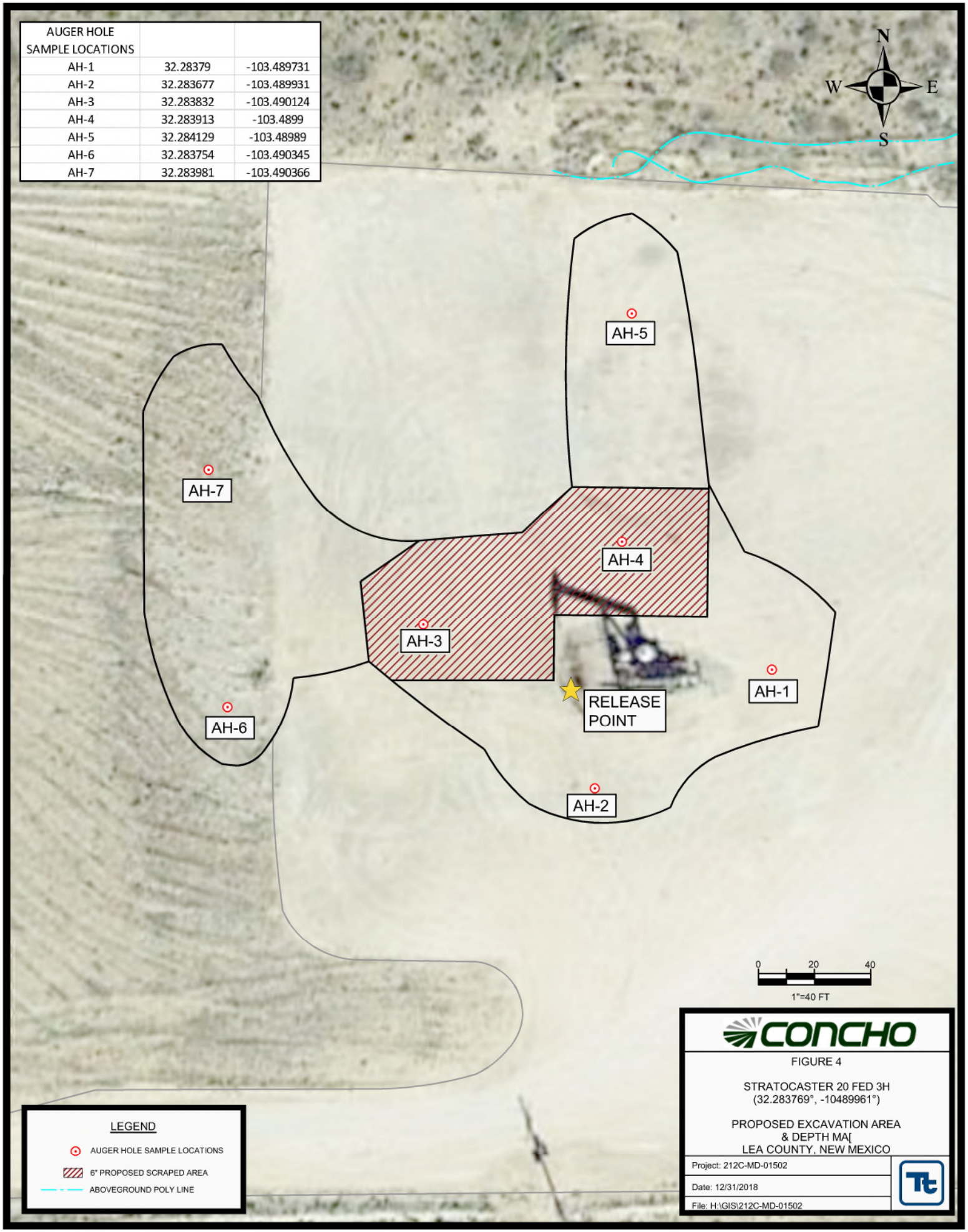
SPILL ASSESSMENT MAP
LEA COUNTY, NEW MEXICO

Project: 212C-MD-01502

Date: 12/31/2018

File: H:\GIS\212C-MD-01502

Drawn By: MISTI MORGAN


AUGER HOLE SAMPLE LOCATIONS
AH-1 32.28379 -103.489731
AH-2 32.283677 -103.489931
AH-3 32.283832 -103.490124
AH-4 32.283913 -103.4899
AH-5 32.284129 -103.48989
AH-6 32.283754 -103.490345
AH-7 32.283981 -103.490366
N
W
E
S
AH-5
AH-7
AH-4
AH-3
AH-1
RELEASE POINT
AH-6
AH-2
0
20
40
1"=40 FT
LEGEND
AUGER HOLE SAMPLE LOCATIONS
6" PROPOSED SCRAPED AREA
ABOVEGROUND POLY LINE
CONCHO
FIGURE 4
STRATOCASTER 20 FED 3H
(32.283769°, -10489961°)
PROPOSED EXCAVATION AREA
& DEPTH MA[
LEA COUNTY, NEW MEXICO
Project: 212C-MD-01502
Date: 12/31/2018
File: H:\GIS\212C-MD-01502
Drawn By: MISTI MORGAN

Tables

Table 1
COG
Stratocaster 20 Fed #3H
Lea 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	GRO+DRO	ORO	Total						
AH-1	11/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	492
	"	1-1.5	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	0.00305	<0.00200	<0.00200	0.00305	897
AH-2	11/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	887
	"	1-1.5	X		<14.9	<14.9	<14.9	<14.9	<14.9	<0.00202	0.00291	<0.00202	<0.00202	0.00291	991
AH-3	11/20/2018	0-6"	X		778	3,170	**3,948**	32.5	**3,980**	0.0124	2.09	1.86	4.76	8.72	193
T-2	12/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<5.00
	"	2	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	7.78
AH-4	11/20/2018	0-6"	X		656	5,900	**6,556**	<75.0	**6,560**	0.0622	0.726	0.331	0.900	2.02	455
T-1	12/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	68.2
	"	2	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	0.00236	<0.00200	0.0135	0.0159	33.1
AH-5	11/20/2018	0-1	X		<15.0	28.3	28.3	<15.0	28.3	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	15.4
AH-6	11/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<4.99
AH-7	11/20/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<4.99

