SITE INFORMATION

Report Type: Work Plan 1RP-4959

General Site Information:						
Site:	**Madera 19 Federal 1**					
Company:	**Marathon Oil Permian, LLC**					
Section, Township and Range	**Unit L**	**Sec. 19**	**T 26S**	**R 35E**		
Lease Number:	**API No. 30-025-36645**					
County:	**Lea County**					
GPS:	**32.026836° N**			**103.411465° W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of NM 3 and Beckham Rd in rural Lea County, travel west on Beckham Rd for approximately 9.3 miles , turn northwest onto leaes road for 0.60 miles, turn south onto lease road for 0.10 mi to location.					

Release Data:	
Date Released:	1/31/2018
Type Release:	Condensate & Produced Water
Source of Contamination:	500 bbl tank
Fluid Released:	150 bbls
Fluids Recovered:	0 bbls

Official Communication:			
Name:	Callie Karrigan		Ike Tavarez
Company:	Marathon Oil Permian, LLC.		Tetra Tech
Address:	2423 Bonita St.		4000 N. Big Spring
			Ste 401
City:	Carlsbad, NM 88220		Midland, Texas
Phone number:	(575) 297-0956		(432) 687-8110
Fax:			
Email:	cnkarrigan@marathonoil.com		Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	***0***	*150'-175'*
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 11:57 am, Feb 28, 2018

NMOCD approves of the delineation completed for 1RP-4959. For remediation, bottom and sidewall samples are required.

February 26, 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 Marathon Oil Company, Madera 19 Federal #1, Unit L, Section 19, Township 26 South, Range 35 East, Lea County, New Mexico. 1RP-4959.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by Marathon Oil Company (Marathon) to investigate and assess a release that occurred at the Madera 19 Federal #1, Unit L, Section 19, Township 26 South, Range 35 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.026836º, W 103.411465º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release was discovered on January 31, 2018, and released approximately 150 barrels of condensate and produced water due to tank leak. None of the fluids were recovered. The release occurred inside the facility berm from a leaking tank bottom and remained on the facility pad, impacting an area measuring approximately 40' x 110'. The initial C-141 form is included in Appendix A.

Groundwater

No wells are listed within Section 19 in the New Mexico Office of the State Engineers database, the USGS National Water Information System, or the Geology and Groundwater Conditions in Southern Lea County, NM (Report 6). However, the State Engineers database lists a well in Section 24, approximately 5.2 miles east of the site, with a reported depth to water of 250' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 150' and 175' 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 8, 2018, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of three (3) auger holes (AH-1, AH-2 and AH-3) were installed in the spill footprint to total depths of 5.0' to 5.5' below surface. 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 the laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown in Figure 3.

Referring to Table 1, none of the samples analyzed showed benzene concentrations above the RRAL. However, the areas of auger holes (AH-1, AH-2 and AH-3) showed total BTEX concentrations of 691 mg/kg, 729 mg/kg, and 622 mg/kg at 0-1' below surface, respectively. The deeper samples declined with depth to below the RRAL at 1.0-1.5' below surface.

Additionally, elevated TPH concentrations were detected at 0-1' below surface, with concentrations of 17,300 mg/kg (AH-1), 14,020 mg/kg (AH-2), and 12,120 mg/kg (AH-3). The TPH concentrations then declined with depth to below the RRAL at 1.0-1.5' below surface, with concentrations of 530 mg/kg (AH-1), 18.2 mg/kg (AH-2), and 1,136 mg/kg (AH-3). In addition, none of the samples collected showed chloride concentrations above the 600 mg/kg threshold.

Work Plan

Based on the laboratory results, Marathon proposes to remove the impacted soils as shown on Figure 4 and highlighted (green) on Table 1. The areas of auger holes (AH-1, AH-2, and AH-3) will be excavated to approximately 1.0' below surface. Once removed to the appropriate depth, the excavated areas will then 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, Marathon will excavate the impacted soils to the maximum extent practicable.

