SITE INFORMATION

Report Type: Deferment Report 1RP-4727

General Site Information:						
Site:	**New Mexico DL State #1**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit I**	**Sec. 18**	**T 23S**	**R 33E**		
Lease Number:	**API No. 30-025-28223**					
County:	**Lea County**					
GPS:	**32.302948° N**			**103.6050491° W**		
Surface Owner:	State					
Mineral Owner:						
Directions:	From the intersection HWY 128 and Red Rd, travel southeast on 128 for 1.2 mi, turn northeast onto lease road and continue for 7.8 miles, turn southeast for 0.9 miles, turn east for 0.75 miles, turn north for 0.30 miles to location.					

Release Data:	
Date Released:	6/1117
Type Release:	Oil & Produced Water
Source of Contamination:	Tanks
Fluid Released:	17 bbls Oil & 19 bbls Produced Water
Fluids Recovered:	15 bbls Oil & 15 bbls Produced Water

Official Communication:			
Name:	Rebecca Haskell		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rhaskell@conchoresources.com		Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	***0***	*400'-500'*
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	*0*
Total Ranking Score:	***0***	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

TETRA TECH

APPROVED
By Olivia Yu at 3:43 pm, Jul 06, 2018

NMOCD approves of the preliminary delineation completed for 1RP-4727 and agree that the area represented by AH-4 will need complete delineation when accessible. Confirmation bottom and sidewall samples required.

June 14, 2018

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

Re: Work Plan for the COG Operating LLC., New Mexico DL State #1, Unit I, Section 18, Township 23 South, Range 33 East, Lea County, New Mexico. 1RP-4727.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a release that occurred at New Mexico DL State #1, Unit I, Section 18, Township 23 South, Range 33 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.302948º, W 103.6050491º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release occurred on June 11, 2017, and released approximately 17 barrels of oil and 19 barrels of produced water due to tanks that overflowed. A vacuum truck was used to remove all freestanding fluids, recovering approximately 15 barrels of oil and 15 barrels of produced water. The release was contained inside the bermed facility and impacted an area measuring approximately 45' x 60'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells are listed in Section 18 on the New Mexico Office of the State Engineer (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 is listed on the NMOSE database and is located in Section 19, approximately 0.9 miles southwest of the site, and has a reported depth to groundwater of 400 feet below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is greater than 500 feet below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
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, dated August 13, 1993. 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 depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On February 15, 2018, Tetra Tech personnel were onsite to evaluate and inspect the release area. A total of four (4) auger holes (AH-1, AH-2, AH-3, and AH-4) were installed in the release area to total depths ranging from 1-1.5' to 3-3.5' below surface. Deeper samples could not be collected due to a dense formation in the area. Selected samples were analyzed 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 auger hole locations are shown on Figure 3.

Referring to Table 1, the areas of auger holes (AH-1, AH-2, and AH-3) showed benzene and total BTEX concentrations below the RRALs at 0-1' below surface. However, the area of auger hole (AH-4) showed a benzene concentration of 3.79 mg/kg and a total BTEX concentration of 126 mg/kg at 0-1' below surface.

Elevated TPH concentrations were detected at all of the auger hole locations. The areas of auger holes (AH-2 and AH-3) showed a shallow hydrocarbon impact to the soil, with TPH concentrations of 5,970 mg/kg and 7,900 mg/kg at 0-1' below surface, respectively. The TPH concentrations then declined with depth at 1-1.5' below the RRAL to 1,620 mg/kg (AH-2) and 3,270 mg/kg (AH-3). The area of auger hole (AH-1) showed deeper impact to the soils, declining below the RRAL at 3-3.5' below surface to 1,900 mg/kg. The area of auger hole (AH-4) showed TPH concentrations of 11,000 mg/kg (0-1') and 6,660 mg/kg (1.0'-1.5') and the area was not vertically defined.

The areas of auger holes (AH-1 and AH-2) did not detect any significant chloride concentrations in the soils. However, chloride highs of 763 mg/kg (0-1') and 831 mg/kg (1.0'-1.5') were detected in the areas of auger holes (AH-3 and AH-4), respectively.

TETRA TECH

Work Plan

The release area is inside the bermed facility, which contains numerous above ground and underground lines, as well as equipment. The depth to groundwater at the site is between 400' and 500' below surface. According to COG, the facility is currently in the process of plugging the well and removing all of the tanks, lines and equipment from the area. Once removed from the area, the impacted soils will be accessible for removal.

Based on the laboratory results, COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of auger hole (AH-1) will be excavated to approximately 2.0'-3.0' below surface and the areas of auger holes (AH-2 and AH-3) will be excavated to approximately 1.0' below surface. In the area of auger hole (AH-4) Tetra Tech will use a backhoe to define the vertical extents and properly remove the impacted soils to the appropriate depth.

Once the areas are excavated to the appropriate depths, the areas will be backfilled with clean material to surface grade. All of the excavated material will be transported offsite for proper disposal.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

If you have any questions or comments concerning the assessment activities for this site, please call at (432) 682-4559.