(-) Not Analyzed

Proposed Excavation Depths

Photos

COG Operating LLC
Stratocaster 30 Fed #3H
Lea County, New Mexico

View West – Area of AH-1

View Northwest – Area of AH-2

COG Operating LLC
Stratocaster 30 Fed #3H
Lea County, New Mexico

View East – Area of AH-3

View South – Area of AH-4

COG Operating LLC
Stratocaster 30 Fed #3H
Lea County, New Mexico

View West – Area of AH-5

View West – Area of AH-6

COG Operating LLC
Stratocaster 30 Fed #3H
Lea County, New Mexico

View West – Area of AH-7

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NOY1830938217
District RP	1RP-5255
Facility ID	
Application ID	pOY1830938484

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)*	NOY1830938217
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.28379 Longitude -103.48991

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Stratocaster 20 Federal #003H	Site Type	Wellhead
Date Release Discovered	October 22, 2018	API# *(if applicable)*	30-025-41447

Unit Letter	Section	Township	Range	County
O	20	23S	34E	Lea

Federal minerals

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) 3	Volume Recovered (bbls) 2
■ Produced Water	Volume Released (bbls) 3	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

While tripping out of hole there was a release of fluid.
The release was on location and 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: 10/29/2018

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

OCD Only

Received by: RECEIVED By Olivia Yu at 10:32 am, Nov 05, 2018 Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	345 (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	
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: 1/10/19

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

OCD Only

Received by: Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

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

☐ Extents of contamination must be fully delineated.

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

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature: _____ Date: 1/10/19

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 - Stratocaster 20 Fed #3H

22 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 391
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 34 East

6	5	4	3	2	1
7	8	9	10	11 30	12 50
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South 35 East

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

23 South 33 East

6	5	4	3	2	1
7 475	8	9	10	11	12 325
18	17	16	15	14	13
19 400	20 400	21	22	23	24
30	29	28 400	27	26 225	25 225
31	32	33	34	35	36

23 South 34 East

6	5 200	4	3	2	1
7	8 225	9	10	11	12
18	17	16 345	15 430	14 318	13
19	20	21	22 295	23 265	24
30	29	28	27	26	25
31	32 130	33	34	35	36

23 South 35 East

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

24 South 33 East

6	5	4	3	2	1
7	8	9	10 24.6	11	12
18	17	16	15	14	13
19	20	21	22	23 208	24 16.9
30	29	28	27	26	25
31	32	33 93.2	34	35	36

24 South 34 East

6 81	5	4 475	3	2	1
7	8	9	10	11 40	12
18	17	16	15	14	13
19	20	21 431	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

24 South 35 East

6	5	4	3	2	1
7	8	9	10 300	11	12
18	17	16	15	14	13
19	20 97	21	22	23	24
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)

90 Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

121 Abandoned Waterwell (recently measured)

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 03620 POD1		CUB	LE	1	4	3	32	23S	34E	641790	3569941	480	130	350
CP 00556 POD1		CP	LE	4	4	3	08	23S	34E	641762	3576206	497	255	242
CP 00580		CP	LE	3	4	3	23	23S	34E	646524	3572948*	220		
CP 00606		CP	LE		4	1	23	23S	34E	646613	3573854*	650	265	385
CP 00618		CP	LE	1	2	4	22	23S	34E	645713	3573539*	428	295	133
CP 00637		CP	LE	3	3	4	15	23S	34E	645293	3574541*	430	430	0
CP 00872 POD1		CP	LE	1	1	1	08	23S	34E	641225	3577504*	494	305	189
CP 01075 POD1		CP	LE		1	1	08	23S	34E	641278	3577525	430	20	410
CP 01120 POD1		CP	LE			3	14	23S	34E	646366	3574753	397	318	79
CP 01130 POD1		CP	LE	2	1	2	07	23S	34E	640662	3577558	27		
CP 01130 POD2		CP	LE	2	1	2	07	23S	34E	640674	3577549	27		
CP 01258 POD1		CP	LE	1	4	3	22	23S	34E	645015	3573221	25		
CP 01258 POD2		CP	LE	1	4	3	22	23S	34E	644941	3572883	65		
CP 01258 POD3		CP	LE	1	4	3	22	23S	34E	644938	3573097	25		
CP 01502 POD1		CP	LE	4	3	3	05	23S	34E	641342	3577635	648	200	448

Average Depth to Water: **246 feet**

Minimum Depth: **20 feet**

Maximum Depth: **430 feet**

Record Count: 15

PLSS Search:

Township: 23S **Range:** 34E

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

National Water Information System: Web Interface

Click to hideNews Bulletins

- Please see news on new formats
- **UPDATE, 11/9: As of November 8, the USGS has successfully restored all of the operational gages that stopped transmitting due to an issue with the satellite telemetry system that records and transmits data. The USGS will now focus on restoring other equipment that experienced the telemetry issues, including about 85 rapid deployment gages that are used periodically for emergency response. Read more**
- Full News

