2057 Commerce Drive
Midland, TX 79703

432.520.7720 PHONE
432.520.7701 FAX

www.trcsolutions.com

APPROVED
By Olivia Yu at 11:12 am, Aug 27, 2018

NMOCD approves of the proposed delineation plan for 1RP-4867.

July 30, 2018

Olivia Yu
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, District 1
1625 French Drive
Hobbs, NM 88240

Ryan Mann
Hobbs Field Office
New Mexico State Land Office
2827 N. Dal Paso St., Suite 117
Hobbs, New Mexico 88240

Re: Proposed Soil Delineation Workplan
Trionyx Frac Pond (1R-4867)
GPS: N 32.154386° W 103.740605°
Unit Letter "P", Section 2, Township 25 South, Range 31 East, NMPM
Eddy County, New Mexico

Dear Ms. Yu and Mr. Mann,

TRC Environmental Corporation (TRC), on behalf of TETRA Technologies, Inc. (TETRA) has prepared this Proposed Soil Delineation Workplan (Workplan) for the Trionyx Frac Pond Release Site (Site). The purpose of this Workplan is to propose delineation activities designed to prepare a Soil Delineation Summary and Proposed Remediation Workplan, which will advance the Site toward an NMOCD approved Site Closure Status. The legal description of the Release Site is Unit Letter "P", Section 2, Township 25 South, Range 31 East, NMPM in Eddy County, New Mexico. The GPS coordinates for the site are N 32.154386° W 103.740605°. The subject property is leased by Devon Energy Production Company, L.P. (Devon) and owned by the State of New Mexico and is administered by the New Mexico State Land Office (NMSLO). A Site Location Map and Site Details and Proposed Trench Location Map are provided as Figure 1 and Figure 2, respectively.

On October 24, 2017, TETRA was pigging the "layflat" line from the Devon Arabian 30-19 Fed Com 1H well site to the Devon Trionyx Frac Pond. TETRA had completed pigging the line from the well site to a TETRA booster pump, while pigging from the TETRA booster pump to the Devon Trionyx Frac Pond air in the "layflat" line resulted in the "layflat" line falling out of the Trionyx Frac Pond, which resulted in fluid being released to the ground from the line. The release was contained on the location on the caliche pad. The release area reportedly measured approximately 2,100 square feet. During initial response activities, the pigging activities were suspended. Approximately fifty (50) barrels of treated produced water was released

from the "layflat" line and approximately forty (40) barrels of treated produced water was recovered utilizing a vacuum truck. On March 24, 2017, a Devon Representative notified the NMOCD of the Release and Devon submitted a Release Notification and Corrective Action (Form C-141) to the NMOCD on October 30, 2017. The Form C-141 is attached to this report.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) identified registered water wells in Section 2, Township 25 South, Range 31 East. The nearest water well (NMOSE File Number C-3830) is located approximately eight hundred (800) feet north of the reported location of the release. The Well Record and Log indicated a water bearing zone was identified at approximately three hundred forty-eight (348) feet below ground surface (bgs). A reference map utilized by the NMOCD Hobbs District Office indicates groundwater should be encountered at approximately three hundred seventy-five (375) feet bgs. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion. Please reference the attached NMOSE data.

One water well (described above) was observed within one-thousand (1,000) feet of the Release Site. Based on the NMOCD site classification system, twenty (20) points will be assigned to the subject area ranking as a result of this criterion.

No surface water was observed within one-thousand (1,000) feet of the release. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

Based on the NMOCD Site Classification criteria, the Release Site soil remediation levels are 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for benzene, toluene, ethylbenzene and xylenes (BTEX), and 100 mg/kg for total petroleum hydrocarbons (TPH). Per NMOCD request, chloride remediation levels for the Release Site will be 600 mg/kg.