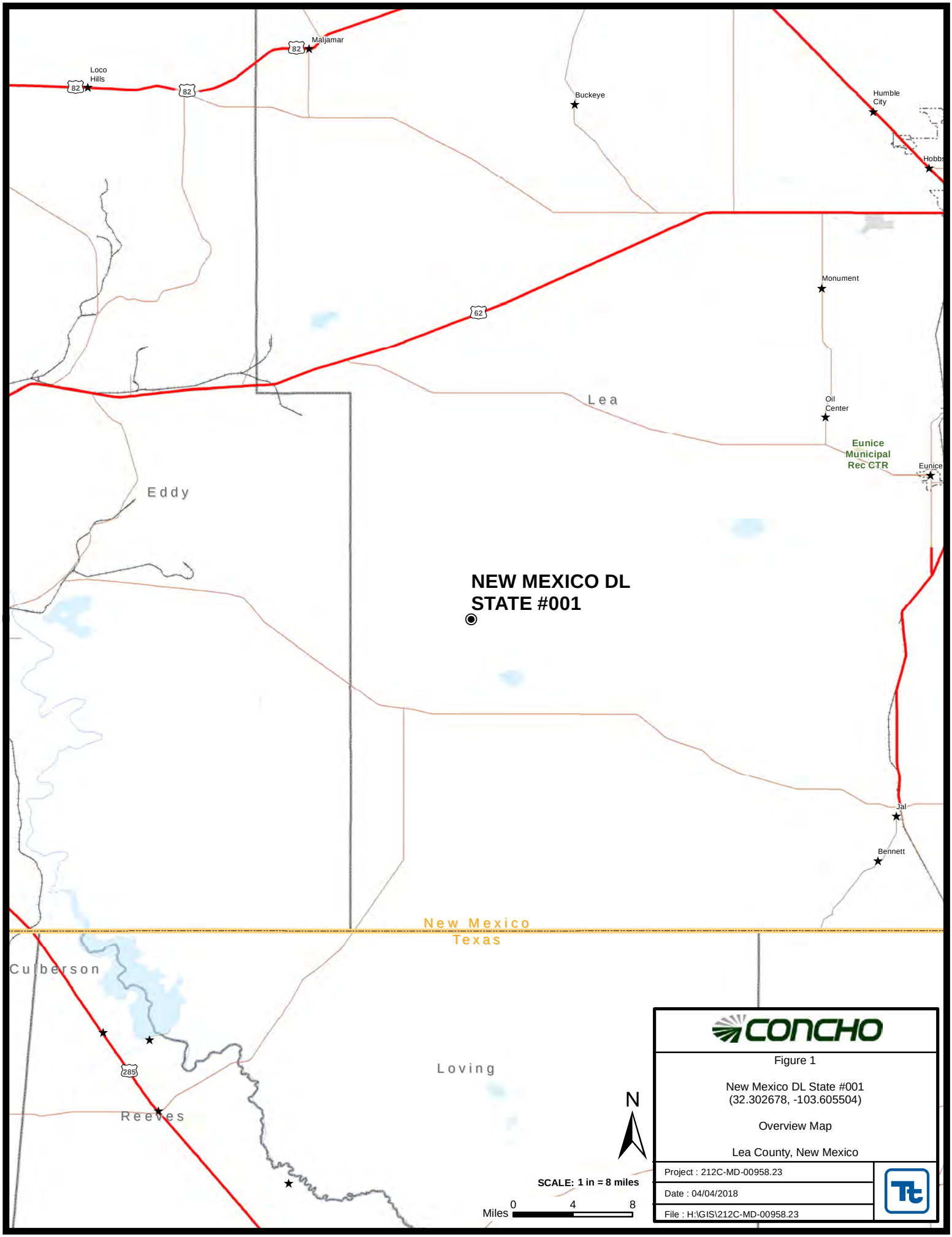
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Project Manager

Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell – COG
Ryan Mann - SLO

Figures



CONCHO

Figure 1

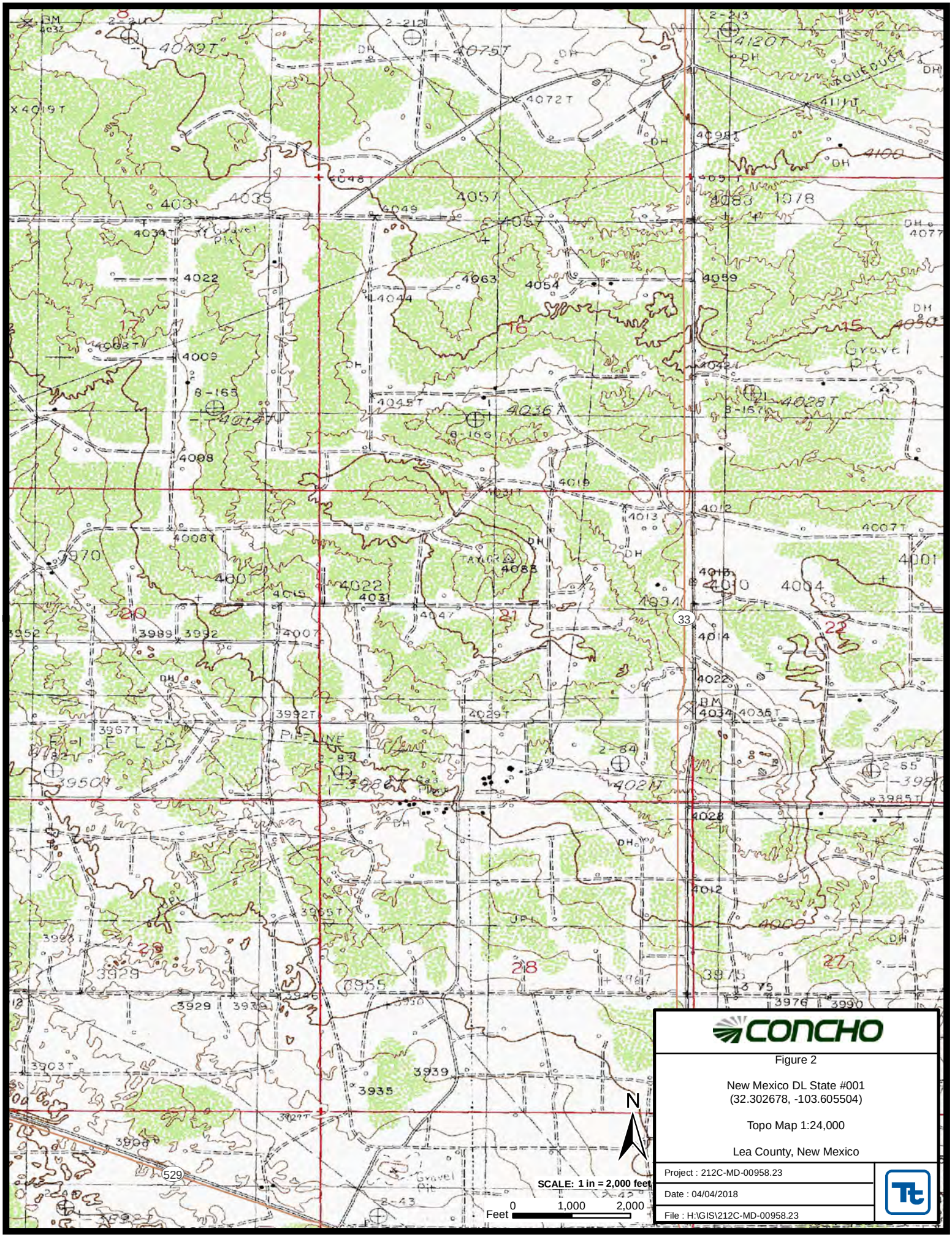
New Mexico DL State #001
(32.302678, -103.605504)