Groundwater levels for New Mexico

Click to hide state-specific text

Search Results -- 1 sites found

site_no list =

- 321734103290001

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

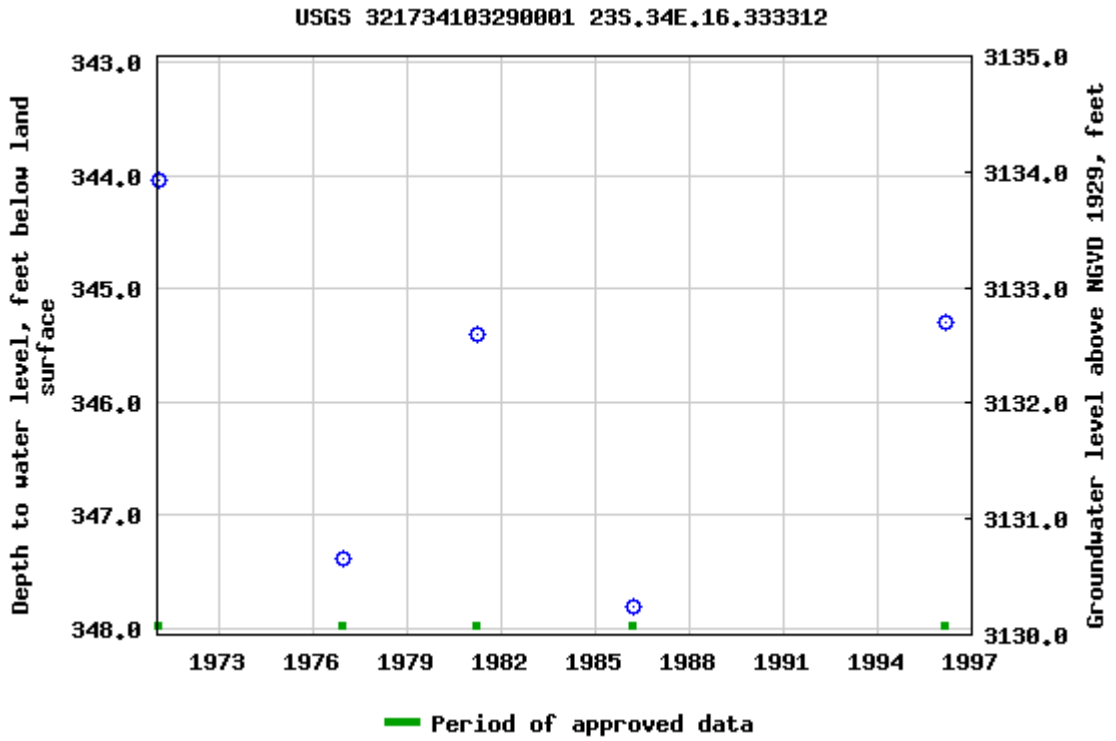
USGS 321734103290001 23S.34E.16.333312

Available data for this site Groundwater: Field measurements | GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°17'53", Longitude 103°28'59" NAD27
Land-surface elevation 3,478.00 feet above NGVD29
The depth of the well is 400 feet below land surface.
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