On February 12, 2018, a Representative of TETRA collected two (2) treated produced water samples (250 bbl Cotton Draw Water Pit and 90 bbl Cotton Draw Water Pit) which were representative of the treated produced water released at the subject release. The water samples were submitted to Cardinal Laboratories in Hobbs, New Mexico and analyzed for concentrations of TPH, BTEX, chloride, and total dissolved solids (TDS) by Method SW846-8015M, EPA Method 8021B, SM4500Cl-B, and EPA Method 160.1, respectively.

The analytical results indicated TPH concentrations ranged from 2.27 mg/L in water sample 250 bbl Cotton Draw Water Pit to 2.65 mg/L in water sample 50 bbl Cotton Draw Water Pit. Benzene concentrations ranged from 0.813 mg/L in water sample 250 bbl Cotton Draw Water Pit to 0.823 mg/L in water sample 50 bbl Cotton Draw Water Pit. Toluene concentrations ranged from 0.569 mg/L in water sample 250 bbl Cotton Draw Water Pit to 0.583 mg/L in water sample 50 bbl Cotton Draw Water Pit. Ethylbenzene concentrations ranged from 0.031 mg/L in water sample 250 bbl Cotton Draw Water Pit to 0.033 mg/L in water sample 50 bbl Cotton Draw Water Pit. Xylene concentrations ranged from 1.57 mg/L in water sample 250 bbl Cotton Draw Water Pit to 1.60 mg/L in water sample 50 bbl Cotton Draw Water Pit.

The analytical results indicated chloride concentrations ranged from 146,000 mg/L in water sample 90 bbl Cotton Draw Water Pit to 150,000 mg/L in water sample 50 bbl Cotton Draw Water Pit. TDS

concentrations ranged from 213,000 mg/L in water sample 90 bbl Cotton Draw Water Pit to 220,000 mg/L in water sample 250 bbl Cotton Draw Water Pit. Based on the analytical results of source water, it appears the primary contaminant of concern for this release will be chloride which exceeds the NMOCD recommended remediation guidelines.

TRC on behalf of TETRA, proposes the following delineation activities designed to advance the Trionyx Frac Pond Release Site toward an NMOCD and NMSLO approved closure:

- Utilizing a backhoe, one (1) background trench (BT) will be advanced to a depth of approximately ten (10) feet bgs. The background trench will be located in an area topographically upslope and at a distance from the Release Site. Initially, soil samples will be chloride field screened at one (1) foot vertical intervals and the chloride field screen intervals may be adjusted based on the initial chloride field screen results. The soil sample exhibiting the highest chloride concentration in the background trench and a soil sample at the bottom of the trench will be collected and submitted to a NMOCD approved laboratory for determination of concentrations of BTEX, TPH, and chloride.
- Utilizing a backhoe, advance three (3) soil investigation trenches (T-1 through T-3) within the release margins to a maximum depth of approximately ten (10) feet bgs. Initially, soil samples will be chloride field screened at one (1) foot vertical intervals and the chloride field screen intervals may be adjusted based on the initial chloride field screen results. When chloride field screening indicates chloride concentrations are less than the NMOCD recommended concentration of 600 mg/kg, the soil investigation trench will be terminated.
- Based on the field screening results, the soil sample exhibiting the highest chloride concentration in each soil investigation trench and two (2) consecutive soil samples at the bottom of each soil investigation trench will be collected and submitted to a NMOCD approved laboratory for determination of concentrations of BTEX, TPH, and chloride. Following the collection of the soil samples, the investigation trenches will be backfilled as a safety precaution.
- In addition, four (4) soil investigation trenches (N. Trench, E. Trench, S. Trench, and W. Trench) will be advanced outside of the impacted area at a depth equal to the deepest trench within the release margins. Chloride field screening will be utilized to guide the advancement of the soil investigation trenches. If chloride field screening in the soil investigation trenches outside of the release margins indicates vertical and horizontal delineation of the contaminant of concern has not been successful, additional soil investigation trenches will be advanced to complete the delineation of the Release Site.
- Based on the field screening results, the soil sample exhibiting the highest chloride concentration in each soil investigation trench and the soil sample at the bottom of each soil investigation trench outside of the release margins will be collected and submitted to a NMOCD approved laboratory for determination of concentrations of BTEX, TPH, and chloride. Following the collection of the soil samples, the investigation trenches will be backfilled as a safety precaution.
- On receipt of favorable analytical results (below the NMOCD regulatory guidelines referenced above), a "Soil Investigation Summary and Proposed Soil Remediation Strategy" will be prepared on behalf of TETRA and submitted to the NMOCD and NMSLO for approval. If the analytical results indicate the soil investigation trenches have not provided vertical delineation of the Release Site, an air rotary drilling rig may be mobilized to the Release Site to continue the vertical delineation efforts.