Overview Map

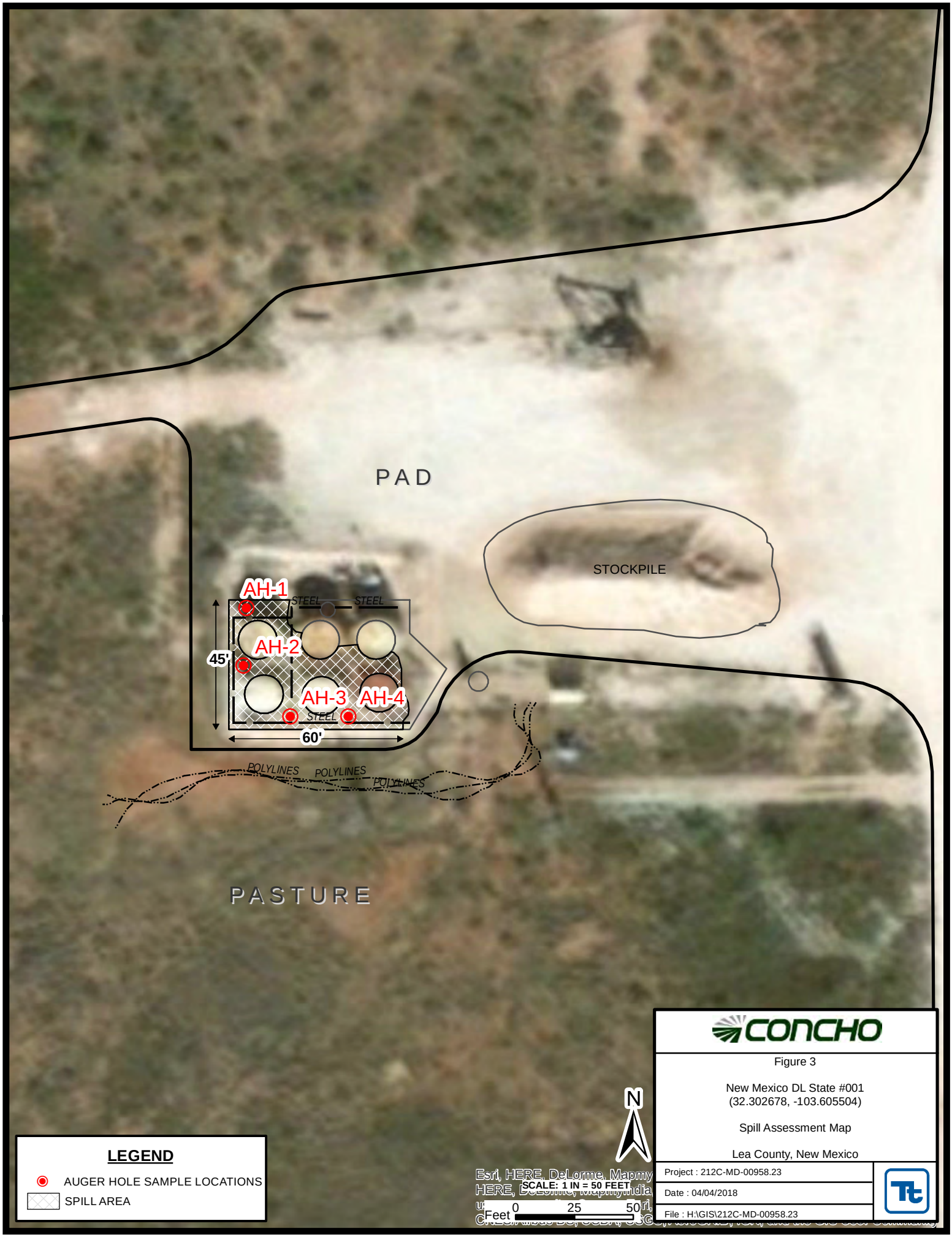
Lea County, New Mexico

Project : 212C-MD-00958.23	
Date : 04/04/2018	
File : H:\GIS\212C-MD-00958.23	

Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



CONCHO

Figure 3

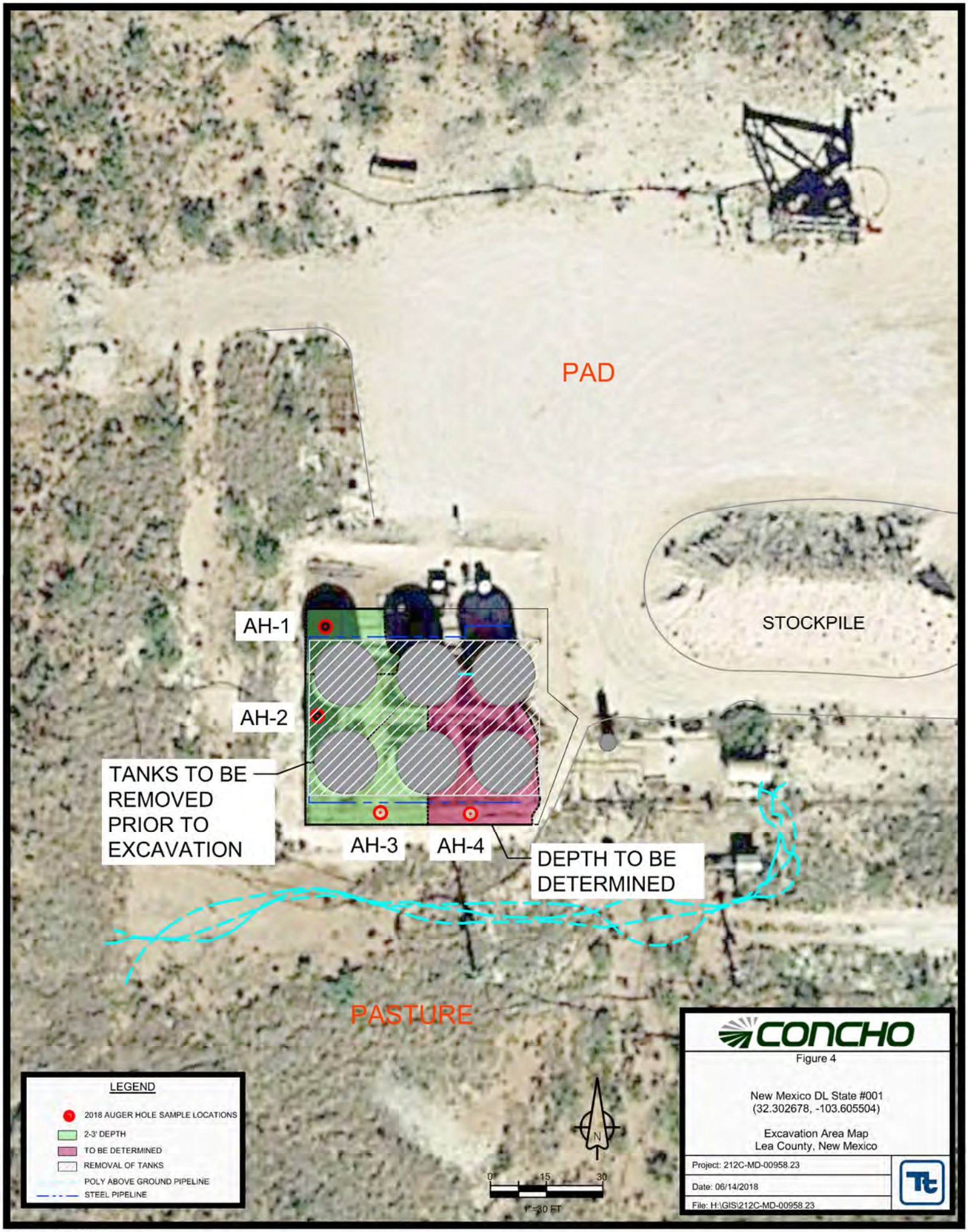
New Mexico DL State #001
(32.302678, -103.605504)