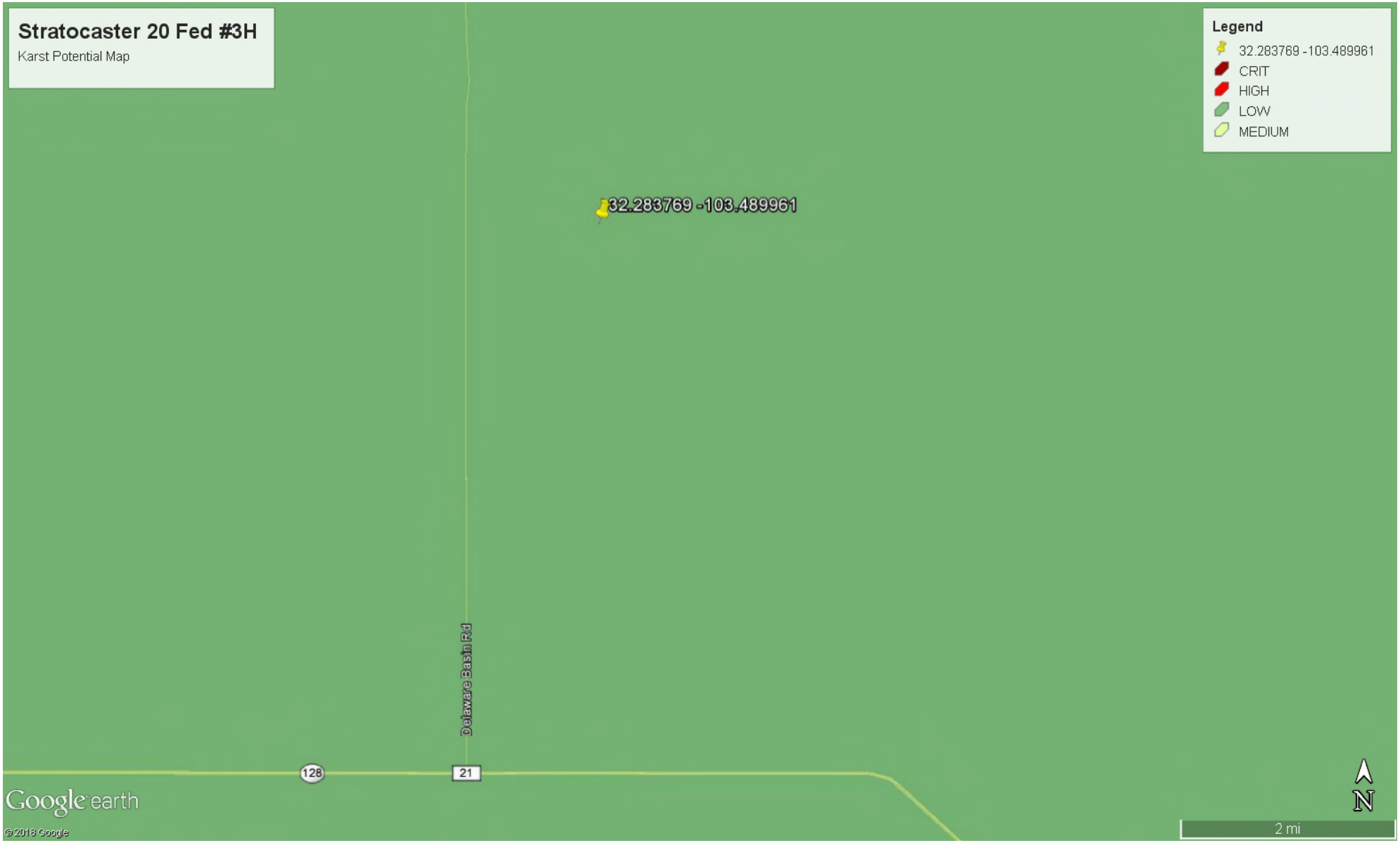


Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

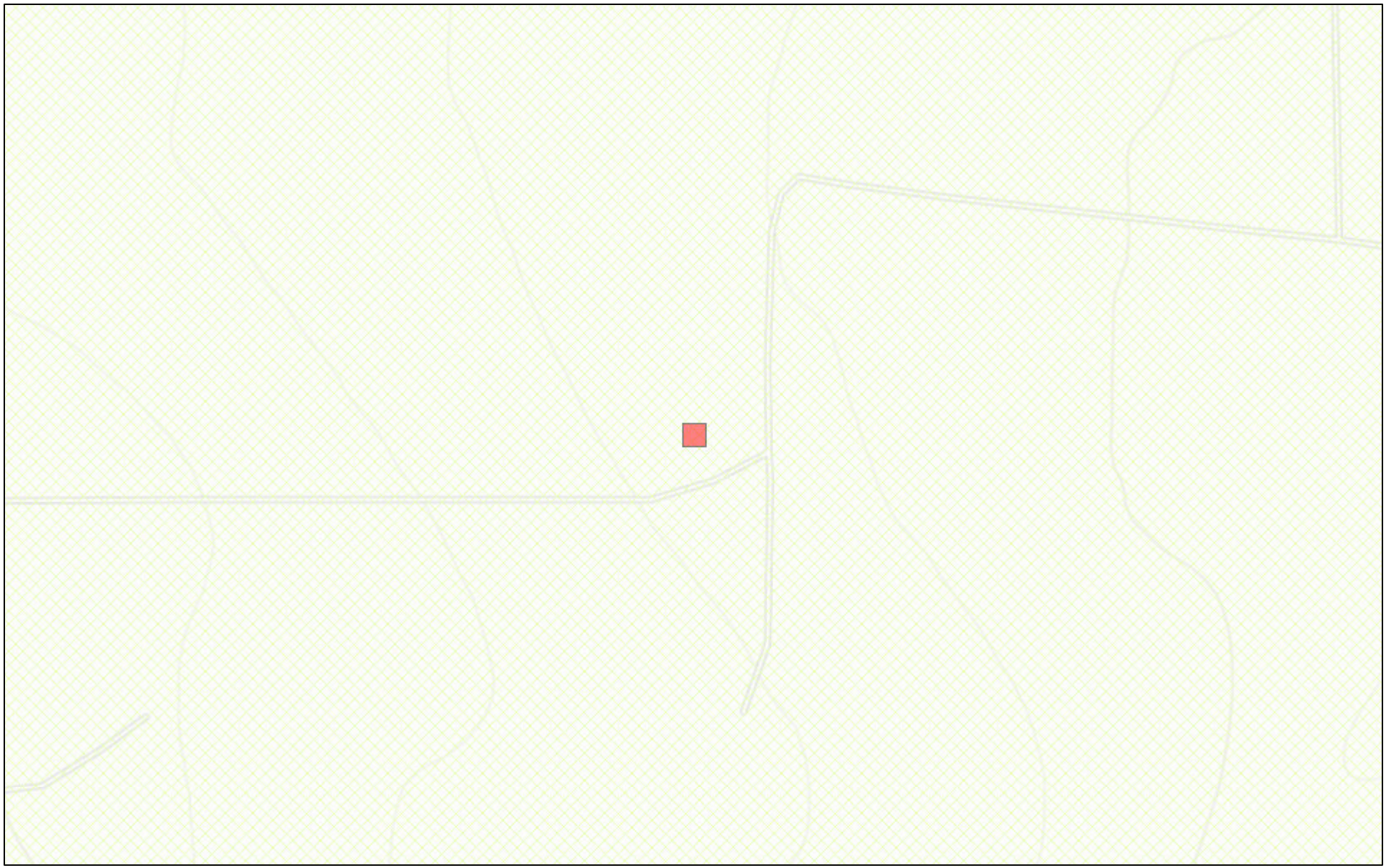
Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Title: Groundwater for New Mexico: Water Levels
URL: https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?

Page Contact Information: New Mexico Water Data Maintainer
Page Last Modified: 2018-11-14 12:38:21 EST


Stratocaster 20 Fed #3H
Karst Potential Map
Legend
32.283769 -103.489961
CRIT
HIGH
LOW
MEDIUM
32.283769 -103.489961
Delaware Basin Rd
128
21
Google earth
© 2018 Google
N
2 mi

New Mexico NFHL Data



December 27, 2018

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,

Appendix C

Analytical Report 606239

for

Tetra Tech- Midland

Project Manager: Clair Gonzales

COG Stratocaster 20 Fed #3H

212C-MD-01502

28-NOV-18

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)
Xenco-Lakeland: Florida (E84098)

28-NOV-18

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

Reference: XENCO Report No(s): **606239**
COG Stratocaster 20 Fed #3H
Project Address: Lea County, New Mexcio

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) 606239. 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. 606239 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,

Kelsey Brooks
Project Manager

Sample Cross Reference 606239

Tetra Tech- Midland, Midland, TX

COG Stratocaster 20 Fed #3H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 1'-1.5'	S	11-20-18 09:30		606239-001
AH-1 0-1'	S	11-20-18 09:45		606239-002
AH-2 0-1'	S	11-20-18 10:15		606239-003
AH-2 1'-1.5'	S	11-20-18 10:30		606239-004
AH-3 0-6"	S	11-20-18 11:15		606239-005
AH-4 0-6"	S	11-20-18 12:00		606239-006
AH-5 0-1'	S	11-20-18 13:00		606239-007
AH-6 0-1'	S	11-20-18 13:30		606239-008
AH-7 0-1'	S	11-20-18 14:00		606239-009

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3070608 Inorganic Anions by EPA 300
Lab Sample ID 606284-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).
Chloride recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference.
Samples in the analytical batch are: 606239-001, -002, -003, -004, -005, -006, -007, -008, -009.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3070635 TPH by SW8015 Mod
Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 606239-006,606239-005.

Batch: LBA-3070793 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Surrogate 4-Bromofluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 606239-004,606239-001.

Surrogate 4-Bromofluorobenzene recovery was above laboratory and method acceptance limits.
Reextraction and/or reanalysis confirms high recovery caused by matrix effect.
Samples affected are: 606239-005,606239-006.

Certificate of Analysis Summary 606239

Tetra Tech- Midland, Midland, TX

Project Name: COG Stratocaster 20 Fed #3H

Project Id: 212C-MD-01502
Contact: Clair Gonzales
Project Location: Lea County, New Mexcio