TETRA TECH

Conclusion

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

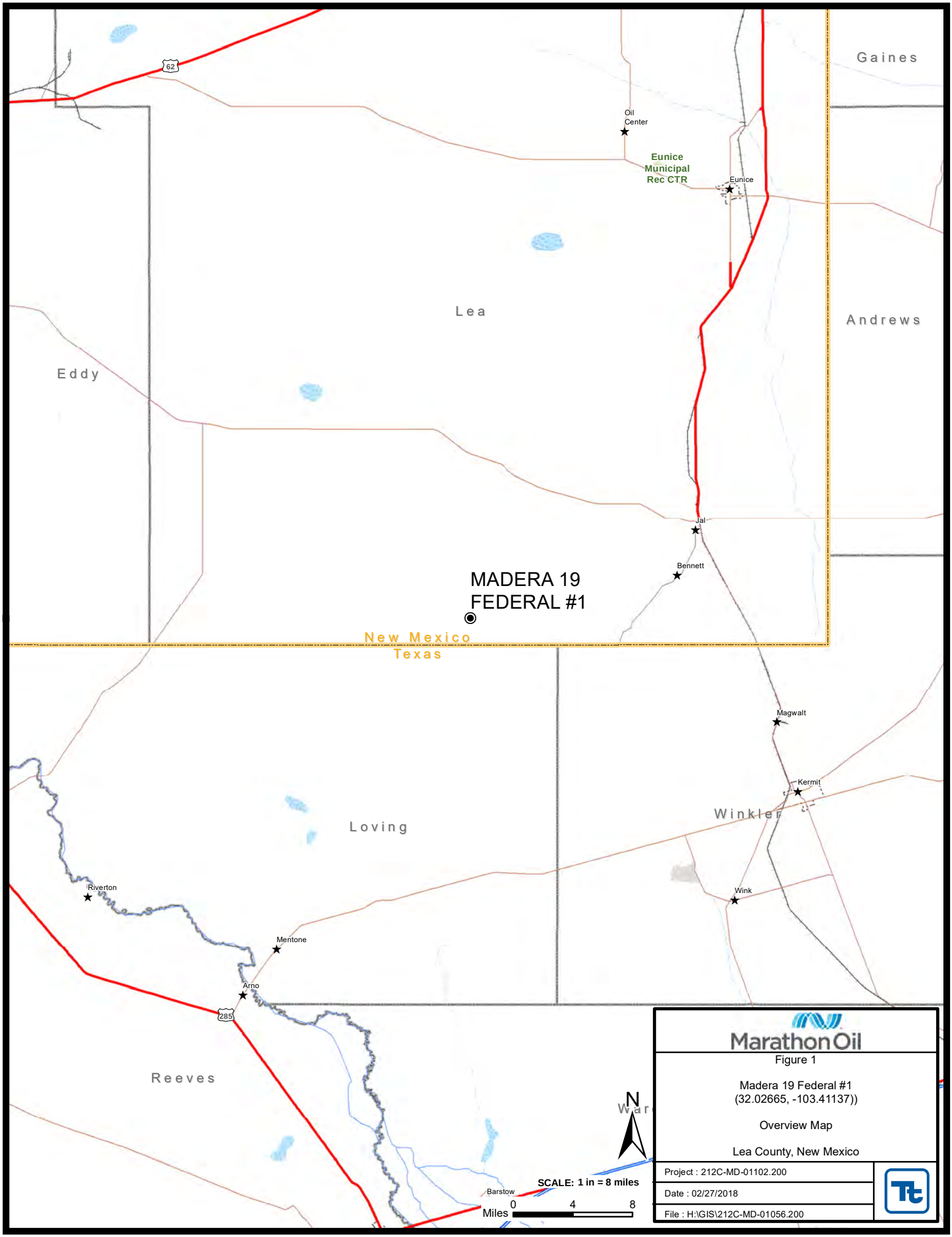
Respectfully submitted,
TETRA TECH

Clair Gonzales,
Project Manager

Ike Tavarez,
Senior Project Manager, P.G.

cc: Shelly Tucker - BLM
Callie Karrigan - Marathon

Figures



Marathon Oil

Figure 1

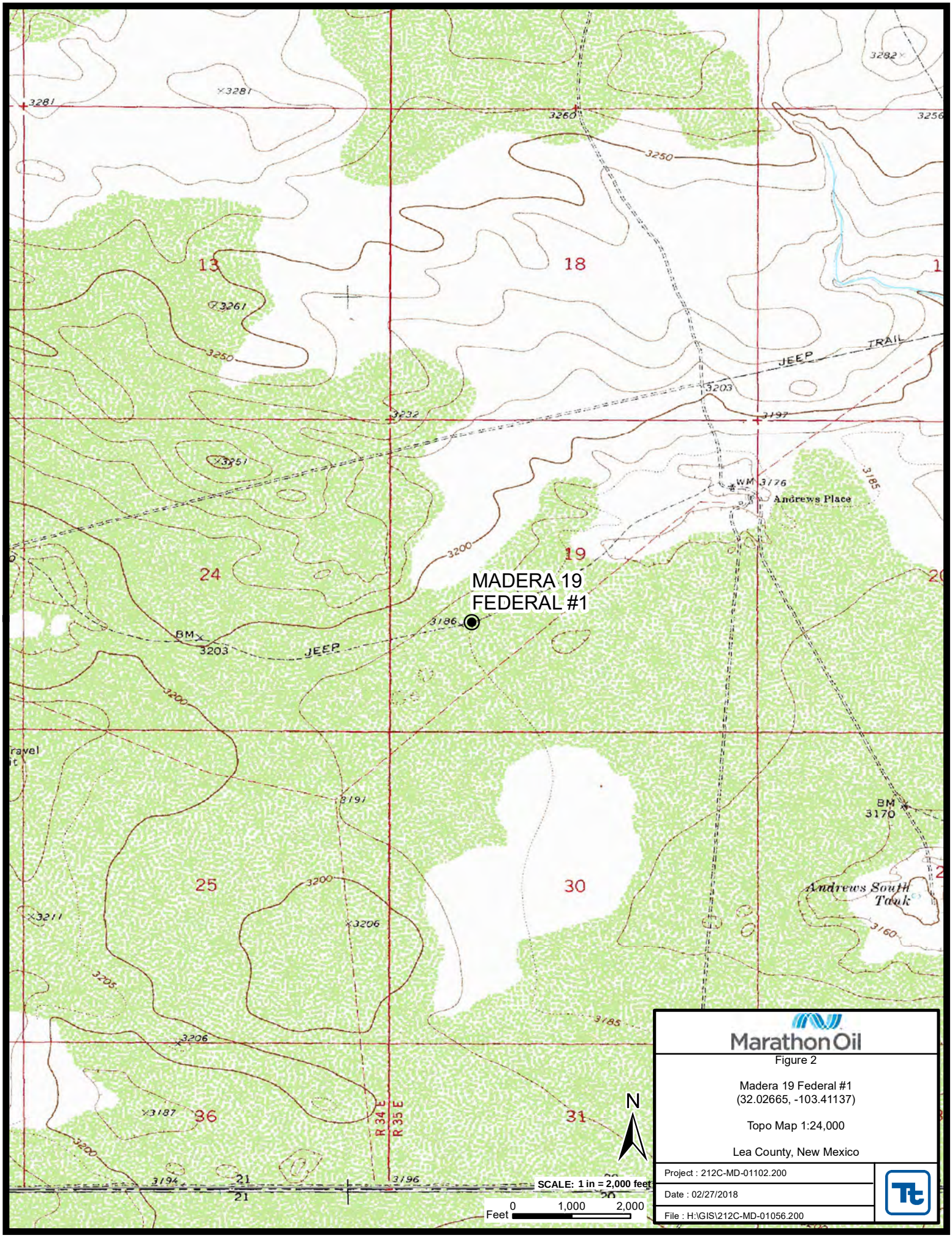
Madera 19 Federal #1
(32.02665, -103.41137))

Overview Map

Lea County, New Mexico

Project : 212C-MD-01102.200	
Date : 02/27/2018	
File : H:\GIS\212C-MD-01056.200	

Mapped By: Isabel Marmolejo



Marathon Oil

Figure 2

Madera 19 Federal #1
(32.02665, -103.41137)