TETRA is prepared to begin the activities outlined in this Proposed Soil Delineation Workplan on NMOCD and NMSLO approval.

If you have any questions, or if additional information is required, please feel free to call me at 432-520-7720 (office) or 432-559-3296 (cell).

Thank you,

Curt D. Stanley
Senior Project Manager
TRC Environmental Corporation

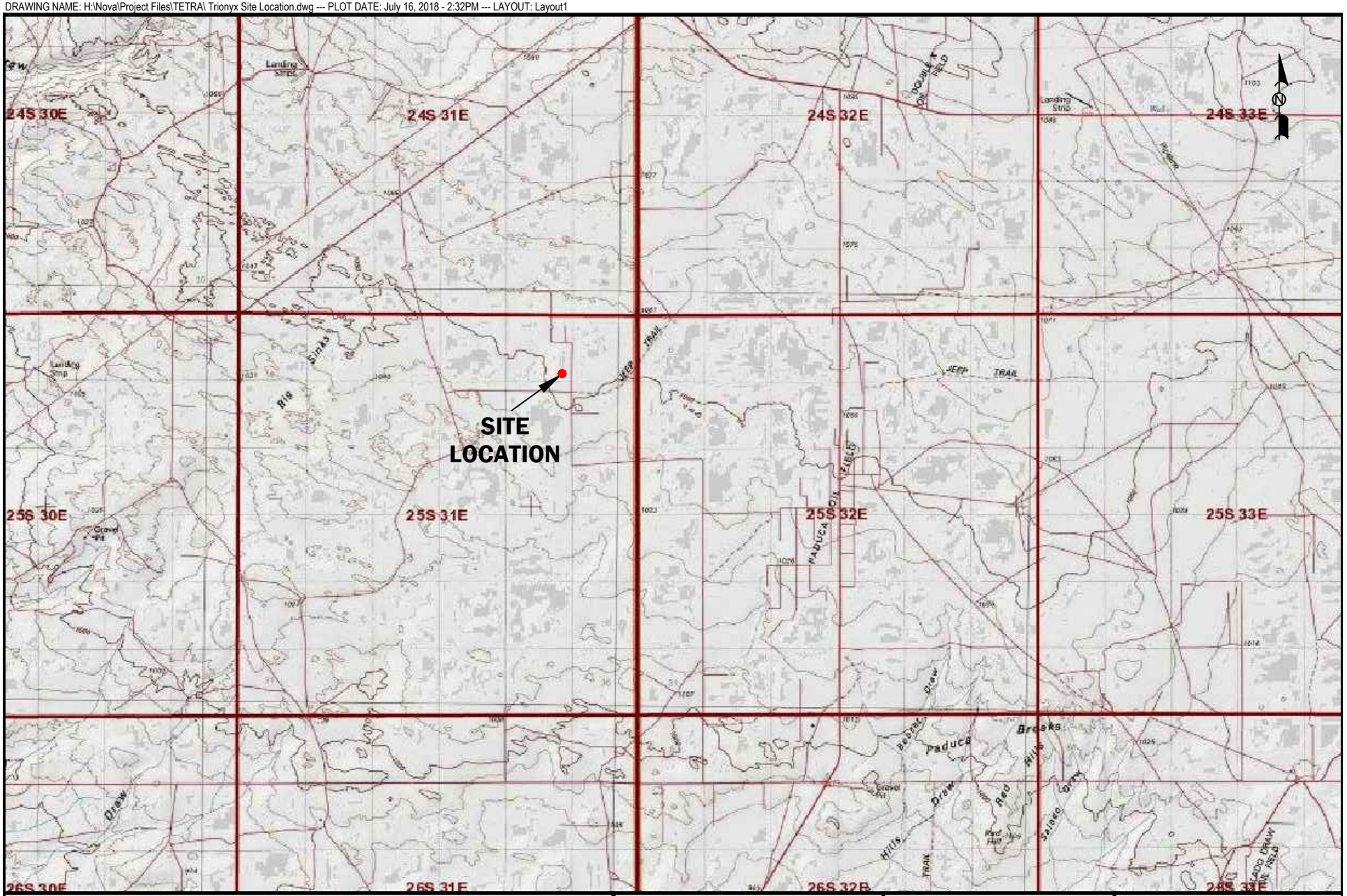
Joel W. Lowry
Senior Project Manager
TRC Environmental Corporation