Date Received in Lab: Wed Nov-21-18 09:10 am
Report Date: 28-NOV-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	606239-001		606239-002		606239-003		606239-004		606239-005		606239-006	
	Field Id:	AH-1 1'-1.5'		AH-1 0-1'		AH-2 0-1'		AH-2 1'-1.5'		AH-3 0-6"		AH-4 0-6"	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-20-18 09:30		Nov-20-18 09:45		Nov-20-18 10:15		Nov-20-18 10:30		Nov-20-18 11:15		Nov-20-18 12:00	
BTEX by EPA 8021B	***Extracted:***	Nov-21-18 15:00		Nov-21-18 15:00		Nov-21-18 15:00		Nov-21-18 15:00		Nov-21-18 15:00		Nov-21-18 15:00	
	Analyzed:	Nov-21-18 23:56		Nov-22-18 00:15		Nov-22-18 00:35		Nov-22-18 00:54		Nov-22-18 02:51		Nov-22-18 04:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00202	0.00202	0.0124	0.00201	0.0622	0.00199
Toluene		0.00305	0.00200	<0.00199	0.00199	<0.00201	0.00201	0.00291	0.00202	1.17 D	0.0402	1.62 D	0.00996
Ethylbenzene		<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00202	0.00202	6.04 D	0.0402	0.331	0.00199
m,p-Xylenes		<0.00401	0.00401	<0.00398	0.00398	<0.00402	0.00402	<0.00403	0.00403	12.0 D	0.0803	0.621	0.00398
o-Xylene		<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00202	0.00202	7.22 D	0.0402	0.279	0.00199
Total Xylenes		<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00202	0.00202	19.2	0.0402	0.900	0.00199
Total BTEX		0.00305	0.00200	<0.00199	0.00199	<0.00201	0.00201	0.00291	0.00202	26.4	0.00201	2.91	0.00199
Chloride by EPA 300	***Extracted:***	Nov-26-18 08:15		Nov-26-18 08:15		Nov-26-18 08:15		Nov-26-18 08:15		Nov-26-18 08:15		Nov-26-18 08:15	
	Analyzed:	Nov-26-18 10:23		Nov-26-18 10:29		Nov-26-18 10:35		Nov-26-18 10:42		Nov-26-18 11:00		Nov-26-18 11:06	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		897	4.97	492	5.00	887	4.96	991	4.96	193	4.95	455	5.00
TPH by SW8015 Mod	***Extracted:***	Nov-21-18 14:00		Nov-21-18 14:00		Nov-21-18 14:00		Nov-21-18 14:00		Nov-21-18 14:00		Nov-21-18 14:00	
	Analyzed:	Nov-22-18 03:57		Nov-22-18 04:15		Nov-22-18 04:33		Nov-22-18 04:51		Nov-22-18 05:09		Nov-22-18 10:15	
	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	<14.9	14.9	778	15.0	656	75.0
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	3170	15.0	5900	75.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	32.5	15.0	<75.0	75.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	3980	15.0	6560	75.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 606239

Tetra Tech- Midland, Midland, TX

Project Name: COG Stratocaster 20 Fed #3H

Project Id: 212C-MD-01502
Contact: Clair Gonzales
Project Location: Lea County, New Mexcio

Date Received in Lab: Wed Nov-21-18 09:10 am
Report Date: 28-NOV-18
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	606239-007		606239-008		606239-009			
	Field Id:	AH-5 0-1'		AH-6 0-1'		AH-7 0-1'			
	Depth:								
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Nov-20-18 13:00		Nov-20-18 13:30		Nov-20-18 14:00			
BTEX by EPA 8021B	***Extracted:***	Nov-21-18 15:00		Nov-21-18 15:00		Nov-21-18 15:00			
	Analyzed:	Nov-22-18 01:13		Nov-22-18 01:33		Nov-22-18 01:52			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
Toluene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
Ethylbenzene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
m,p-Xylenes		<0.00398	0.00398	<0.00400	0.00400	<0.00399	0.00399		
o-Xylene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
Total Xylenes		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
Total BTEX		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200		
Chloride by EPA 300	***Extracted:***	Nov-26-18 08:15		Nov-26-18 08:15		Nov-26-18 08:15			
	Analyzed:	Nov-26-18 11:25		Nov-26-18 11:31		Nov-26-18 11:37			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		15.4	5.00	<4.99	4.99	<4.99	4.99		
TPH by SW8015 Mod	***Extracted:***	Nov-21-18 14:00		Nov-21-18 14:00		Nov-21-18 14:00			
	Analyzed:	Nov-22-18 05:46		Nov-22-18 06:04		Nov-22-18 06:58			
	Units/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		
Diesel Range Organics (DRO)		28.3	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		
Total TPH		28.3	15.0	<15.0	15.0	<15.0	15.0		

Kelsey Brooks
Project Manager

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: COG Stratocaster 20 Fed #3H

Work Orders : 606239,

Project ID: 212C-MD-01502

Lab Batch #: 3070793 **Sample:** 606239-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/21/18 23:56

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0320	0.0300	107	70-130	
4-Bromofluorobenzene	0.00601	0.0300	20	70-130	**

Lab Batch #: 3070793 **Sample:** 606239-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 00:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0330	0.0300	110	70-130	
4-Bromofluorobenzene	0.0306	0.0300	102	70-130	

Lab Batch #: 3070793 **Sample:** 606239-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 00:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0337	0.0300	112	70-130	
4-Bromofluorobenzene	0.0317	0.0300	106	70-130	

Lab Batch #: 3070793 **Sample:** 606239-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 00:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0340	0.0300	113	70-130	
4-Bromofluorobenzene	0.00635	0.0300	21	70-130	**

Lab Batch #: 3070793 **Sample:** 606239-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 01:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0336	0.0300	112	70-130	
4-Bromofluorobenzene	0.0324	0.0300	108	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: COG Stratocaster 20 Fed #3H

Work Orders : 606239,

Project ID: 212C-MD-01502

Lab Batch #: 3070793 **Sample:** 606239-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 01:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0324	0.0300	108	70-130	
4-Bromofluorobenzene	0.0333	0.0300	111	70-130	

Lab Batch #: 3070793 **Sample:** 606239-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 01:52

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0336	0.0300	112	70-130	
4-Bromofluorobenzene	0.0309	0.0300	103	70-130	

Lab Batch #: 3070793 **Sample:** 606239-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 02:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0357	0.0300	119	70-130	
4-Bromofluorobenzene	0.0375	0.0300	125	70-130	

Lab Batch #: 3070635 **Sample:** 606239-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 03:57

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	86.2	99.7	86	70-135	
o-Terphenyl	46.6	49.9	93	70-135	

Lab Batch #: 3070793 **Sample:** 606239-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 04:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0326	0.0300	109	70-130	
4-Bromofluorobenzene	0.0421	0.0300	140	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: COG Stratocaster 20 Fed #3H

Work Orders : 606239,

Project ID: 212C-MD-01502

Lab Batch #: 3070635 **Sample:** 606239-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 04:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	85.9	99.9	86	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

Lab Batch #: 3070635 **Sample:** 606239-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 04:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.9	99.8	85	70-135	
o-Terphenyl	45.4	49.9	91	70-135	

Lab Batch #: 3070635 **Sample:** 606239-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 04:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	85.3	99.6	86	70-135	
o-Terphenyl	45.7	49.8	92	70-135	

Lab Batch #: 3070635 **Sample:** 606239-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 05:09

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	117	99.9	117	70-135	
o-Terphenyl	70.7	50.0	141	70-135	**