Topo Map 1:24,000

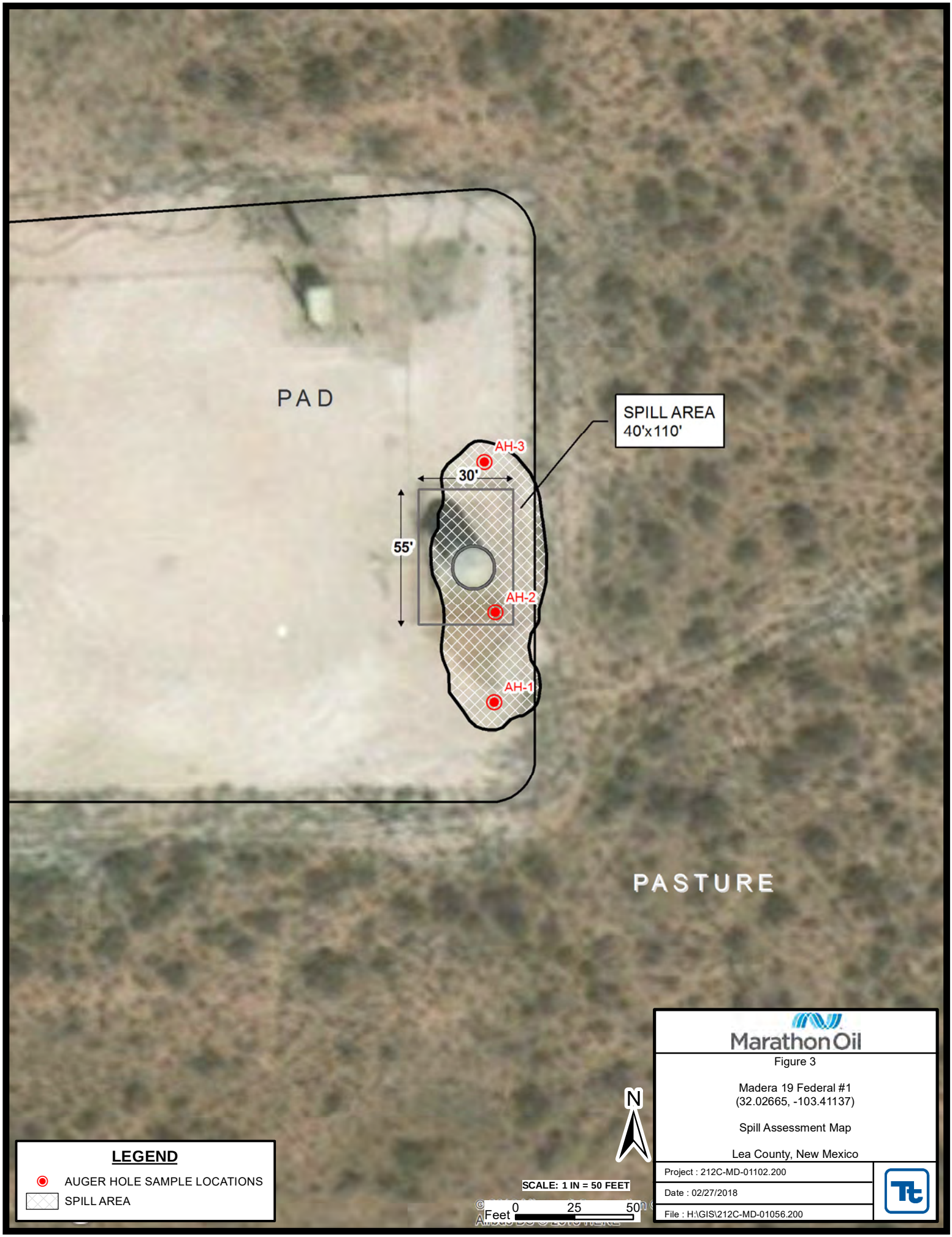
Lea County, New Mexico

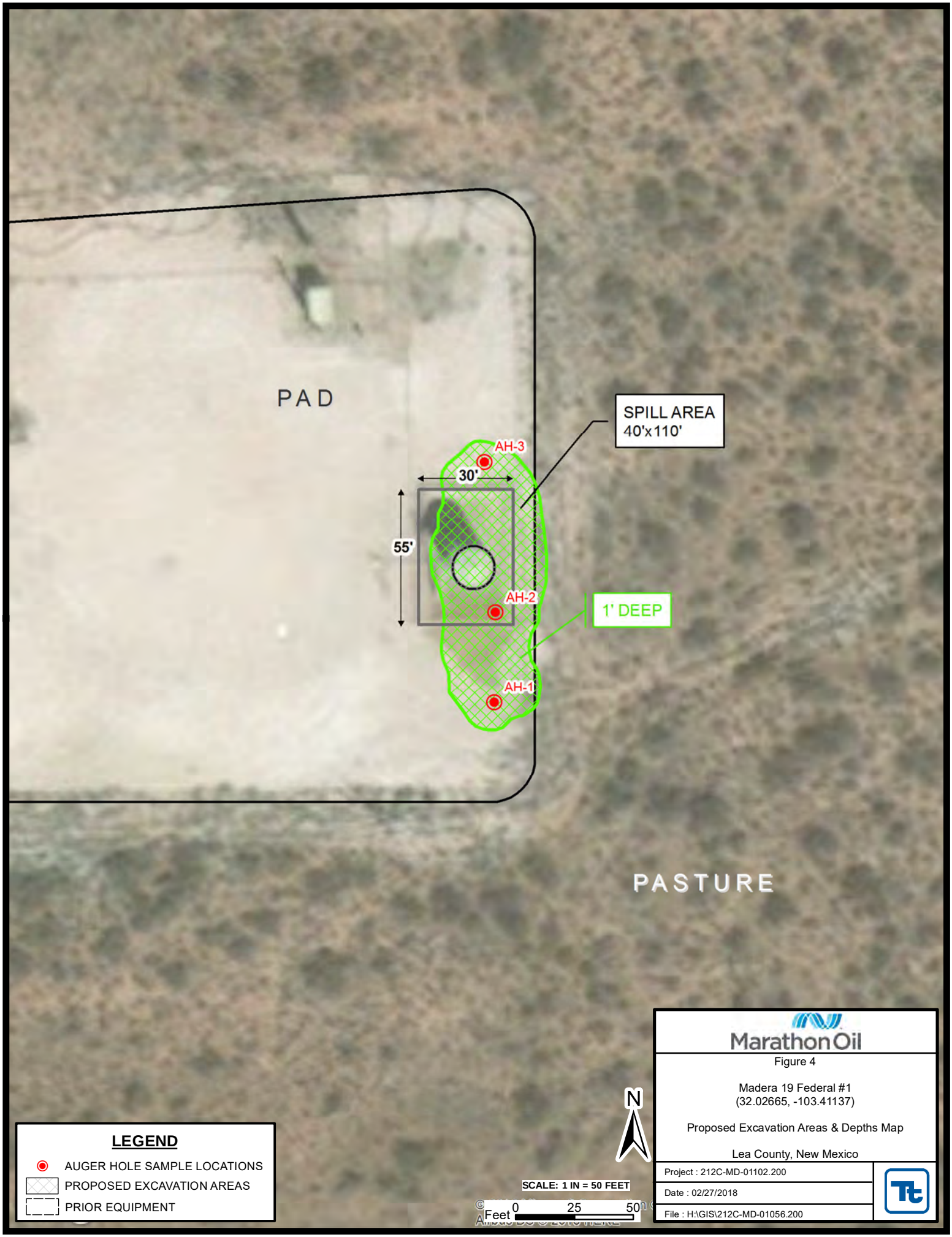
Project : 212C-MD-01102.200

Date : 02/27/2018

File : H:\GIS\212C-MD-01056.200

Mapped By: Isabel Marmolejo


PAD
SPILL AREA
40'x110'
AH-3
30'
55'
AH-2
AH-1
PASTURE
N
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
SCALE: 1 IN = 50 FEET
Feet 0 25 50
Marathon Oil
Figure 3
Madera 19 Federal #1
(32.02665, -103.41137)
Spill Assessment Map
Lea County, New Mexico
Project : 212C-MD-01102.200
Date : 02/27/2018
File : H:\GIS\212C-MD-01056.200
Mapped By: Isabel Marmolejo


PAD
SPILL AREA
40'x110'
AH-3
30'
55'
AH-2
1' DEEP
AH-1
PASTURE
N
SCALE: 1 IN = 50 FEET
Feet 0 25 50
LEGEND
AUGER HOLE SAMPLE LOCATIONS
PROPOSED EXCAVATION AREAS
PRIOR EQUIPMENT
Marathon Oil
Figure 4
Madera 19 Federal #1
(32.02665, -103.41137)
Proposed Excavation Areas & Depths Map
Lea County, New Mexico
Project : 212C-MD-01102.200
Date : 02/27/2018
File : H:\GIS\212C-MD-01056.200
Mapped By: Isabel Marmolejo