Attachments:

Figure 1 - Site Location Map
Figure 2 - Site Map and Proposed Soil Investigation Trenches
NMOSE Data
Laboratory Analytical Results
Release Notification and Corrective Action (Form C-141)

cc: File

DRAWING NAME: H:\Nova\Project Files\TETRA\ Trionyx Site Location.dwg --- PLOT DATE: July 16, 2018 - 2:32PM --- LAYOUT: Layout1



LEGEND:

2 1 0 1 2

Distance in Miles

Figure 1
Site Location Map
TETRA Technologies
Trionyx Frac Pond
NMOCD Reference # 1RP-4867
Eddy County, NM

Scale: 1" = 2 Miles	
CAD By: CS	Checked By: CS
Draft: July 16, 2018	
Lat. N 32.154386° , Long. W 103.740605°	
ULT "P", Section 2, Township 25S, Range 31 E	

TRC
2057 Commerce Drive
Midland, Texas 79703
432.520.7720

LEGEND:

Area of Impact

Proposed Trench Location

100 50 0 50 100

Distance in Feet

Figure 2
Proposed Trench Location Map
TETRA Technologies, Inc.
Trionyx Frac Pond
NMOCD Reference
1RP-4867
Eddy County,NM

Scale: 1" = 100 feet	
CAD By: CS	Checked By: CS
Draft: July 16, 2018	
Lat. N 32.154386° , Long. W 103.740605°	
ULT "P", Section 2, Township 25S, Range 31E	

TRC

2057 Commerce Drive
Midland, Texas 79703
432.520.7720

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): 1	OSE FILE NUMBER(S): C-3830
WELL OWNER NAME(S): ROCKHOUSE RANCH INC.	PHONE (OPTIONAL): 575-995-6920
WELL OWNER MAILING ADDRESS: 1108 W PIEARCE ST.	CITY: CARLSBAD STATE: NM ZIP: 88220

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	09	22	N
LONGITUDE	103	44	31	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SE 1/4,NE 1/4, SE 1/4, SECTION 2, TOWNSHIP 25S, RANGE 31E

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1607	LUIS A. (TONY) DURAN	DURAN DRILLING

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
1/28/15	2/02/15	451	450	300

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT):

DRILLING FLUID: ○ AIR ◉ MUD ADDITIVES – SPECIFY: DRILLING MUD

DRILLING METHOD: ◉ ROTARY ○ HAMMER ○ CABLE TOOL ○ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	220	12	STEEL	STEEL PERF	7	1/4	-
220	450	12	STEEL PERF	STEEL	7	1/4	1/8

STATE ENGINEER OFFICE RECEIVED FEB 23 AM 10 23

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	20	12	20 BGS 80 LBS CEMENT		MIXER
20	450	12	22 YARDS 1/4" GRAVEL		