Lab Batch #: 3070635 **Sample:** 606239-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 05:46

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	87.3	100	87	70-135	
o-Terphenyl	46.8	50.0	94	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: COG Stratocaster 20 Fed #3H

Work Orders : 606239,

Project ID: 212C-MD-01502

Lab Batch #: 3070635 **Sample:** 606239-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 06:04

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	87.7	99.7	88	70-135	
o-Terphenyl	47.0	49.9	94	70-135	

Lab Batch #: 3070635 **Sample:** 606239-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 06:58

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	85.4	99.8	86	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

Lab Batch #: 3070635 **Sample:** 606239-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 10:15

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	98.4	50.0	197	70-135	**

Lab Batch #: 3070793 **Sample:** 606239-005 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/27/18 18:06

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0303	0.0300	101	70-130	
4-Bromofluorobenzene	0.142	0.0300	473	70-130	**

Lab Batch #: 3070793 **Sample:** 606239-006 / DL **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/27/18 18:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0360	0.0300	120	70-130	
4-Bromofluorobenzene	0.0937	0.0300	312	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: COG Stratocaster 20 Fed #3H

Work Orders : 606239, **Project ID:** 212C-MD-01502

Lab Batch #: 3070793 **Sample:** 7666828-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/21/18 23:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0309	0.0300	103	70-130	
4-Bromofluorobenzene	0.0279	0.0300	93	70-130	

Lab Batch #: 3070635 **Sample:** 7666734-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/22/18 01:50

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	82.7	100	83	70-135	
o-Terphenyl	44.9	50.0	90	70-135	

Lab Batch #: 3070793 **Sample:** 7666828-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/21/18 21:58

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0296	0.0300	99	70-130	
4-Bromofluorobenzene	0.0298	0.0300	99	70-130	

Lab Batch #: 3070635 **Sample:** 7666734-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/22/18 02:08

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	100	120	70-135	
o-Terphenyl	53.7	50.0	107	70-135	

Lab Batch #: 3070793 **Sample:** 7666828-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/21/18 22:17

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	70-130	
4-Bromofluorobenzene	0.0290	0.0300	97	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: COG Stratocaster 20 Fed #3H

Work Orders : 606239, **Project ID:** 212C-MD-01502

Lab Batch #: 3070635 **Sample:** 7666734-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/22/18 02:26

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	51.6	50.0	103	70-135	

Lab Batch #: 3070793 **Sample:** 606239-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/21/18 22:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	70-130	
4-Bromofluorobenzene	0.0316	0.0300	105	70-130	

Lab Batch #: 3070635 **Sample:** 606082-024 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 03:02

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.9	111	70-135	
o-Terphenyl	47.7	50.0	95	70-135	

Lab Batch #: 3070793 **Sample:** 606239-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/21/18 22:56

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	70-130	
4-Bromofluorobenzene	0.0312	0.0300	104	70-130	

Lab Batch #: 3070635 **Sample:** 606082-024 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/22/18 03:21

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	105	99.8	105	70-135	
o-Terphenyl	46.3	49.9	93	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.

BS / BSD Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Order #: 606239 **Project ID:** 212C-MD-01502

Analyst: SCM **Date Prepared:** 11/21/2018 **Date Analyzed:** 11/21/2018

Lab Batch ID: 3070793 **Sample:** 7666828-1-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	<0.000383	0.0994	0.125	126	0.0998	0.128	128	2	70-130	35	
Toluene	<0.000453	0.0994	0.117	118	0.0998	0.118	118	1	70-130	35	
Ethylbenzene	<0.000561	0.0994	0.120	121	0.0998	0.121	121	1	70-130	35	
m,p-Xylenes	<0.00101	0.199	0.238	120	0.200	0.240	120	1	70-130	35	
o-Xylene	<0.000342	0.0994	0.115	116	0.0998	0.116	116	1	70-130	35	

Analyst: CHE **Date Prepared:** 11/26/2018 **Date Analyzed:** 11/26/2018

Lab Batch ID: 3070608 **Sample:** 7666782-1-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	<5.00	250	268	107	250	268	107	0	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

BS / BSD Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Order #: 606239 **Project ID:** 212C-MD-01502

Analyst: ARM **Date Prepared:** 11/21/2018 **Date Analyzed:** 11/22/2018

Lab Batch ID: 3070635 **Sample:** 7666734-1-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	1040	104	1000	1030	103	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1050	105	1000	1030	103	2	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

Form 3 - MS / MSD Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Order # : 606239 **Project ID:** 212C-MD-01502

Lab Batch ID: 3070793 **QC- Sample ID:** 606239-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/21/2018 **Date Prepared:** 11/21/2018 **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	0.000561	0.100	0.101	100	0.100	0.113	112	11	70-130	35	
Toluene	0.00305	0.100	0.0868	84	0.100	0.101	98	15	70-130	35	
Ethylbenzene	0.00123	0.100	0.0739	73	0.100	0.0933	92	23	70-130	35	
m,p-Xylenes	0.00152	0.201	0.142	70	0.200	0.182	90	25	70-130	35	
o-Xylene	<0.000346	0.100	0.0706	71	0.100	0.0889	89	23	70-130	35	

Lab Batch ID: 3070608 **QC- Sample ID:** 606239-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/26/2018 **Date Prepared:** 11/26/2018 **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	991	248	1210	88	248	1220	92	1	90-110	20	X

Lab Batch ID: 3070608 **QC- Sample ID:** 606284-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/26/2018 **Date Prepared:** 11/26/2018 **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	169	249	428	104	249	424	102	1	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: COG Stratocaster 20 Fed #3H

Work Order # : 606239 **Project ID:** 212C-MD-01502

Lab Batch ID: 3070635 **QC- Sample ID:** 606082-024 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/22/2018 **Date Prepared:** 11/21/2018 **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	999	978	98	998	968	97	1	70-135	20	
Diesel Range Organics (DRO)	<8.12	999	947	95	998	949	95	0	70-135	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.