Tables

Table 1
Marathon Oil Company
Madera 19 Federal #1
Lea County, New Mexico

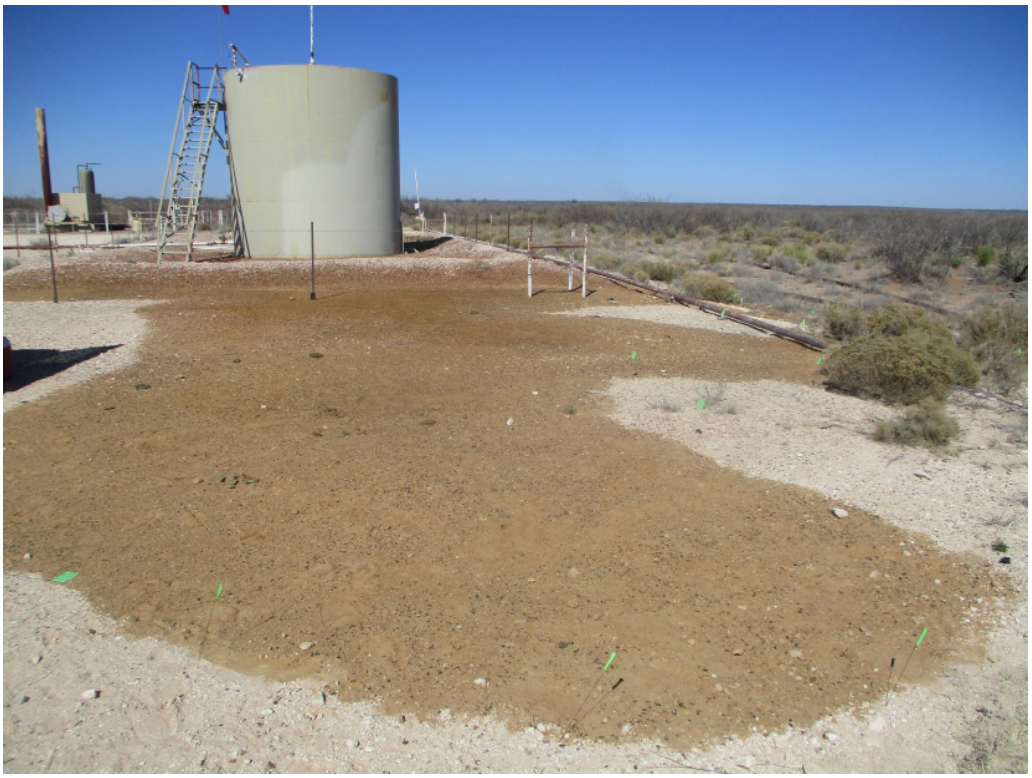
Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	2/8/2018	0-1	X		**8,940**	**8,360**	**17,300**	2.41	161	27.1	500	**691**	161
	"	1-1.5	X		56.3	474	530	<0.00199	0.0570	0.0381	0.942	1.04	61.5
	"	2-2.5	X		-	-	-	-	-	-	-	-	54.8
	"	3-3.5	X		-	-	-	-	-	-	-	-	50.0
	"	4-4.5	X		-	-	-	-	-	-	-	-	38.8
	"	4.5-5.0	X		-	-	-	-	-	-	-	-	437
AH-2	2/8/2018	0-1	X		**8,660**	**5,360**	**14,020**	3.21	188	27.3	510	**729**	143
	"	1-1.5	X		<15.0	18.2	18.2	<0.00201	0.00271	<0.00201	0.0141	0.0168	52.8
	"	2-2.5	X		-	-	-	-	-	-	-	-	26.3
	"	3-3.5	X		-	-	-	-	-	-	-	-	54.5
	"	4-4.5	X		-	-	-	-	-	-	-	-	68.9
	"	5-5.5	X		-	-	-	-	-	-	-	-	<4.90
AH-3	2/8/2018	0-1	X		**6,450**	**5,670**	**12,120**	7.94	203	22.6	388	**622**	<4.90
	"	1-1.5	X		300.0	836	1,136	<0.101	0.324	0.289	7.62	8.23	<4.91
	"	2-2.5	X		-	-	-	-	-	-	-	-	13.4
	"	3-3.5	X		-	-	-	-	-	-	-	-	18.9
	"	4-4.5	X		-	-	-	-	-	-	-	-	40.6
	"	5-5.5	X		-	-	-	-	-	-	-	-	45.7