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
C-3830	1	560005

25S.31E.2.424

END

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	1	1	TOPSOIL	○ Y ◉ N	
1	4	3	CALICHE	○ Y ◉ N	
4	16	12	SAND	○ Y ◉ N	
90	99	9	CLAY	○ Y ◉ N	
99	190	91	SAND	○ Y ◉ N	
190	250	60	BROWN CLAY	○ Y ◉ N	
250	265	15	SAND	○ Y ◉ N	
265	340	75	CLAY	○ Y ◉ N	
340	348	8	SAND	○ Y ◉ N	
348	378	30	GRAVEL	◉ Y ○ N	10
378	384	6	CALY	○ Y ◉ N	
384	448	64	SAND	◉ Y ○ N	5
448	450	2	RED BED	○ Y ◉ N	
				○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ◉ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 15

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

STATE ENGINEER OFFICE RECEIVED FEB 23 AM 11:23

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

LUIS A. DURAN

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Luis A. Duran LUIS A. DURAN — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

2-02-15 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
C-3830	/	560005

255.31E.2.424

EXPL

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 13, 2018

ANDREW ROMO

TETRA TECHNOLOGIES

1114 S FM 1788

MIDLAND, TX 79765

RE: COTTON DRAW WATER PIT

Enclosed are the results of analyses for samples received by the laboratory on 02/12/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECHNOLOGIES
ANDREW ROMO
1114 S FM 1788
MIDLAND TX, 79765
Fax To:

Received:	02/12/2018	Sampling Date:	02/12/2018
Reported:	02/13/2018	Sampling Type:	Wastewater
Project Name:	COTTON DRAW WATER PIT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LOVINGTON, NM		

Sample ID: 250 BBL COTTON DRAW WATER PIT (H800433-01)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.813**	0.020	02/12/2018	ND	0.020	99.2	0.0200	0.733	
Toluene*	**0.569**	0.020	02/12/2018	ND	0.020	97.9	0.0200	1.35	
Ethylbenzene*	**0.031**	0.020	02/12/2018	ND	0.020	97.5	0.0200	2.48	
Total Xylenes*	**0.154**	0.060	02/12/2018	ND	0.061	102	0.0600	1.74	
Total BTEX	**1.57**	0.120	02/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**150000**	4.00	02/12/2018	ND	104	104	100	3.92	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**220000**	5.00	02/13/2018	ND	209	98.1	213	2.38	

TPH 8015M mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**2.27**	1.00	02/12/2018	ND	37.4	74.8	50.0	0.837	
DRO >C10-C28*	<1.00	1.00	02/12/2018	ND	48.5	96.9	50.0	2.18	
EXT DRO >C28-C36	<1.00	1.00	02/12/2018	ND					

Surrogate: 1-Chlorooctane *70.5 %* *37.1-138*

Surrogate: 1-Chlorooctadecane *90.7 %* *44.6-151*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TETRA TECHNOLOGIES
ANDREW ROMO
1114 S FM 1788
MIDLAND TX, 79765
Fax To:

Received:	02/12/2018	Sampling Date:	02/12/2018
Reported:	02/13/2018	Sampling Type:	Wastewater
Project Name:	COTTON DRAW WATER PIT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	LOVINGTON, NM		

Sample ID: 90 BBL COTTON DRAW WATER PIT (H800433-02)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.823**	0.020	02/12/2018	ND	0.020	99.2	0.0200	0.733	
Toluene*	**0.583**	0.020	02/12/2018	ND	0.020	97.9	0.0200	1.35	
Ethylbenzene*	**0.033**	0.020	02/12/2018	ND	0.020	97.5	0.0200	2.48	
Total Xylenes*	**0.162**	0.060	02/12/2018	ND	0.061	102	0.0600	1.74	
Total BTEX	**1.60**	0.120	02/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**146000**	4.00	02/12/2018	ND	104	104	100	3.92	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**213000**	5.00	02/13/2018	ND	209	98.1	213	2.38	

