2057 Commerce Drive
Midland, TX 79703

432.520.7720 PHONE
432.520.7701 FAX

www.trcsolutions.com

APPROVED
By Olivia Yu at 10:48 am, May 11, 2017

NMOCD approves the delineation workplan for 1RP-4500 with one condition:
Vertical delineation is considered completed when BTEX, TPH, and 600 mg/kg chloride levels are obtained and maintained for an additional minimum of 5 ft. further.

April 27, 2017

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

Re: Proposed Delineation Workplan
Trunk M Release (1RP-4500)
GPS: N 32.31741° W 103.21097°
Unit Letter "H", Section 12, Township 23 South, Range 36 East, NMPM
Lea County, New Mexico

Dear Ms. Yu,

TRC Environmental Corporation (TRC) has prepared this *Proposed Delineation Workplan* (Workplan) for the Trunk M Release (Release Site). The purpose of this Workplan is to propose additional delineation activities designed to assess the horizontal and vertical extent of impact at the Release Site. The legal description of the Release Site is Unit Letter "H", Section 12, Township 23 South, Range 36 East, in Lea County, New Mexico. The GPS coordinates for the site are N 32.31741° W 103.21097°. The subject property is owned by the Strain-King Ranch, LLC. A Site Location Map and Site Details and Proposed Soil Sample Locations Map are provided as Figure 1 and Figure 2, respectively. Release Site photographs are attached to this Workplan.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 12, Township 23 South, Range 36 East. A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) Hobbs District Office indicates groundwater should be encountered at approximately one hundred ten (110) feet below ground surface (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. No water wells were observed within one-thousand (1,000) feet of the Release Site. Based on the NMOCD site classification system, zero (0) 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.

The NMOCD guidelines indicate the Trunk M Release Site has a ranking score of zero (0). Based on this score, the initial soil remediation levels for a site with a ranking score of zero (0) points are as follows:

- Benzene – 10 mg/Kg (ppm)
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) – 50 mg/Kg (ppm)
- TPH – 5,000 mg/Kg (ppm)
- Chloride – 1,000 mg/Kg (ppm)

Based on the vertical extent of impact, the soil remediation levels may require modification.

On December 7, 2016, Terracon, on behalf of ETC, performed an initial site assessment of the Release Site. During the site assessment, a Terracon representative collected eight (8) soil samples from the open excavation at the Release Site. A review of laboratory analytical results indicated the soil samples were below the NMOCD Site Classification Criteria for TPH, benzene, BTEX, and chloride concentrations, with the exception of soil samples WSW #2 @ 3', Floor #1 (6-6.5), and Floor #2 (7-7.5), which exhibited BTEX and/or chloride concentrations above NMOCD guidelines. The *Initial Release Assessment Report* provided by Terracon is attached to this Workplan.

ETC proposes to vertically delineate the release extent utilizing a backhoe to advance the investigation trenches. The proposed investigation trenches will be advanced in the areas represented by soil samples WSW #2 @ 3', Floor #1 (6-6.5'), Floor #2 (7-7.5'). The investigation trenches in the areas represented by soil samples Floor #1 (6-6.5') and Floor #2 (7-7.5') will be advanced vertically and field screening will be perform every two (2) vertical feet. Based on visual evidence, olfactory evidence, and chloride field screen results, soil samples will be collected and submitted for TPH, BTEX, and chloride analysis. The advancement of the investigation trenches will be suspended when visual evidence, olfactory evidence, and/or chloride field screening indicates hydrocarbon and chloride concentrations do not exceed the NMOCD regulatory guidelines.

The investigation trench in the area represented by soil sample WSW #2 @ 3' will be advanced horizontally in a west direction beginning from the southwest wall of the open excavation. Field screen activities will be performed every two (2) horizontal feet and, based on visual evidence, olfactory evidence, and/or chloride field screening, soil samples will be submitted to the laboratory for TPH, BTEX, and chloride analysis. The advancement of the investigation trench will be suspended when visual evidence, olfactory evidence, and/or chloride field screening indicate hydrocarbon and chloride concentrations do not exceed the NMOCD regulatory guidelines.

Soil samples collected from the activities described above will be submitted to the laboratory and analyzed for concentrations of BTEX using Method SW 846 8021B, TPH using SW 846 8015M and chloride using EPA Method 300.0.

On receipt of the analytical results and the conclusion of delineation activities, a *Soil Investigation Summary and Proposed Remediation Workplan* will be prepared and submitted to the NMOCD for approval. The *Soil Investigation Summary and Proposed Remediation Workplan* will detail remediation activities designed to progress the Release Site toward a NMOCD Closure.