(-) Not Analyzed

Proposed Excavation Depths

Photos

Marathon Oil Company
Madera 19 Federal #1
Lea County, New Mexico



View North – Area of AH-1

View West – Area of AH-2

Marathon Oil Company
Madera 19 Federal #1
Lea County, New Mexico

View South – Area of AH-3

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Marathon Oil Permian LLC	Contact Callie Karrigan
Address 2423 Bonita St, Carlsbad, NM 88220	Telephone No. 405-202-1028 (cell) 575-297-0956 (office)
Facility Name: Madera 19 Federal 1	Facility Type Oil and gas production facilities

Surface: Owner: Federal	Mineral: Owner:	API No. : 33-025-36645

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	19	26S	35E					LEA

Latitude 32.026836 **.Longitude** -103.411465

NATURE OF RELEASE

Type of Release: Condensate and Produced Water	Volume of Release 150 bbls	Volume Recovered None
Source of Release: 500 bbl tank	Date and Hour of Occurrence unknown	Date and Hour of Discovery 1/31/2018 12:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Olivia Yu	
By Whom? Callie Karrigan	Date and Hour 1/31/2018 5:40 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
Not applicable.

Describe Cause of Problem and Remedial Action Taken.*
A tank leak resulted in releasing 150 bbls onto the pad. The tank was strapped to identify remaining fluid level and then hauled off. No standing fluids were observed.

Describe Area Affected and Cleanup Action Taken.*
Condensate and produced water overfilled secondary containment (approximately 56'x33') and an additional area (approximately 49'x33). A third party will collect soil samples and assess spill area.

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: *Callie Karrigan*	OIL CONSERVATION DIVISION	
Printed Name: Raquel Chacon	Approved by Environmental Specialist:	
Title: HES Professional - Environmental	Approval Date:	Expiration Date:
E-mail Address: cnkarrigan@marathonoil.com	Conditions of Approval:	Attached ☐
Date: Phone: 405-202-1028 (cell) 575-297-0956 (office)		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
Marathon - Madera 19 Federal 1
Lea County, New Mexico

25 South 34 East

6	5	4	3	2	1 260
7	8	9	10	11	12
18	17	16	15 135	14	13
19	20	21	22	23	24 300
30	29 50	28	27	26	25
31	32	33	34	35	36

25 South 35 East

6	5 165	4	3 108	2	1
7	8	9	10	11	12
18 230	17	16	15	14	13
19	20	21 218	22	23	24
30 80	29	28	27	26	25
31	32	33	34	35	36

25 South 36 East

6 295	5	4	3	2	1
7	8	9	10300 180	11	12
18	17	16	15 120	14	13
19	20	21	22	23 53.7	24 455
30	29	28	27	26	25
31	32	33 80	34	35	36

26 South 34 East

6 160 175	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

26 South 35 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 230
19	20	21	22	23	24 250
30	29	28	27	26	25
31	32	33	34	35	36

26 South 36 East

6	5	4	3	2	1
7	8	9 175 177	10	11	12
18 220	17	16	15	14	13
19 198	20	21	22	23 151	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 03795 POD1		C	LE	4	4	3	24	26S	35E	658419	3544221	496	250	246
J 00005 POD1			LE	2	2	2	13	26S	35E	659200	3547174*	601	230	371

Average Depth to Water: **240 feet**

Minimum Depth: **230 feet**

Maximum Depth: **250 feet**

Record Count: 2

PLSS Search:

Township: 26S **Range:** 35E

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

2/26/18 1:33 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C

Analytical Report 576035

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

Madera la Fed. 1

21-FEB-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), 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 (T104704400-17-13)
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)

21-FEB-18

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

Reference: XENCO Report No(s): **576035**
Madera la Fed. 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) 576035. 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. 576035 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 576035

Tetra Tech- Midland, Midland, TX

Madera la Fed. 1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH 1 (0-1)	S	02-08-18 00:00		576035-001
AH 1 (1-1.5)	S	02-08-18 00:00		576035-002
AH 1 (2-2.5)	S	02-08-18 00:00		576035-003
AH 1 (3-3.5)	S	02-08-18 00:00		576035-004
AH 1 (4-4.5)	S	02-08-18 00:00		576035-005
AH 1 (4.5-5)	S	02-08-18 00:00		576035-006
AH 2 (0-1)	S	02-08-18 00:00		576035-007
AH 2 (1-1.5)	S	02-08-18 00:00		576035-008
AH 2 (2-2.5)	S	02-08-18 00:00		576035-009
AH 2 (3-3.5)	S	02-08-18 00:00		576035-010
AH 2 (4-4.5)	S	02-08-18 00:00		576035-011
AH 2 (5-5.5)	S	02-08-18 00:00		576035-012
AH 3 (0-1	S	02-08-18 00:00		576035-013
AH 3 (1-1.5)	S	02-08-18 00:00		576035-014
AH 3 (2-2.5)	S	02-08-18 00:00		576035-015
AH 3 (3-3.5)	S	02-08-18 00:00		576035-016
AH 3 (4-4.5)	S	02-08-18 00:00		576035-017
AH 3 (5-5.5)	S	02-08-18 00:00		576035-018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3040996 BTEX by EPA 8021B
Surrogate 1,4-Difluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 575590-005 S,575590-005 SD,576035-002.
Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 576035-002.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3041032 TPH By SW8015 Mod
Lab Sample ID 576035-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Gasoline Range Hydrocarbons recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Diesel Range Organics recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-001, -002, -007, -008, -013, -014.
The Laboratory Control Sample for Gasoline Range Hydrocarbons, Diesel Range Organics is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3041091 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3041576 Inorganic Anions by EPA 300/300.1
Lab Sample ID 576035-002 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-001, -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-3041591 Inorganic Anions by EPA 300/300.1

Lab Sample ID 576035-010 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-010, -011, -012, -013, -014, -015, -016, -017, -018.