Spill Assessment Map

Lea County, New Mexico

Project : 212C-MD-00958.23	
Date : 04/04/2018	
File : H:\GIS\212C-MD-00958.23	

Mapped By: Isabel Marmolejo



CONCHO

Figure 4

New Mexico DL State #001
(32.302678, -103.605504)

Excavation Area Map
Lea County, New Mexico

Project: 212C-MD-00958.23

Date: 06/14/2018

File: H:\GIS\212C-MD-00958.23

Drawn By: MISTI MORGAN

Tables

Table 1
COG Operating LLC.
NM DL State #1
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	C6-C10	C10-C28	C28-C35	Total						
AH-1	2/15/2018	0-1	X		**1,350**	**7,130**	**165**	**8,650**	0.932	13.2	4.39	30.6	49.1	36.1
	"	1-1.5	X		**3,200**	**7,490**	**252**	**10,900**	-	-	-	-	-	14.5
	"	2-2.5	X		**4,050**	**6,860**	**447**	**11,400**	-	-	-	-	-	10.8
	"	3-3.5	X		558	1,290	48	1,900	-	-	-	-	-	35.1
AH-2	2/15/2018	0-1	X		**96.6**	**5,690**	**186**	**5,970**	0.0937	0.191	0.0235	0.0582	0.366	360
	"	1-1.5	X		17.4	1,520	86.1	1,620	-	-	-	-	-	78.6
	"	2-2.5	X		-	-	-	-	-	-	-	-	-	119
	"	3-3.5	X		-	-	-	-	-	-	-	-	-	100
	"	4-4.5	X		-	-	-	-	-	-	-	-	-	112
AH-3	2/15/2018	0-1	X		**466**	**7,190**	**244**	**7,900**	1.56	6.90	0.789	5.06	14.3	763
	"	1-1.5	X		316	2,840	113	3,270	-	-	-	-	-	90.8
	"	2-2.5	X		-	-	-	-	-	-	-	-	-	429
	"	3-3..5	X		-	-	-	-	-	-	-	-	-	109
AH-4	2/15/2018	0-1	X		**1,420**	**9,320**	**253**	**11,000**	3.79	47.5	7.20	67.7	**126**	531
	"	1-1.5	X		**699**	**5,600**	**357**	**6,660**	-	-	-	-	-	831

Proposed to Excavate and Remove

(-) Not Analyzed

Photos

COG Operating LLC
New Mexico DL State #1
Lea County, New Mexico

View Southwest – Area of AH-1

View South – Area of AH-2

COG Operating LLC
New Mexico DL State #1
Lea County, New Mexico

View East – Area of AH-3

View East – Area of AH-4

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 August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Repor

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: New Mexico DL State #001	Facility Type: Tank Battery

Surface Owner: State	Mineral Owner: State	API No. 30-025-28223

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	18	23S	33E	1980	South	660	East	Lea

Latitude 32.302948 **Longitude** -103.6050491

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 17 bbls Oil & 19 bbls PW	Volume Recovered: 15 bbls Oil & 15 bbls PW
Source of Release: Tanks	Date and Hour of Occurrence: June 11, 2017 9:45 am	Date and Hour of Discovery: June 11, 2017 9:45 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Ms. Yu – NMOCD / Ms. Groves – SLO	
By Whom? Rebecca Haskell	Date and Hour: June 12, 2017 Time of this Email	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse	

RECEIVED
By Olivia Yu at 2:37 pm, Jun 15, 2017

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The SWD pump failed to start and no high level alarm was received resulting in the tanks overflowing. Called the alarm company to repair the alarm.

Describe Area Affected and Cleanup Action Taken.*

The release was within an unlined berm. 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: Rebecca Haskell	OIL CONSERVATION DIVISION
Printed Name: Rebecca Haskell	Approved by Environmental Specialist:
Title: Senior HSE Coordinator	Approval Date: 6/15/2017 Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: see attached directive Attached ☑
Date: June 12, 2017 Phone: 432-683-7443	

* Attach Additional Sheets If Necessary

1RP-4727 nOY1716650629

pOY1716652856

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - New Mexico DL State #1
Lea County, New Mexico

22 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 382 350	13
19 (S) 280	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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

23 South 32 East

6	5	4	3	2	1
7 639	8	9	10	11	12
18	17	16	15	14	13
19	20 713	21 400	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	4	3	2	1
7	8 225	9	10	11	12
18	17	16	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

24 South 32 East

6	5	4	3	2	1
7	8	9	10 20	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33 290	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

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 02275		CUB	LE	3	3	2	19	23S	33E	630843	3573557*	650	400	250
C 02276		CUB	LE	3	1	4	19	23S	33E	630848	3573154*	650	400	250
C 02277		CUB	LE	2	3	4	20	23S	33E	632663	3572970*	550	400	150
C 02278		CUB	LE	3	4	2	28	23S	33E	634484	3571989*	650	400	250
C 02279		CUB	LE	3	4	3	28	23S	33E	633691	3571173*	650	400	250
C 02280		CUB	LE	3	2	4	28	23S	33E	634489	3571586*	650	400	250
C 02281		CUB	LE	3	4	4	28	23S	33E	634495	3571183*	545	400	145
C 02282		CUB	LE	3	1	1	25	23S	33E	638098	3572436*	325	225	100
C 02283		CUB	LE	4	2	2	26	23S	33E	637896	3572431*	325	225	100
C 02284		CUB	LE	4	2	4	26	23S	33E	637907	3571626*	325	225	100
C 03582 POD1		C	LE	4	1	1	14	23S	33E	636583	3575666	590		

Average Depth to Water: **347 feet**

Minimum Depth: **225 feet**

Maximum Depth: **400 feet**

Record Count: 11

PLSS Search:

Township: 23S **Range:** 33E

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

Appendix C

Analytical Report 576779

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

NM DL State #1

212C-MD-00958 Task #23

05-MAR-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

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

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-18-14)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)

05-MAR-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **576779**
NM DL State #1
Project Address: Lea County, New Mexico

Ike Tavarez:

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) 576779. 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. 576779 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 576779

Tetra Tech- Midland, Midland, TX

NM DL State #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH #1 (0-1')	S	02-15-18 00:00		576779-001
AH #1 (1-1.5')	S	02-15-18 00:00		576779-002
AH #1 (2-2.5')	S	02-15-18 00:00		576779-003
AH #1 (3-3.5')	S	02-15-18 00:00		576779-004
AH #2 (0-1')	S	02-15-18 00:00		576779-005
AH #2 (1-1.5')	S	02-15-18 00:00		576779-006
AH #2 (2-2.5')	S	02-15-18 00:00		576779-007
AH #2 (3-3.5')	S	02-15-18 00:00		576779-008
AH #2 (4-4.5')	S	02-15-18 00:00		576779-009
AH #3 (0-1')	S	02-15-18 00:00		576779-010
AH #3 (1-1.5')	S	02-15-18 00:00		576779-011
AH #3 (2-2.5')	S	02-15-18 00:00		576779-012
AH #3 (3-3.5')	S	02-15-18 00:00		576779-013
AH #4 (0-1')	S	02-15-18 00:00		576779-014
AH #4 (1-1.5')	S	02-15-18 00:00		576779-015