Analysis Request of Chain of Custody Record

1006239

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: COG	**Site Manager:** Clair Gonzales
Project Name: COG Stratocaster 20 Fed #3H	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-01502
Invoice to: COG Attn: Ike Tavarez	
Receiving Laboratory: Xenco	**Sampler Signature:** Bucky Moore
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B	BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M	GRO - DRO - ORO	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride	Sulfate	TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	Asbestos			Hold
	AH-1 1'-1.5'	11-20-18	9:30					✓	1		X			X													X								
	AH-1 0-1'	11-20-18	9 45					✓	1		X			X													X								
	AH-2 0-1'	11-20-18	10:15					✓	1		X			X													X								
	AH-2 1'-1.5'	11-20-18	10:30					✓	1		X			X													X								
	AH-3 0-6"	11-20-18	11:15					✓	1		X			X													X								
	AH-4 0-6"	11-20-18	12:00					✓	1		X			X													X								
	AH-5 0-1'	11-20-18	1:00					✓	1		X			X													X								
	AH-6 0-1'	11-20-18	1:30					✓	1		X			X													X								
	AH-7 0-1'	11-20-18	2:00					✓	1		X			X													X								

Relinquished by: Bucky Moore	Date: 11-21-18	Time:	Received by:	Date: 11/21/18	Time: 0910
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature 3.5/3.4 NR

REMARKS:

- [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 #: _____

ORIGINAL COPY

Final 1.000

Page 18 of 19

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 11/21/2018 09:10:00 AM

Work Order #: 606239

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)?	3.4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 11/21/2018

Brianna Teel

Checklist reviewed by: Kelsey Brooks Date: 11/21/2018

Kelsey Brooks

Analytical Report 609489

for

Tetra Tech- Midland

Project Manager: Clair Gonzales

COG Stratocaster 20 Fed #3H

212C-MD-01502

26-DEC-18

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)
Xenco-Lakeland: Florida (E84098)

26-DEC-18

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

Reference: XENCO Report No(s): **609489**
COG Stratocaster 20 Fed #3H
Project Address: Lea, 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) 609489. 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. 609489 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 609489

Tetra Tech- Midland, Midland, TX

COG Stratocaster 20 Fed #3H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1 (0'-1)	S	12-20-18 10:30		609489-001
T1 (2')	S	12-20-18 10:35		609489-002
T2 (0'-1)	S	12-20-18 11:10		609489-006
T2 (2')	S	12-20-18 11:15		609489-007
T1 (3')	S	12-20-18 10:40		Not Analyzed
T1 (4')	S	12-20-18 10:45		Not Analyzed
T1 (6')	S	12-20-18 10:50		Not Analyzed
T2 (3')	S	12-20-18 11:20		Not Analyzed
T2 (4')	S	12-20-18 11:25		Not Analyzed
T2 (6')	S	12-20-18 11:30		Not Analyzed

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3073879 BTEX by EPA 8021B

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

Certificate of Analysis Summary 609489

Tetra Tech- Midland, Midland, TX

Project Name: COG Stratocaster 20 Fed #3H

Project Id: 212C-MD-01502
Contact: Clair Gonzales
Project Location: Lea, County, New Mexico

Date Received in Lab: Thu Dec-20-18 03:36 pm
Report Date: 26-DEC-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	609489-001		609489-002		609489-006		609489-007					
	Field Id:	T1 (0'-1)		T1 (2')		T2 (0'-1)		T2 (2')					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Dec-20-18 10:30		Dec-20-18 10:35		Dec-20-18 11:10		Dec-20-18 11:15					
BTEX by EPA 8021B	***Extracted:***	Dec-21-18 08:30		Dec-21-18 08:30		Dec-21-18 08:30		Dec-21-18 08:30					
	Analyzed:	Dec-21-18 11:38		Dec-21-18 11:57		Dec-21-18 12:59		Dec-21-18 13:18					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00202	0.00202				
Toluene		<0.00200	0.00200	0.00236	0.00200	<0.00200	0.00200	<0.00202	0.00202				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00202	0.00202				
m,p-Xylenes		<0.00401	0.00401	<0.00399	0.00399	<0.00400	0.00400	<0.00403	0.00403				
o-Xylene		<0.00200	0.00200	0.0135	0.00200	<0.00200	0.00200	<0.00202	0.00202				
Total Xylenes		<0.00200	0.00200	0.0135	0.00200	<0.00200	0.00200	<0.00202	0.00202				
Total BTEX		<0.00200	0.00200	0.0159	0.00200	<0.00200	0.00200	<0.00202	0.00202				
Chloride by EPA 300	***Extracted:***	Dec-21-18 15:00		Dec-21-18 15:00		Dec-21-18 15:00		Dec-21-18 15:00					
	Analyzed:	Dec-21-18 16:54		Dec-21-18 17:16		Dec-21-18 17:22		Dec-21-18 17:28					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		68.2	5.00	33.1	5.00	<5.00	5.00	7.78	5.00				
TPH by SW8015 Mod	***Extracted:***	Dec-20-18 17:00		Dec-20-18 17:00		Dec-20-18 17:00		Dec-20-18 17:00					
	Analyzed:	Dec-21-18 07:33		Dec-21-18 07:53		Dec-21-18 08:13		Dec-21-18 08:34					
	Units/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				
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				

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

Form 2 - Surrogate Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Orders : 609489,

Project ID: 212C-MD-01502

Lab Batch #: 3073727 **Sample:** 609489-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 07:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.9	101	70-135	
o-Terphenyl	51.2	50.0	102	70-135	

Lab Batch #: 3073727 **Sample:** 609489-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 07:53

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.8	101	70-135	
o-Terphenyl	51.1	49.9	102	70-135	

Lab Batch #: 3073727 **Sample:** 609489-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 08:13

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.7	99.8	99	70-135	
o-Terphenyl	49.8	49.9	100	70-135	

Lab Batch #: 3073727 **Sample:** 609489-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 08:34

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.9	101	70-135	
o-Terphenyl	50.8	50.0	102	70-135	

Lab Batch #: 3073879 **Sample:** 609489-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 11:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	70-130	
4-Bromofluorobenzene	0.0255	0.0300	85	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: COG Stratocaster 20 Fed #3H

Work Orders : 609489,

Project ID: 212C-MD-01502

Lab Batch #: 3073879 **Sample:** 609489-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 11:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0306	0.0300	102	70-130	
4-Bromofluorobenzene	0.0385	0.0300	128	70-130	

Lab Batch #: 3073879 **Sample:** 609489-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 12:59

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0326	0.0300	109	70-130	
4-Bromofluorobenzene	0.0252	0.0300	84	70-130	

Lab Batch #: 3073879 **Sample:** 609489-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 13:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0332	0.0300	111	70-130	
4-Bromofluorobenzene	0.0268	0.0300	89	70-130	

Lab Batch #: 3073727 **Sample:** 7668571-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 00:45