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

Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX

Project Name: Madera la Fed. 1

Project Id:

Contact: Ike Tavarez

Project Location: Lea County New Mexico

Date Received in Lab: Fri Feb-09-18 10:54 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	576035-001		576035-002		576035-003		576035-004		576035-005		576035-006	
	Field Id:	AH 1 (0-1)		AH 1 (1-1.5)		AH 1 (2-2.5)		AH 1 (3-3.5)		AH 1 (4-4.5)		AH 1 (4.5-5)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-14-18 10:00		Feb-12-18 17:00									
	Analyzed:	Feb-14-18 12:55		Feb-12-18 21:37									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		2.41	2.02	<0.00199	0.00199								
Toluene		161	2.02	0.0570	0.00199								
Ethylbenzene		27.1	2.02	0.0381	0.00199								
m,p-Xylenes		382	4.04	0.659	0.00398								
o-Xylene		118	2.02	0.283	0.00199								
Total Xylenes		500	2.02	0.942	0.00199								
Total BTEX		691	2.02	1.04	0.00199								
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00	
	Analyzed:	Feb-19-18 15:02		Feb-19-18 16:16		Feb-19-18 17:02		Feb-19-18 17:07		Feb-19-18 17:12		Feb-19-18 17:18	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		163	4.91	61.5	4.90	54.8	4.90	50.0	5.00	38.8	4.90	437	4.99
TPH By SW8015 Mod	***Extracted:***	Feb-13-18 07:00		Feb-13-18 07:00									
	Analyzed:	Feb-14-18 03:56		Feb-13-18 11:05									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons		8940	74.9	56.3	15.0								
Diesel Range Organics		8360	74.9	474	15.0								

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX

Project Name: Madera la Fed. 1

Project Id:

Contact: Ike Tavarez

Project Location: Lea County New Mexico

Date Received in Lab: Fri Feb-09-18 10:54 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	576035-007		576035-008		576035-009		576035-010		576035-011		576035-012	
	Field Id:	AH 2 (0-1)		AH 2 (1-1.5)		AH 2 (2-2.5)		AH 2 (3-3.5)		AH 2 (4-4.5)		AH 2 (5-5.5)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-14-18 10:00		Feb-12-18 17:00									
	Analyzed:	Feb-14-18 12:18		Feb-12-18 21:18									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		3.21	2.00	<0.00201	0.00201								
Toluene		188	2.00	0.00271	0.00201								
Ethylbenzene		27.3	2.00	<0.00201	0.00201								
m,p-Xylenes		386	3.99	0.00947	0.00402								
o-Xylene		124	2.00	0.00460	0.00201								
Total Xylenes		510	2.00	0.0141	0.00201								
Total BTEX		729	2.00	0.0168	0.00201								
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 14:00		Feb-19-18 14:00		Feb-19-18 14:00	
	Analyzed:	Feb-19-18 17:28		Feb-19-18 17:41		Feb-19-18 17:46		Feb-19-18 18:18		Feb-19-18 18:34		Feb-19-18 18:39	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		143	4.92	52.8	4.96	26.3	4.94	54.5	4.92	68.9	5.00	<4.90	4.90
TPH By SW8015 Mod	***Extracted:***	Feb-13-18 07:00		Feb-13-18 07:00									
	Analyzed:	Feb-14-18 07:20		Feb-13-18 11:45									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons		8660	74.9	<15.0	15.0								
Diesel Range Organics		5360	74.9	18.2	15.0								

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX

Project Name: Madera la Fed. 1

Project Id:

Contact: Ike Tavarez

Project Location: Lea County New Mexico

Date Received in Lab: Fri Feb-09-18 10:54 am

Report Date: 21-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	576035-013		576035-014		576035-015		576035-016		576035-017		576035-018	
	Field Id:	AH 3 (0-1		AH 3 (1-1.5)		AH 3 (2-2.5)		AH 3 (3-3.5)		AH 3 (4-4.5)		AH 3 (5-5.5)	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00	
BTEX by EPA 8021B	***Extracted:***	Feb-14-18 10:00		Feb-14-18 10:00									
	Analyzed:	Feb-14-18 12:36		Feb-14-18 15:43									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		7.94	2.00	<0.101	0.101								
Toluene		203	2.00	0.324	0.101								
Ethylbenzene		22.6	2.00	0.289	0.101								
m,p-Xylenes		301	4.01	5.30	0.201								
o-Xylene		87.4	2.00	2.32	0.101								
Total Xylenes		388	2.00	7.62	0.101								
Total BTEX		622	2.00	8.23	0.101								
Inorganic Anions by EPA 300/300.1	***Extracted:***	Feb-19-18 14:00		Feb-19-18 14:00		Feb-19-18 14:00		Feb-19-18 14:00		Feb-19-18 14:00		Feb-19-18 14:00	
	Analyzed:	Feb-19-18 18:44		Feb-19-18 18:50		Feb-19-18 19:05		Feb-19-18 19:11		Feb-19-18 19:16		Feb-19-18 19:21	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.90	4.90	<4.91	4.91	13.4	4.90	18.9	5.00	40.6	4.90	45.7	4.90
TPH By SW8015 Mod	***Extracted:***	Feb-13-18 07:00		Feb-13-18 07:00									
	Analyzed:	Feb-14-18 07:41		Feb-13-18 12:25									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons		6450	74.8	300	15.0								
Diesel Range Organics		5670	74.8	836	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

+ NELAC certification not offered for this compound.