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3041808 BTEX by EPA 8021B
Lab Sample ID 576779-005 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576779-005.
The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 576779-005 SD.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3041960 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3041964 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3042388 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 576779

Tetra Tech- Midland, Midland, TX

Project Name: NM DL State #1

Project Id: 212C-MD-00958 Task #23
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Fri Feb-16-18 12:44 pm
Report Date: 05-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	576779-001		576779-002		576779-003		576779-004		576779-005		576779-006	
	Field Id:	AH #1 (0-1')		AH #1 (1-1.5')		AH #1 (2-2.5')		AH #1 (3-3.5')		AH #2 (0-1')		AH #2 (1-1.5')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-20-18 15:00								Feb-20-18 11:00			
	Analyzed:	Feb-22-18 01:20								Feb-20-18 14:59			
	Units/RL:	mg/kg	RL							mg/kg	RL		
Benzene		0.932	0.0994							0.0937	0.00199		
Toluene		13.2	0.0994							0.191	0.00199		
Ethylbenzene		4.39	0.0994							0.0235	0.00199		
m,p-Xylenes		19.5	0.199							0.0411	0.00398		
o-Xylene		11.1	0.0994							0.0171	0.00199		
Total Xylenes		30.6	0.0994							0.0582	0.00199		
Total BTEX		49.1	0.0994							0.366	0.00199		
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00	
	Analyzed:	Feb-22-18 20:48		Feb-22-18 20:53		Feb-22-18 20:58		Feb-22-18 21:03		Feb-22-18 21:09		Feb-22-18 21:14	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		36.1	4.97	14.5	4.91	10.8	4.99	35.1	4.95	360	5.00	78.6	4.91
TPH By SW8015 Mod	***Extracted:***	Feb-20-18 17:00		Feb-28-18 08:00		Mar-01-18 12:00		Mar-02-18 18:00		Feb-20-18 17:00		Feb-28-18 08:00	
	Analyzed:	Feb-21-18 08:36		Mar-01-18 10:41		Mar-02-18 14:23		Mar-03-18 15:22		Feb-21-18 06:14		Mar-01-18 11:05	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		1350	75.0	3200	74.8	4050	74.8	558 K	15.0	96.6	74.9	17.4	15.0
Diesel Range Organics (DRO)		7130	75.0	7490	74.8	6860	74.8	1290 K	15.0	5690	74.9	1520	15.0
Oil Range Hydrocarbons (ORO)		165	75.0	252	74.8	447	74.8	47.7 K	15.0	186	74.9	86.1	15.0
Total TPH		8650	75.0	10900	74.8	11400	74.8	1900 K	15.0	5970	74.9	1620	15.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 576779

Tetra Tech- Midland, Midland, TX

Project Name: NM DL State #1

Project Id: 212C-MD-00958 Task #23
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Fri Feb-16-18 12:44 pm
Report Date: 05-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	576779-007		576779-008		576779-009		576779-010		576779-011		576779-012	
	Field Id:	AH #2 (2-2.5')		AH #2 (3-3.5')		AH #2 (4-4.5')		AH #3 (0-1')		AH #3 (1-1.5')		AH #3 (2-2.5')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00	
BTEX by EPA 8021B	***Extracted:***							Feb-20-18 15:00					
	Analyzed:							Feb-22-18 02:17					
	Units/RL:							mg/kg	RL				
Benzene								1.56	0.0998				
Toluene								6.90	0.0998				
Ethylbenzene								0.789	0.0998				
m,p-Xylenes								4.18	0.200				
o-Xylene								0.876	0.0998				
Total Xylenes								5.06	0.0998				
Total BTEX								14.3	0.0998				
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00	
	Analyzed:	Feb-22-18 21:30		Feb-22-18 21:35		Feb-22-18 21:51		Feb-22-18 21:56		Feb-22-18 22:02		Feb-22-18 22:07	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		119	4.92	100	4.95	112	4.95	763	4.90	90.8	4.97	429	4.92
TPH By SW8015 Mod	***Extracted:***							Feb-20-18 17:00		Feb-28-18 08:00			
	Analyzed:							Feb-21-18 06:42		Mar-01-18 11:33			
	Units/RL:							mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)								466	150	316	15.0		
Diesel Range Organics (DRO)								7190	150	2840	15.0		
Oil Range Hydrocarbons (ORO)								244	150	113	15.0		
Total TPH								7900	150	3270	15.0		

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 576779

Tetra Tech- Midland, Midland, TX

Project Name: NM DL State #1

Project Id: 212C-MD-00958 Task #23
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Fri Feb-16-18 12:44 pm
Report Date: 05-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	576779-013		576779-014		576779-015			
	Field Id:	AH #3 (3-3.5')		AH #4 (0-1')		AH #4 (1-1.5')			
	Depth:								
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Feb-15-18 00:00		Feb-15-18 00:00		Feb-15-18 00:00			
BTEX by EPA 8021B	***Extracted:***			Feb-22-18 08:00		Feb-26-18 17:15			
	Analyzed:			Feb-22-18 12:02		Feb-28-18 15:18			
	Units/RL:			mg/kg	RL	mg/kg	RL		
Benzene				3.79	0.499	0.653	0.0996		
Toluene				47.5	0.499	16.9	0.0996		
Ethylbenzene				7.20	0.499	3.65	0.0996		
m,p-Xylenes				51.9	0.998	11.4	0.199		
o-Xylene				15.8	0.499	7.14	0.0996		
Total Xylenes				67.7	0.499	18.5	0.0996		
Total BTEX				126	0.499	39.7	0.0996		
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-22-18 16:00		Feb-22-18 16:00		Feb-22-18 16:00			
	Analyzed:	Feb-22-18 22:12		Feb-22-18 22:18		Feb-22-18 22:23			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		109	4.90	531	5.00	831	4.99		
TPH By SW8015 Mod	***Extracted:***			Feb-20-18 17:00		Feb-28-18 08:00			
	Analyzed:			Feb-21-18 07:07		Feb-28-18 21:39			
	Units/RL:			mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)				1420	74.8	699	74.9		
Diesel Range Organics (DRO)				9320	74.8	5600	74.9		
Oil Range Hydrocarbons (ORO)				253	74.8	357	74.9		
Total TPH				11000	74.8	6660	74.9		