ETC is prepared to begin the activities outlined in this *Proposed Delineation Workplan* on NMOCD approval.

If you have any questions, or if additional information is required, please feel free to call Rose Slade (ETC) at 210-403-6525 or myself at 432-520-7720 (office) or 432-664-6699 (cell).

Respectfully submitted,

Nikki Green
Project Manager
TRC Environmental Corporation

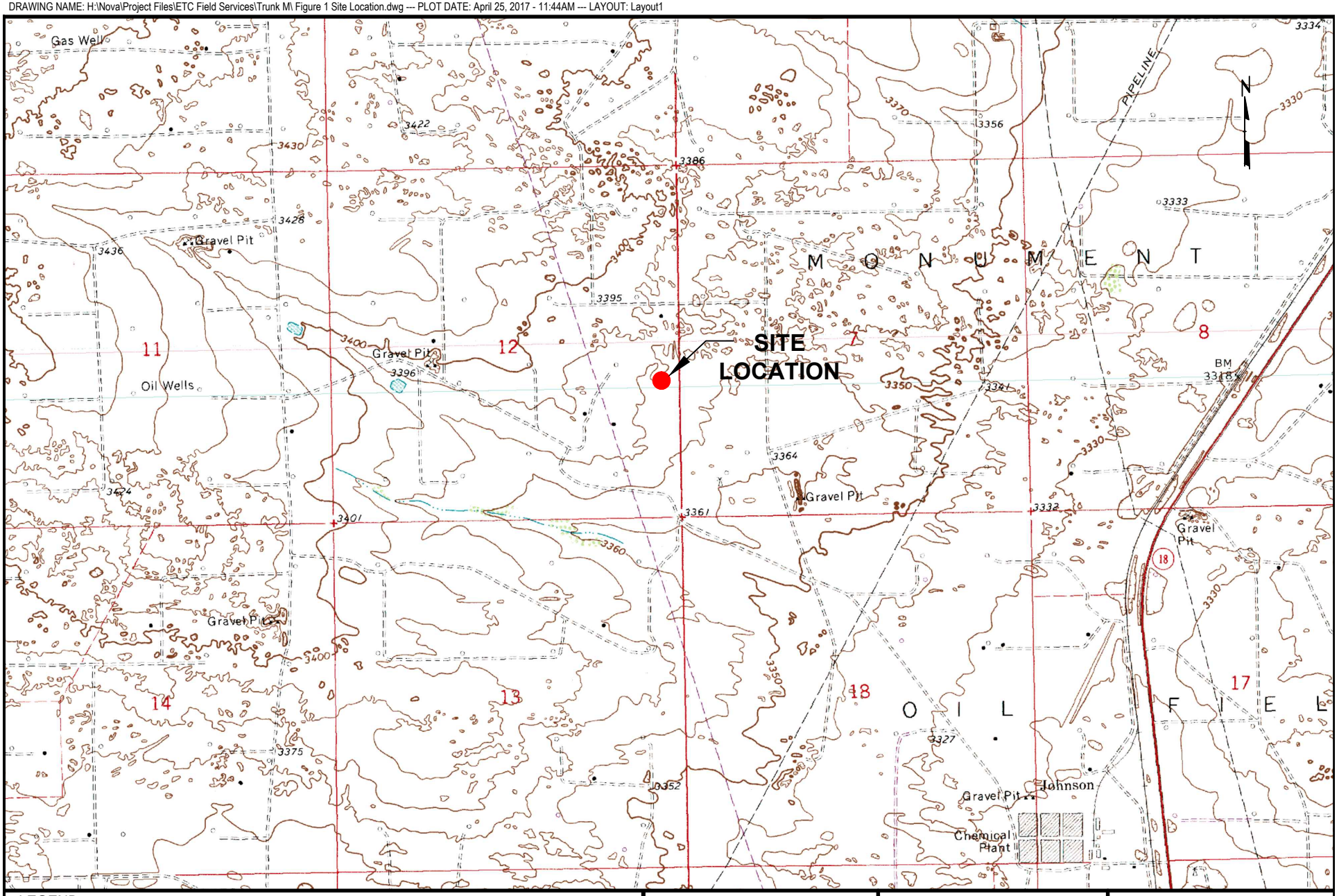
Jeffrey Kindley, PG
Senior Project Manager
TRC Environmental Corporation

Attachments:

Figure 1 - Site Location Map
Figure 2 – Site Detail and Proposed Investigation Trench Map
Table 1 – Concentrations of Benzene, BTEX, TPH, and Chloride in Soil
Terracon *Initial Release Assessment Report*
Release Notification and Corrective Action (Form C-141)

cc: File

DRAWING NAME: H:\Nova\Project Files\ETC Field Services\Trunk M\ Figure 1 Site Location.dwg --- PLOT DATE: April 25, 2017 - 11:44AM --- LAYOUT: Layout1



LEGEND:

2000 1000 0 1000 2000

Distance in Feet

Figure 1

Site Location Map

ETC Field Services, LLC

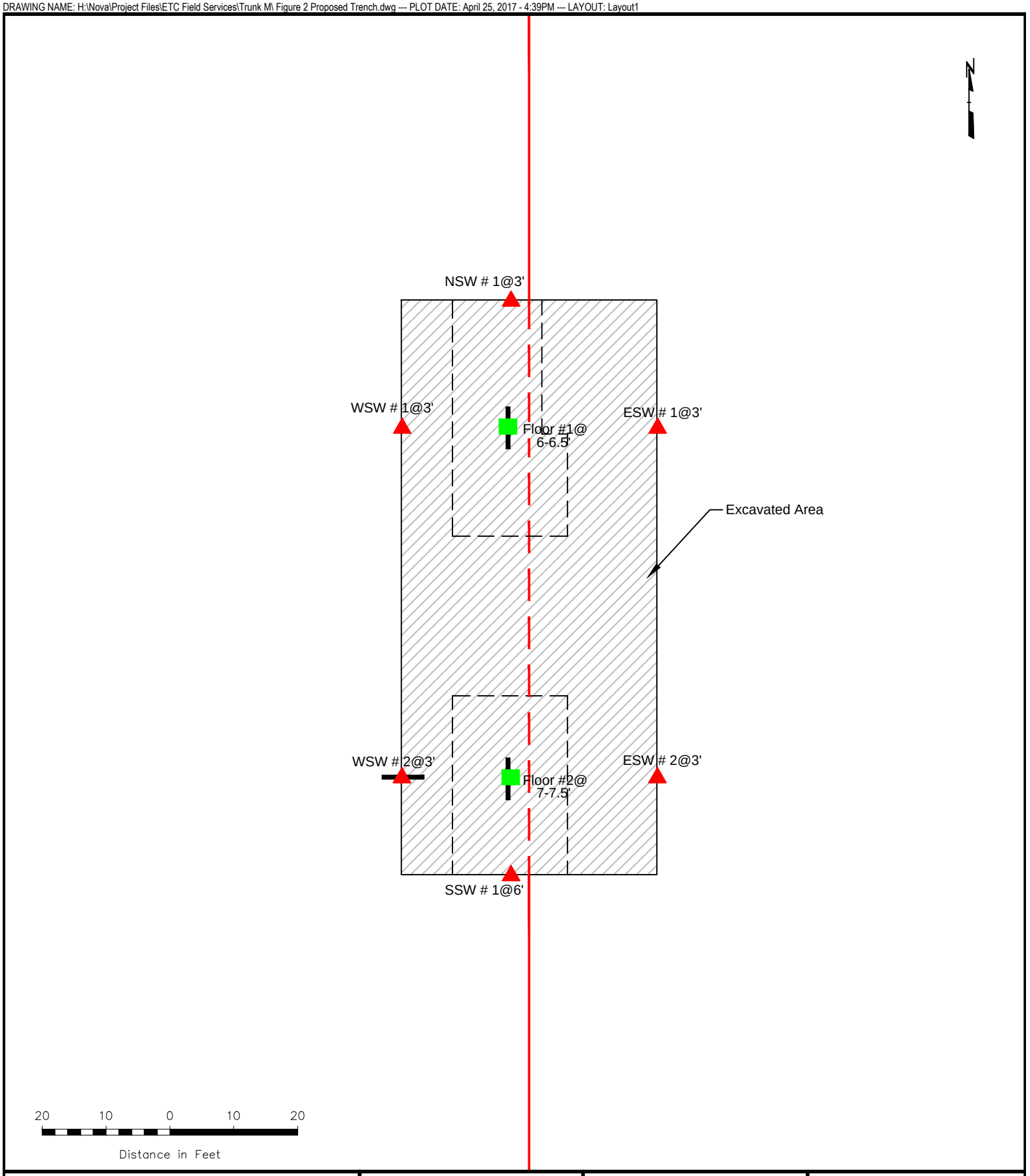
Trunk M

Lea County, NM

Scale: 1" = 2000'	
CAD By: TA	Checked By: NG
Draft: April 25, 2017	
Lat. N 32.31741° , Long. W 103.21097°	
NE1/4 SE1/4 Sec 12 T23S R36E	
TRC Proj. No.: 274130	