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

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3040996 **Sample:** 576035-008 / SMP **Batch:** 1 **Matrix:** Soil

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

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0281	0.0300	94	80-120	

Lab Batch #: 3040996 **Sample:** 576035-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/12/18 21:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0225	0.0300	75	80-120	**
4-Bromofluorobenzene	0.0583	0.0300	194	80-120	**

Lab Batch #: 3041032 **Sample:** 576035-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/13/18 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	95.6	99.7	96	70-135	
o-Terphenyl	52.3	49.9	105	70-135	

Lab Batch #: 3041032 **Sample:** 576035-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/13/18 11:45

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	50.9	49.9	102	70-135	

Lab Batch #: 3041032 **Sample:** 576035-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/13/18 12:25

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.9	102	70-135	
o-Terphenyl	50.5	50.0	101	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: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3041032 **Sample:** 576035-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 03:56

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	54.5	50.0	109	70-135	

Lab Batch #: 3041032 **Sample:** 576035-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 07:20

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	55.3	49.9	111	70-135	

Lab Batch #: 3041032 **Sample:** 576035-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 07:41

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	82.5	99.7	83	70-135	
o-Terphenyl	45.4	49.9	91	70-135	

Lab Batch #: 3041091 **Sample:** 576035-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 12:18

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0250	0.0300	83	80-120	
4-Bromofluorobenzene	0.0352	0.0300	117	80-120	

Lab Batch #: 3041091 **Sample:** 576035-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 12:36

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	0.0333	0.0300	111	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: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3041091 **Sample:** 576035-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 12:55

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0279	0.0300	93	80-120	
4-Bromofluorobenzene	0.0324	0.0300	108	80-120	

Lab Batch #: 3041091 **Sample:** 576035-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 15:43

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0246	0.0300	82	80-120	
4-Bromofluorobenzene	0.0338	0.0300	113	80-120	

Lab Batch #: 3040996 **Sample:** 7639096-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/12/18 19:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0241	0.0300	80	80-120	
4-Bromofluorobenzene	0.0258	0.0300	86	80-120	

Lab Batch #: 3041032 **Sample:** 7639062-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/13/18 09:02

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.1	100	96	70-135	
o-Terphenyl	50.1	50.0	100	70-135	

Lab Batch #: 3041091 **Sample:** 7639146-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/14/18 11:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0285	0.0300	95	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: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3040996 **Sample:** 7639096-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/12/18 18:14

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	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

Lab Batch #: 3041032 **Sample:** 7639062-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/13/18 09:22

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	61.7	50.0	123	70-135	

Lab Batch #: 3041091 **Sample:** 7639146-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/14/18 09:34

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	0.0292	0.0300	97	80-120	

Lab Batch #: 3040996 **Sample:** 7639096-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/12/18 18:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0288	0.0300	96	80-120	

Lab Batch #: 3041032 **Sample:** 7639062-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/13/18 09:44

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	52.1	50.0	104	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: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3041091 **Sample:** 7639146-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 02/14/18 09:52

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0287	0.0300	96	80-120	

Lab Batch #: 3040996 **Sample:** 575590-005 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/12/18 18:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0137	0.0300	46	80-120	**
4-Bromofluorobenzene	0.0248	0.0300	83	80-120	

Lab Batch #: 3041032 **Sample:** 576035-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 04:18

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	50.5	50.0	101	70-135	

Lab Batch #: 3041091 **Sample:** 575871-010 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 10:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0284	0.0300	95	80-120	

Lab Batch #: 3040996 **Sample:** 575590-005 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/12/18 19:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0127	0.0300	42	80-120	**
4-Bromofluorobenzene	0.0262	0.0300	87	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: Madera la Fed. 1

Work Orders : 576035,

Project ID:

Lab Batch #: 3041032 **Sample:** 576035-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 04:38

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.9	100	70-135	
o-Terphenyl	50.5	50.0	101	70-135	

Lab Batch #: 3041091 **Sample:** 575871-010 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 02/14/18 10:29

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	0.0300	86	80-120	
4-Bromofluorobenzene	0.0282	0.0300	94	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.

BS / BSD Recoveries

Project Name: Madera la Fed. 1

Work Order #: 576035 **Project ID:**

Analyst: ALJ **Date Prepared:** 02/12/2018 **Date Analyzed:** 02/12/2018

Lab Batch ID: 3040996 **Sample:** 7639096-1-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	<0.00201	0.101	0.100	99	0.100	0.112	112	11	70-130	35	
Toluene	<0.00201	0.101	0.0986	98	0.100	0.107	107	8	70-130	35	
Ethylbenzene	<0.00201	0.101	0.103	102	0.100	0.112	112	8	71-129	35	
m,p-Xylenes	<0.00402	0.201	0.210	104	0.200	0.227	114	8	70-135	35	
o-Xylene	<0.00201	0.101	0.102	101	0.100	0.111	111	8	71-133	35	

Analyst: ALJ **Date Prepared:** 02/14/2018 **Date Analyzed:** 02/14/2018

Lab Batch ID: 3041091 **Sample:** 7639146-1-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	0.105	104	0.100	0.103	103	2	70-130	35	
Toluene	<0.00202	0.101	0.101	100	0.100	0.0967	97	4	70-130	35	
Ethylbenzene	<0.00202	0.101	0.107	106	0.100	0.102	102	5	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.218	108	0.201	0.207	103	5	70-135	35	
o-Xylene	<0.00202	0.101	0.105	104	0.100	0.100	100	5	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: Madera la Fed. 1

Work Order #: 576035 **Project ID:**

Analyst: OJS **Date Prepared:** 02/19/2018 **Date Analyzed:** 02/19/2018

Lab Batch ID: 3041576 **Sample:** 7639421-1-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	273	250	273	109	250	275	110	1	90-110	20	

Analyst: OJS **Date Prepared:** 02/19/2018 **Date Analyzed:** 02/19/2018

Lab Batch ID: 3041591 **Sample:** 7639422-1-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	267	250	267	107	250	274	110	3	90-110	20	