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	100	106	70-135	
o-Terphenyl	55.6	50.0	111	70-135	

Lab Batch #: 3073879 **Sample:** 7668705-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 10:42

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	70-130	
4-Bromofluorobenzene	0.0217	0.0300	72	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: COG Stratocaster 20 Fed #3H

Work Orders : 609489,

Project ID: 212C-MD-01502

Lab Batch #: 3073727 **Sample:** 7668571-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 01:06

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	126	100	126	70-135	
o-Terphenyl	56.2	50.0	112	70-135	

Lab Batch #: 3073879 **Sample:** 7668705-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 09:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0301	0.0300	100	70-130	
4-Bromofluorobenzene	0.0263	0.0300	88	70-130	

Lab Batch #: 3073727 **Sample:** 7668571-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 01:26

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	53.4	50.0	107	70-135	

Lab Batch #: 3073879 **Sample:** 7668705-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 12/21/18 09:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0316	0.0300	105	70-130	
4-Bromofluorobenzene	0.0253	0.0300	84	70-130	

Lab Batch #: 3073727 **Sample:** 609503-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 02:08

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	51.3	50.0	103	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: COG Stratocaster 20 Fed #3H

Work Orders : 609489,

Project ID: 212C-MD-01502

Lab Batch #: 3073879 **Sample:** 609489-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 09:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0312	0.0300	104	70-130	
4-Bromofluorobenzene	0.0252	0.0300	84	70-130	

Lab Batch #: 3073727 **Sample:** 609503-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 02:28

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	99.9	116	70-135	
o-Terphenyl	51.3	50.0	103	70-135	

Lab Batch #: 3073879 **Sample:** 609489-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 12/21/18 10:06

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0316	0.0300	105	70-130	
4-Bromofluorobenzene	0.0255	0.0300	85	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: COG Stratocaster 20 Fed #3H

Work Order #: 609489 **Project ID:** 212C-MD-01502

Analyst: SCM **Date Prepared:** 12/21/2018 **Date Analyzed:** 12/21/2018

Lab Batch ID: 3073879 **Sample:** 7668705-1-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	<0.000385	0.100	0.114	114	0.100	0.118	118	3	70-130	35	
Toluene	<0.000456	0.100	0.105	105	0.100	0.104	104	1	70-130	35	
Ethylbenzene	<0.000565	0.100	0.118	118	0.100	0.111	111	6	70-130	35	
m,p-Xylenes	<0.00101	0.200	0.219	110	0.201	0.201	100	9	70-130	35	
o-Xylene	<0.000344	0.100	0.105	105	0.100	0.0965	97	8	70-130	35	

Analyst: CHE **Date Prepared:** 12/21/2018 **Date Analyzed:** 12/21/2018

Lab Batch ID: 3073892 **Sample:** 7668612-1-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	<5.00	250	274	110	250	274	110	0	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

BS / BSD Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Order #: 609489 **Project ID:** 212C-MD-01502

Analyst: ARM **Date Prepared:** 12/20/2018 **Date Analyzed:** 12/21/2018

Lab Batch ID: 3073727 **Sample:** 7668571-1-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	902	90	1000	884	88	2	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	987	99	1000	965	97	2	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

Form 3 - MS / MSD Recoveries

Project Name: COG Stratocaster 20 Fed #3H

Work Order # : 609489 **Project ID:** 212C-MD-01502

Lab Batch ID: 3073879 **QC- Sample ID:** 609489-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2018 **Date Prepared:** 12/21/2018 **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	<0.000388	0.101	0.102	101	0.0996	0.105	105	3	70-130	35	
Toluene	<0.000459	0.101	0.0902	89	0.0996	0.0935	94	4	70-130	35	
Ethylbenzene	<0.000569	0.101	0.0953	94	0.0996	0.0989	99	4	70-130	35	
m,p-Xylenes	0.00123	0.202	0.173	85	0.199	0.179	89	3	70-130	35	
o-Xylene	<0.000347	0.101	0.0825	82	0.0996	0.0855	86	4	70-130	35	

Lab Batch ID: 3073892 **QC- Sample ID:** 609206-030 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2018 **Date Prepared:** 12/21/2018 **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	21.3	248	283	106	248	271	101	4	90-110	20	

Lab Batch ID: 3073892 **QC- Sample ID:** 609489-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2018 **Date Prepared:** 12/21/2018 **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	68.2	250	324	102	250	328	104	1	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: COG Stratocaster 20 Fed #3H

Work Order # : 609489 **Project ID:** 212C-MD-01502

Lab Batch ID: 3073727 **QC- Sample ID:** 609503-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2018 **Date Prepared:** 12/20/2018 **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)	10.8	1000	949	94	999	995	99	5	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	955	96	999	977	98	2	70-135	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.

Analysis Request of Chain of Custody Record

609489

Page 1 of 1

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:** Claire Gonzales
Project Name: COG Stratocaster 20 Fed #3H	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-01502
Invoice to: COG Attn: Ike Tavarez	
Receiving Laboratory: Xenco	**Sampler Signature:**

Comments: Run deeper samples if GRO+DRO exceeds 1,000.
Run deeper samples if Benzene exceeds 10 or Total BTEX exceeds 50.

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2018 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B	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
	T1(0'-1')	20-Dec-18	1030		X			X		1	N	X		X												X							
	T1(2')	20-Dec-18	1035		X			X		1	N	X		X												X							
	T1(3')	20-Dec-18	1040		X			X		1	N	X		X												X							
	T1(4')	20-Dec-18	1045		X			X		1	N																						X
	T1(6')	20-Dec-18	1050		X			X		1	N																						X
	T2(0'-1')	20-Dec-18	1110		X			X		1	N	X		X												X							X
	T2(2')	20-Dec-18	1115		X			X		1	N	X		X												X							
	T2(3')	20-Dec-18	1120		X			X		1	N																						
	T2(4')	20-Dec-18	1125		X			X		1	N																						X
	T2(6')	20-Dec-18	1130		X			X		1	N																						X

Relinquished by:	Date: 12.20.18	Time: 1536	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: Date: 12/20/18 Time: 1536

Received by: Date: Time:

Received by: Date: Time:

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB USE ONLY
Sample Temperature
11.3/1.2
IC

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: 12/20/2018 03:36:00 PM

Work Order #: 609489

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)?	11.2
#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: 12/20/2018

Brianna Teel

Checklist reviewed by: Kelsey Brooks Date: 12/21/2018

Kelsey Brooks