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

+ 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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041808 **Sample:** 576779-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/18 14:59

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0338	0.0300	113	80-120	

Lab Batch #: 3041816 **Sample:** 576779-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/18 06:14

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.8	108	70-135	
o-Terphenyl	51.9	49.9	104	70-135	

Lab Batch #: 3041816 **Sample:** 576779-010 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/18 06:42

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.7	119	70-135	
o-Terphenyl	53.1	49.9	106	70-135	

Lab Batch #: 3041816 **Sample:** 576779-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/18 07:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	99.7	116	70-135	
o-Terphenyl	59.6	49.9	119	70-135	

Lab Batch #: 3041816 **Sample:** 576779-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/18 08:36

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	127	100	127	70-135	
o-Terphenyl	63.0	50.0	126	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041964 **Sample:** 576779-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/22/18 01:20

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0247	0.0300	82	80-120	
4-Bromofluorobenzene	0.0304	0.0300	101	80-120	

Lab Batch #: 3041964 **Sample:** 576779-010 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/22/18 02:17

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0255	0.0300	85	80-120	
4-Bromofluorobenzene	0.0269	0.0300	90	80-120	

Lab Batch #: 3041960 **Sample:** 576779-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/22/18 12:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0249	0.0300	83	80-120	

Lab Batch #: 3042388 **Sample:** 576779-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 15:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0218	0.0300	73	70-130	
4-Bromofluorobenzene	0.0329	0.0300	110	70-130	

Lab Batch #: 3042497 **Sample:** 576779-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 21:39

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	99.9	120	70-135	
o-Terphenyl	44.3	50.0	89	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3042497 **Sample:** 576779-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/01/18 10:41

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	99.7	122	70-135	
o-Terphenyl	49.4	49.9	99	70-135	

Lab Batch #: 3042497 **Sample:** 576779-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/01/18 11:05

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	99.7	112	70-135	
o-Terphenyl	58.9	49.9	118	70-135	

Lab Batch #: 3042497 **Sample:** 576779-011 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/01/18 11:33

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	58.0	50.0	116	70-135	

Lab Batch #: 3042633 **Sample:** 576779-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/02/18 14:23

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	120	99.7	120	70-135	
o-Terphenyl	44.5	49.9	89	70-135	

Lab Batch #: 3042778 **Sample:** 576779-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 15:22

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	99.8	124	70-135	
o-Terphenyl	63.1	49.9	126	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041808 **Sample:** 7639600-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/18 14:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0317	0.0300	106	80-120	

Lab Batch #: 3041816 **Sample:** 7639520-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/18 19:36

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	63.2	50.0	126	70-135	

Lab Batch #: 3041964 **Sample:** 7639673-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/21/18 22:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0249	0.0300	83	80-120	
4-Bromofluorobenzene	0.0298	0.0300	99	80-120	

Lab Batch #: 3041960 **Sample:** 7639666-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/22/18 08:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0251	0.0300	84	80-120	
4-Bromofluorobenzene	0.0319	0.0300	106	80-120	

Lab Batch #: 3042388 **Sample:** 7639915-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 05:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0239	0.0300	80	70-130	
4-Bromofluorobenzene	0.0280	0.0300	93	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3042497 **Sample:** 7639972-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 07:55

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	103	100	103	70-135	
o-Terphenyl	53.0	50.0	106	70-135	

Lab Batch #: 3042633 **Sample:** 7640031-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/01/18 13:16

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	53.5	50.0	107	70-135	

Lab Batch #: 3042778 **Sample:** 7640127-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 04:04

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

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

Lab Batch #: 3041808 **Sample:** 7639600-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/18 12:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0249	0.0300	83	80-120	
4-Bromofluorobenzene	0.0342	0.0300	114	80-120	

Lab Batch #: 3041816 **Sample:** 7639520-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

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

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	54.3	50.0	109	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041964 **Sample:** 7639673-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/21/18 20:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0260	0.0300	87	80-120	
4-Bromofluorobenzene	0.0324	0.0300	108	80-120	

Lab Batch #: 3041960 **Sample:** 7639666-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/22/18 07:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0253	0.0300	84	80-120	
4-Bromofluorobenzene	0.0334	0.0300	111	80-120	

Lab Batch #: 3042388 **Sample:** 7639915-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 03:42

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0262	0.0300	87	70-130	
4-Bromofluorobenzene	0.0338	0.0300	113	70-130	

Lab Batch #: 3042497 **Sample:** 7639972-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 08:22

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	100	110	70-135	
o-Terphenyl	53.5	50.0	107	70-135	

Lab Batch #: 3042633 **Sample:** 7640031-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/01/18 13:41

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	58.0	50.0	116	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3042778 **Sample:** 7640127-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 04:32

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	127	100	127	70-135	
o-Terphenyl	64.8	50.0	130	70-135	

Lab Batch #: 3041808 **Sample:** 7639600-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/18 13:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

Lab Batch #: 3041816 **Sample:** 7639520-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/20/18 20:27

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	63.8	50.0	128	70-135	

Lab Batch #: 3041964 **Sample:** 7639673-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/21/18 20:34

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0258	0.0300	86	80-120	
4-Bromofluorobenzene	0.0336	0.0300	112	80-120	

Lab Batch #: 3041960 **Sample:** 7639666-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/22/18 07:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0264	0.0300	88	80-120	
4-Bromofluorobenzene	0.0328	0.0300	109	80-120	

* 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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3042388 **Sample:** 7639915-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 04:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0253	0.0300	84	70-130	
4-Bromofluorobenzene	0.0349	0.0300	116	70-130	

Lab Batch #: 3042497 **Sample:** 7639972-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/28/18 08:48

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	54.8	50.0	110	70-135	

Lab Batch #: 3042633 **Sample:** 7640031-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/01/18 14:07

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	60.1	50.0	120	70-135	

Lab Batch #: 3042778 **Sample:** 7640127-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 04:57

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	59.1	50.0	118	70-135	

Lab Batch #: 3041808 **Sample:** 576779-005 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/18 13:23

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	0.0300	91	80-120	
4-Bromofluorobenzene	0.0338	0.0300	113	80-120	

* 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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041816 **Sample:** 576780-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/18 21:21

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.9	119	70-135	
o-Terphenyl	58.4	50.0	117	70-135	

Lab Batch #: 3041964 **Sample:** 576848-003 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/21/18 20:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0248	0.0300	83	80-120	
4-Bromofluorobenzene	0.0318	0.0300	106	80-120	

Lab Batch #: 3041960 **Sample:** 576402-004 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/22/18 07:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0335	0.0300	112	80-120	

Lab Batch #: 3042388 **Sample:** 577388-008 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 04:21

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	0.0347	0.0300	116	70-130	

Lab Batch #: 3042497 **Sample:** 577419-021 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 09:38

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	99.9	94	70-135	
o-Terphenyl	41.1	50.0	82	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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3042633 **Sample:** 577756-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/01/18 14:59