Analyst: ARM **Date Prepared:** 02/13/2018 **Date Analyzed:** 02/13/2018

Lab Batch ID: 3041032 **Sample:** 7639062-1-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	<15.0	1000	1050	105	1000	913	91	14	70-135	35	
Diesel Range Organics	<15.0	1000	1150	115	1000	985	99	15	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: Madera la Fed. 1

Work Order # : 576035 **Project ID:**

Lab Batch ID: 3040996 **QC- Sample ID:** 575590-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/12/2018 **Date Prepared:** 02/12/2018 **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	<0.00200	0.0998	0.0763	76	0.100	0.0805	81	5	70-130	35	
Toluene	<0.00200	0.0998	0.0622	62	0.100	0.0652	65	5	70-130	35	X
Ethylbenzene	<0.00200	0.0998	0.0479	48	0.100	0.0515	52	7	71-129	35	X
m,p-Xylenes	<0.00399	0.200	0.0943	47	0.200	0.102	51	8	70-135	35	X
o-Xylene	<0.00200	0.0998	0.0476	48	0.100	0.0509	51	7	71-133	35	X

Lab Batch ID: 3041091 **QC- Sample ID:** 575871-010 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/14/2018 **Date Prepared:** 02/14/2018 **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	<0.00200	0.100	0.0974	97	0.101	0.0892	88	9	70-130	35	
Toluene	0.0132	0.100	0.0903	77	0.101	0.0800	66	12	70-130	35	X
Ethylbenzene	<0.00200	0.100	0.0849	85	0.101	0.0709	70	18	71-129	35	X
m,p-Xylenes	0.00487	0.200	0.172	84	0.201	0.138	66	22	70-135	35	X
o-Xylene	<0.00200	0.100	0.0843	84	0.101	0.0656	65	25	71-133	35	X

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

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

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

Form 3 - MS / MSD Recoveries

Project Name: Madera la Fed. 1

Work Order # : 576035 **Project ID:**

Lab Batch ID: 3041576 **QC- Sample ID:** 576035-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2018 **Date Prepared:** 02/19/2018 **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	163	246	417	103	246	403	98	3	90-110	20	

Lab Batch ID: 3041576 **QC- Sample ID:** 576035-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2018 **Date Prepared:** 02/19/2018 **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	61.5	245	337	112	245	334	111	1	90-110	20	X

Lab Batch ID: 3041591 **QC- Sample ID:** 576035-010 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/19/2018 **Date Prepared:** 02/19/2018 **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	54.5	246	306	102	246	344	118	12	90-110	20	X

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

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

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

Form 3 - MS / MSD Recoveries

Project Name: Madera la Fed. 1

Work Order # : 576035 **Project ID:**

Lab Batch ID: 3041032 **QC- Sample ID:** 576035-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/14/2018 **Date Prepared:** 02/13/2018 **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	8940	1000	8750	0	999	9300	36	6	70-135	35	X
Diesel Range Organics	8360	1000	9490	113	999	9860	150	4	70-135	35	X

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

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

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

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

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

Analysis Request of Chain of Custody Record

Page 1 of 2

Tetra Tech, Inc.

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

576035

Client Name: Marathon

Site Manager: Ike Tavarez

Project Name: Madera 19 Fed. 1

Project Location: (county, state) Lea County, New Mexico

Project #: 212C-MD-01102 (TASK 200)

Invoice to: Tetra Tech

Receiving Laboratory: Xenco

Sampler Signature: Sterling B Mike C

Comments: If TPH exceeds 5,000 mg/kg, Benzene exceeds 10mg/kg or Total BTEX exceeds 50 mg/kg run deeper Samples

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 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)	2-8-18			X			X	1	N	X		X												X						
	AH 1 (1-1.5)				X			X	1	N	X		X												X						
	AH 1 (2-2.5)				X			X	1	N															X						
	AH 1 (3-3.5)				X			X	1	N															X						
	AH 1 (4-4.5)				X			X	1	N															X						
	AH 1 (4.5-5)				X			X	1	N															X						
	AH 2 (0-1)				X			X	1	N	X		X												X						
	AH 2 (1-1.5)				X			X	1	N	X		X												X						
	AH 2 (2-2.5)				X			X	1	N															X						
	AH 2 (3-3.5)				X			X	1	N															X						

Relinquished by: Date: 2-9-18 Time: 1100

Received by: Date: 2/9/18 Time: 1054

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

ANALYSIS REQUEST
(Circle or Specify Method No.)

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 #:

Temp: 2.7 IR ID:R-8

CF:(0-6: -0.2°C)
(6-23: +0.2°C)

Corrected Temp: 2.5

ORIGINAL COPY

Final 1.000

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Analysis Request of Chain of Custody Record

Page 2 of 2

Tetra Tech, Inc.

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

5760035

Client Name: Marathon

Site Manager: Ike Tavarez

Project Name: Madera 19 Fed. 1

Project Location: (county, state) Lea County NM

Project #: 212C-MD-01102 (Task 200)

Invoice to: Tetra Tech

Receiving Laboratory: Xenco

Sampler Signature: Sterling B, Mike C

Comments: If TPH exceeds 5,000 mg/kg, Benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg run deeper samples

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	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 2 (4-4.5)	2-8-18			X			X	1	N														X				
	AH 2 (5-5.5)				X			X	1	N														X				
	AH 3 (0-1)				X			X	1	N	X		X											X				
	AH 3 (1-1.5)				X			X	1	N	X		X											X				
	AH 3 (2-2.5)				X			X	1	N														X				
	AH 3 (3-3.5)				X			X	1	N														X				
	AH 3 (4-4.5)				X			X	1	N														X				
	AH 3 (5-5.5)				X			X	1	N														X				

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by: Date: 2-9-18 Time: 1100

Received by: Date: 2/9/18 Time: 1100

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

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 #:

ORIGINAL COPY

Final 1.000

Page 22 of 23

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 02/09/2018 10:54:00 AM

Work Order #: 576035

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.5
#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)?	**No**
#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: Shawnee Smith Date: 02/09/2018

Shawnee Smith

Checklist reviewed by: Kelsey Brooks Date: 02/11/2018

Kelsey Brooks