TPH 8015M mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**2.65**	1.00	02/12/2018	ND	37.4	74.8	50.0	0.837	
DRO >C10-C28*	<1.00	1.00	02/12/2018	ND	48.5	96.9	50.0	2.18	
EXT DRO >C28-C36	<1.00	1.00	02/12/2018	ND					

Surrogate: 1-Chlorooctane *75.0 %* *37.1-138*

Surrogate: 1-Chlorooctadecane *78.7 %* *44.6-151*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Tetra Technology	**BILL TO**	
Project Manager:	Andrew Romo	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	Cotton Draw Water Pit	State: Zip:	
Project Location:	Lovington, NM	Phone #:	
Sampler Name:	Andrew Romo	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	TPH 8015	BTEX	Cl	TDS							
H800433																									
1	250 bbl Cotton Draw Water Pit				✓								2/12/18	10:30	✓	✓	✓	✓							
2	90 bbl Cotton Draw water Pit				✓								2/12/18	10:30	✓	✓	✓	✓							

Relinquished By:	Date: 2/12/18	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 11:30		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: aromo@tetratech.com
	Time:		RUSH!!
Delivered By: (Circle One) #75	Sample Condition: Cool ☑ Yes ☐ No, Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:	1.1°C / 1.3°C		

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

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 Devon Energy Production Co LP (6137)	Contact Stephen Richards, Devon Completions Foreman
Address PO BOX 250, Artesia, NM 88211	Telephone No. (575) 252-3717
Facility Name: Trionyx Frac Pond (Completing wells on the Arabian 30-19 Fed Com 1H)	Facility Type Oil

Surface Owner: State	Mineral Owner: State	API No. 30-025-43176

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	2	25S	31E					EDDY

Latitude 32.154386 N Longitude 103.740605 W NAD83

NATURE OF RELEASE

Type of Release: Treated Produced Water	Volume of Release: 50 bbls	Volume Recovered: 40 bbls
Source of Release: Lay Flat Transfer Line	Date and Hour of Occurrence: 10/24/2017 @ 2:14 PM MST	Date and Hour of Discovery 10/24/2017 @ 2:14 PM MST
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD: Olivia Yu	RECEIVED By Olivia Yu at 9:23 am, Nov 17, 2017
By Whom? Mike Shoemaker, EHS Professional	Date and Hour: OCD: 10/25/17 @ 7:24 PM MST	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.* NA

Describe Cause of Problem and Remedial Action Taken.*
A contract company was pigging the layflat line from the Arabian 30-19 Fed Com 1H to the Trionyx pond. They had completed the line from the location to their booster pump, after rigging up to pig from the booster pump to the Trionyx pond there was some air in the line which caused the line to come out of the pond and allowed fluid to be release to the ground from the line. The contract company shut down operations and notified Devon personnel. Approximately 50bbls of produced water ran off the side of the pond onto the Trionxy facility. A vacuum truck was dispatched and recovered 40 bbls of produced water.

Describe Area Affected and Cleanup Action Taken.*
The spill affected approximately 25,000 square feet running South from the release point. Approximately 50 barrels of treated produced water was spilled and approximately 40 barrels were recovered. A remediation contractor will be contacted to assist with the delineation and remediation efforts.

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: Denise Menoud	OIL CONSERVATION DIVISION
Printed Name: Denise Menoud	Approved by Environmental Specialist:
Title: Admin Field Support	Approval Date: 11/17/2017 Expiration Date:
E-mail Address: denise.menoud@dvn.com	Conditions of Approval: see attached directive Attached ☑
Date: 10/30/2017 Phone: (575)746-5544	

* Attach Additional Sheets If Necessary

1RP-4867 nOY1732133962 pOY1732135037

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _11/6/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4867__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _12/17/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
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