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	56.8	49.9	114	70-135	

Lab Batch #: 3042778 **Sample:** 577595-021 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 05:49

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	56.6	50.0	113	70-135	

Lab Batch #: 3041808 **Sample:** 576779-005 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/18 13:42

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0355	0.0300	118	80-120	
4-Bromofluorobenzene	0.0399	0.0300	133	80-120	**

Lab Batch #: 3041816 **Sample:** 576780-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/20/18 21:48

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	59.7	50.0	119	70-135	

Lab Batch #: 3041964 **Sample:** 576848-003 SD / MSD **Batch:** 1 **Matrix:** Soil

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0262	0.0300	87	80-120	
4-Bromofluorobenzene	0.0315	0.0300	105	80-120	

* 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: NM DL State #1

Work Orders : 576779,

Project ID: 212C-MD-00958 Task #23

Lab Batch #: 3041960 **Sample:** 576402-004 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/22/18 16:59

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0245	0.0300	82	80-120	
4-Bromofluorobenzene	0.0346	0.0300	115	80-120	

Lab Batch #: 3042388 **Sample:** 577388-008 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 04:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0247	0.0300	82	70-130	
4-Bromofluorobenzene	0.0337	0.0300	112	70-130	

Lab Batch #: 3042497 **Sample:** 577419-021 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/28/18 10:05

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.0	99.9	90	70-135	
o-Terphenyl	41.3	50.0	83	70-135	

Lab Batch #: 3042633 **Sample:** 577756-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/01/18 15:24

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	99.7	107	70-135	
o-Terphenyl	52.2	49.9	105	70-135	

Lab Batch #: 3042778 **Sample:** 577595-021 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 06:15

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	114	99.7	114	70-135	
o-Terphenyl	53.8	49.9	108	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: NM DL State #1

Work Order #: 576779 **Project ID:** 212C-MD-00958 Task #23

Analyst: ALJ **Date Prepared:** 02/20/2018 **Date Analyzed:** 02/20/2018

Lab Batch ID: 3041808 **Sample:** 7639600-1-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	<0.00202	0.101	0.0902	89	0.100	0.0890	89	1	70-130	35	
Toluene	<0.00202	0.101	0.0952	94	0.100	0.0942	94	1	70-130	35	
Ethylbenzene	<0.00202	0.101	0.106	105	0.100	0.104	104	2	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.210	104	0.200	0.205	103	2	70-135	35	
o-Xylene	<0.00202	0.101	0.103	102	0.100	0.102	102	1	71-133	35	

Analyst: ALJ **Date Prepared:** 02/22/2018 **Date Analyzed:** 02/22/2018

Lab Batch ID: 3041960 **Sample:** 7639666-1-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	<0.00199	0.0994	0.103	104	0.0998	0.0888	89	15	70-130	35	
Toluene	<0.00199	0.0994	0.111	112	0.0998	0.0928	93	18	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.124	125	0.0998	0.0992	99	22	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.247	124	0.200	0.196	98	23	70-135	35	
o-Xylene	<0.00199	0.0994	0.120	121	0.0998	0.0950	95	23	71-133	35	

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: NM DL State #1

Work Order #: 576779 **Project ID:** 212C-MD-00958 Task #23

Analyst: ALJ **Date Prepared:** 02/20/2018 **Date Analyzed:** 02/21/2018

Lab Batch ID: 3041964 **Sample:** 7639673-1-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	<0.00199	0.0994	0.0823	83	0.100	0.0935	94	13	70-130	35	
Toluene	<0.00199	0.0994	0.0887	89	0.100	0.101	101	13	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.102	103	0.100	0.117	117	14	71-129	35	
m,p-Xylenes	<0.00398	0.199	0.201	101	0.201	0.229	114	13	70-135	35	
o-Xylene	<0.00199	0.0994	0.0994	100	0.100	0.114	114	14	71-133	35	

Analyst: ALJ **Date Prepared:** 02/26/2018 **Date Analyzed:** 02/28/2018

Lab Batch ID: 3042388 **Sample:** 7639915-1-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	<0.00202	0.101	0.0833	82	0.100	0.0797	80	4	70-130	35	
Toluene	<0.00202	0.101	0.0877	87	0.100	0.0857	86	2	70-130	35	
Ethylbenzene	<0.00202	0.101	0.0994	98	0.100	0.0970	97	2	70-130	35	
m,p-Xylenes	<0.00403	0.202	0.196	97	0.200	0.192	96	2	70-130	35	
o-Xylene	<0.00202	0.101	0.0981	97	0.100	0.0976	98	1	70-130	35	

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: NM DL State #1

Work Order #: 576779 **Project ID:** 212C-MD-00958 Task #23

Analyst: OJS **Date Prepared:** 02/22/2018 **Date Analyzed:** 02/22/2018

Lab Batch ID: 3041902 **Sample:** 7639624-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	255	102	250	262	105	3	90-110	20	

Analyst: ARM **Date Prepared:** 02/20/2018 **Date Analyzed:** 02/20/2018

Lab Batch ID: 3041816 **Sample:** 7639520-1-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)	<15.0	1000	906	91	1000	1050	105	15	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	986	99	1000	1130	113	14	70-135	35	

Analyst: ARM **Date Prepared:** 02/28/2018 **Date Analyzed:** 02/28/2018

Lab Batch ID: 3042497 **Sample:** 7639972-1-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)	<15.0	1000	965	97	1000	963	96	0	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	988	99	1000	983	98	1	70-135	35	

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: NM DL State #1

Work Order #: 576779 **Project ID:** 212C-MD-00958 Task #23

Analyst: ARM **Date Prepared:** 03/01/2018 **Date Analyzed:** 03/01/2018

Lab Batch ID: 3042633 **Sample:** 7640031-1-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)	<15.0	1000	974	97	1000	1080	108	10	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1000	100	1000	1110	111	10	70-135	35	

Analyst: ARM **Date Prepared:** 03/02/2018 **Date Analyzed:** 03/03/2018

Lab Batch ID: 3042778 **Sample:** 7640127-1-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)	<15.0	1000	1100	110	1000	1040	104	6	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1140	114	1000	1060	106	7	70-135	35	

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: NM DL State #1

Work Order # : 576779 **Project ID:** 212C-MD-00958 Task #23

Lab Batch ID: 3041808 **QC- Sample ID:** 576779-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/20/2018 **Date Prepared:** 02/20/2018 **Analyst:** ALJ

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	0.0937	0.100	0.114	20	0.101	0.0984	5	15	70-130	35	X
Toluene	0.191	0.100	0.187	0	0.101	0.182	0	3	70-130	35	X
Ethylbenzene	0.0235	0.100	0.0662	43	0.101	0.0602	36	9	71-129	35	X
m,p-Xylenes	0.0411	0.200	0.125	42	0.201	0.104	31	18	70-135	35	X
o-Xylene	0.0171	0.100	0.0659	49	0.101	0.0544	37	19	71-133	35	X

Lab Batch ID: 3041960 **QC- Sample ID:** 576402-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/22/2018 **Date Prepared:** 02/22/2018 **Analyst:** ALJ

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	<0.00201	0.100	0.0805	81	0.0998	0.0808	81	0	70-130	35	
Toluene	<0.00201	0.100	0.0842	84	0.0998	0.0849	85	1	70-130	35	
Ethylbenzene	<0.00201	0.100	0.0889	89	0.0998	0.0930	93	5	71-129	35	
m,p-Xylenes	<0.00402	0.201	0.175	87	0.200	0.184	92	5	70-135	35	
o-Xylene	<0.00201	0.100	0.0860	86	0.0998	0.0908	91	5	71-133	35	

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: NM DL State #1

Work Order # : 576779 **Project ID:** 212C-MD-00958 Task #23

Lab Batch ID: 3041964 **QC- Sample ID:** 576848-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/21/2018 **Date Prepared:** 02/20/2018 **Analyst:** ALJ

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	<0.00202	0.101	0.0730	72	0.0994	0.0738	74	1	70-130	35	
Toluene	0.00225	0.101	0.0781	75	0.0994	0.0777	76	1	70-130	35	
Ethylbenzene	<0.00202	0.101	0.0875	87	0.0994	0.0848	85	3	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.171	85	0.199	0.166	83	3	70-135	35	
o-Xylene	<0.00202	0.101	0.0859	85	0.0994	0.0823	83	4	71-133	35	

Lab Batch ID: 3042388 **QC- Sample ID:** 577388-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/28/2018 **Date Prepared:** 02/26/2018 **Analyst:** ALJ

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	0.0996	0.0794	80	0.0994	0.0699	70	13	70-130	35	
Toluene	<0.00199	0.0996	0.0844	85	0.0994	0.0739	74	13	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0929	93	0.0994	0.0819	82	13	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.183	92	0.199	0.161	81	13	70-130	35	
o-Xylene	<0.00199	0.0996	0.0913	92	0.0994	0.0793	80	14	70-130	35	

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: NM DL State #1

Work Order # : 576779 **Project ID:** 212C-MD-00958 Task #23

Lab Batch ID: 3041902 **QC- Sample ID:** 576746-010 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/22/2018 **Date Prepared:** 02/22/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	<4.92	246	254	103	246	266	108	5	90-110	20	

Lab Batch ID: 3041902 **QC- Sample ID:** 576779-006 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/22/2018 **Date Prepared:** 02/22/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	78.6	246	338	105	246	339	106	0	90-110	20	

Lab Batch ID: 3041816 **QC- Sample ID:** 576780-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/20/2018 **Date Prepared:** 02/20/2018 **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)	<15.0	999	987	99	1000	1020	102	3	70-135	35	
Diesel Range Organics (DRO)	<15.0	999	1070	107	1000	1100	110	3	70-135	35	

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: NM DL State #1

Work Order # : 576779 **Project ID:** 212C-MD-00958 Task #23

Lab Batch ID: 3042497 **QC- Sample ID:** 577419-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/28/2018 **Date Prepared:** 02/28/2018 **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)	<15.0	999	1070	107	999	953	95	12	70-135	35	
Diesel Range Organics (DRO)	<15.0	999	1180	118	999	1060	106	11	70-135	35	

Lab Batch ID: 3042633 **QC- Sample ID:** 577756-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/01/2018 **Date Prepared:** 03/01/2018 **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)	<15.0	997	1060	106	997	957	96	10	70-135	35	
Diesel Range Organics (DRO)	<15.0	997	1100	110	997	1010	101	9	70-135	35	

Lab Batch ID: 3042778 **QC- Sample ID:** 577595-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/03/2018 **Date Prepared:** 03/02/2018 **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)	<15.0	999	1060	106	997	1030	103	3	70-135	35	
Diesel Range Organics (DRO)	<15.0	999	1100	110	997	1050	105	5	70-135	35	

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

Tetra Tech, Inc.

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

576779

Client Name: COG	**Site Manager:** Ike Tavarez
Project Name: NM DL State #1	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-00958 Task#23
Invoice to: Bill Direct to COG-Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona

Comments: Run deeper samples if TPH exceeds 5,000 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: 2017 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	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance					Hold
	AH #1 (0-1')	2/15/2018			X				X			1	N	X		X												X								
	AH #1 (1-1.5')	2/15/2018			X				X			1	N															X								
	AH #1 (2-2.5')	2/15/2018			X				X			1	N															X								
	AH #1 (3-3.5')	2/15/2018			X				X			1	N															X								
	AH #2 (0-1')	2/15/2018			X				X			1	N	X		X												X								
	AH #2 (1-1.5')	2/15/2018			X				X			1	N															X								
	AH #2 (2-2.5')	2/15/2018			X				X			1	N															X								
	AH #2 (3-3.5')	2/15/2018			X				X			1	N															X								
	AH #2 (4-4.5')	2/15/2018			X				X			1	N															X								
	AH #3 (0-1')	2/15/2018			X				X			1	N	X		X												X								

Relinquished by:	Date: 2-16-18	Time: 1244	Received by: Julian Molina Date: 2-16-18 Time: 12:44
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Temp: 0.6 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 0.4

ORIGINAL COPY

LAB USE ONLY

Sample Temperature

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 #: _____

Final 1.001

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

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

576779

Client Name: COG	**Site Manager:** Ike Tavarez
Project Name: NM DL State #1	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-00958 Task#23
Invoice to: Bill Direct to COG-Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona
Comments: Run deeper samples if TPH exceeds 5,000 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: 2017 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	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
	AH #3 (1-1.5')	2/15/2018			X				X			1	N															X							
	AH #3 (2-2.5')	2/15/2018			X				X			1	N															X							
	AH #3 (3-3.5')	2/15/2018			X				X			1	N															X							
	AH #4 (0-1')	2/15/2018			X				X			1	N	X		X												X							
	AH #4 (1-1.5')	2/15/2018			X				X			1	N															X							

Final 1.001

Page 29 of 30

Relinquished by:	Date: 2-16-18	Time: 1244
Relinquished by:	Date:	Time:
Relinquished by:	Date:	Time:

Received by:	Date:	Time:
Julian Martinez	2-16-18	12:44
Received by:	Date:	Time:
Received by:		

Temp: 0.6 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 0.4

ORIGINAL COPY

LAB USE ONLY

nperature

REMARKS:

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

DELIVERED FEDEX UPS Tracking #: _____

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 02/16/2018 12:44:00 PM

Work Order #: 576779

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.4	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	Lubbock
#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: Connie Hernandez Date: 02/19/2018

Checklist reviewed by: Kelsey Brooks Date: 02/19/2018