TRC

2057 Commerce Drive
Midland, Texas 79703
432.520.7720



LEGEND:

- Steel Pipeline
- Proposed Investigation Trench
- Sidewall Soil Sample Location
- Floor Soil Sample Location

Figure 2
Site Details & Proposed
Investigation Trench Map
ETC Field Services, LLC
Trunk M
Lea County, NM

Scale: 1" = 20'	
CAD By: TA	Checked By: NG
Draft: April 25, 2017	
Lat. N 32.31741°, Long. W 103.21097°	
NE1/4 SE1/4 Sec 12 T23S R36E	
TRC Proj. No.: 274130	

TRC
2057 Commerce Drive
Midland, Texas 79703
432.520.7720

TABLE 1

CONCENTRATIONS OF BENZENE, BTEX, TPH, AND CHLORIDE IN SOIL

ETC FIELD SERVICES, LLC
Trunk M
LEA COUNTY, NEW MEXICO

All concentrations are reported in mg/Kg

SAMPLE LOCATION	SAMPLE DATE	SOIL STATUS	METHODS: SW 846-8021b						METHOD: SW 8015M				E 300.1
			BENZENE	TOLUENE	ETHYL-BENZENE	m, p - XYLENES	o - XYLENE	TOTAL BTEX	TPH GRO C_6-C_{12}	TPH DRO C_{12}-C_{28}	TPH ORO C_{28}-C_{35}	TOTAL TPH C_6-C_{35}	CHLORIDE
NMOCD Site Classification Criteria			**10**					**50**				**5,000**	**1,000**
*NSW #1 @ 3'	12/06/16	In-Situ	<0.0200	<0.0200	<0.0200	<0.0200		<0.0200	<4.00	<50.0	<50.0	<50.0	93.4
*ESW #1 @ 3'	12/06/16	In-Situ	<0.0200	<0.0200	<0.0200	<0.0200		<0.0200	<4.00	<50.0	<50.0	<50.0	<25.0
*ESW #2 @ 3'	12/06/16	In-Situ	<0.0200	<0.0200	<0.0200	<0.0200		<0.0200	<4.00	<50.0	<50.0	<50.0	118
*SSW #2 @ 6'	12/06/16	In-Situ	<0.0200	<0.0200	<0.0200	<0.0200		<0.0200	<4.00	<50.0	<50.0	<50.0	456
*WSW #1 @ 3'	12/06/16	In-Situ	<0.0200	<0.0200	<0.0200	<0.0200		<0.0200	6.01	<50.0	<50.0	6.01	250
*WSW #2 @ 3'	12/06/16	In-Situ	5.85	56.0	66.7	142		**270.55**	4,160	4,280	<1000	**8,440**	974
*Floor #1 (6-6.5)	12/06/16	In-Situ	0.321	6.05	12.2	42.4		**60.971**	2,200	2,080	375	4,655	**2,550**
*Floor #2 (7-7.5)	12/06/16	In-Situ	0.725	14.5	25.6	48.6		**89.425**	1,760	1,050	<250	2,810	**1,570**

* - Soil samples were collected by a second party vendor assigned by ETC.

ENERGY TRANSFER

Terracon
Consulting Engineers & Scientists

Initial Release Assessment Report

Date of Assessment 12/7/16
Site Name **Trunk M**
Terracon Project No. AR167369

Site GPS **Latitude**: 32.31741°
Longitude: -103.21097°

County Lea

PLSS			
Unit Letter	**Section**	**Township**	**Range**
I	12	23S	36E

General Description

General Description The site consists of a relatively large open excavation within a pipeline right-of-way transected by a recently replaced and/or repaired poly pipeline.

Dimensions	**Length**	**Width**	**Depth**
	90 ft.	40 ft.	3 - 7 ft.

Site Location Map

NMOCD Site Ranking and Recommended Remediation Action Levels

General Site Characteristics		Score
Depth to Groundwater	**~ 110 ft.**	0
Distance to Nearest Well	**> 1,000 ft.**	0
Distance to Nearest Surface Water	**> 1,000 ft.**	0
Total Ranking Score		**0**

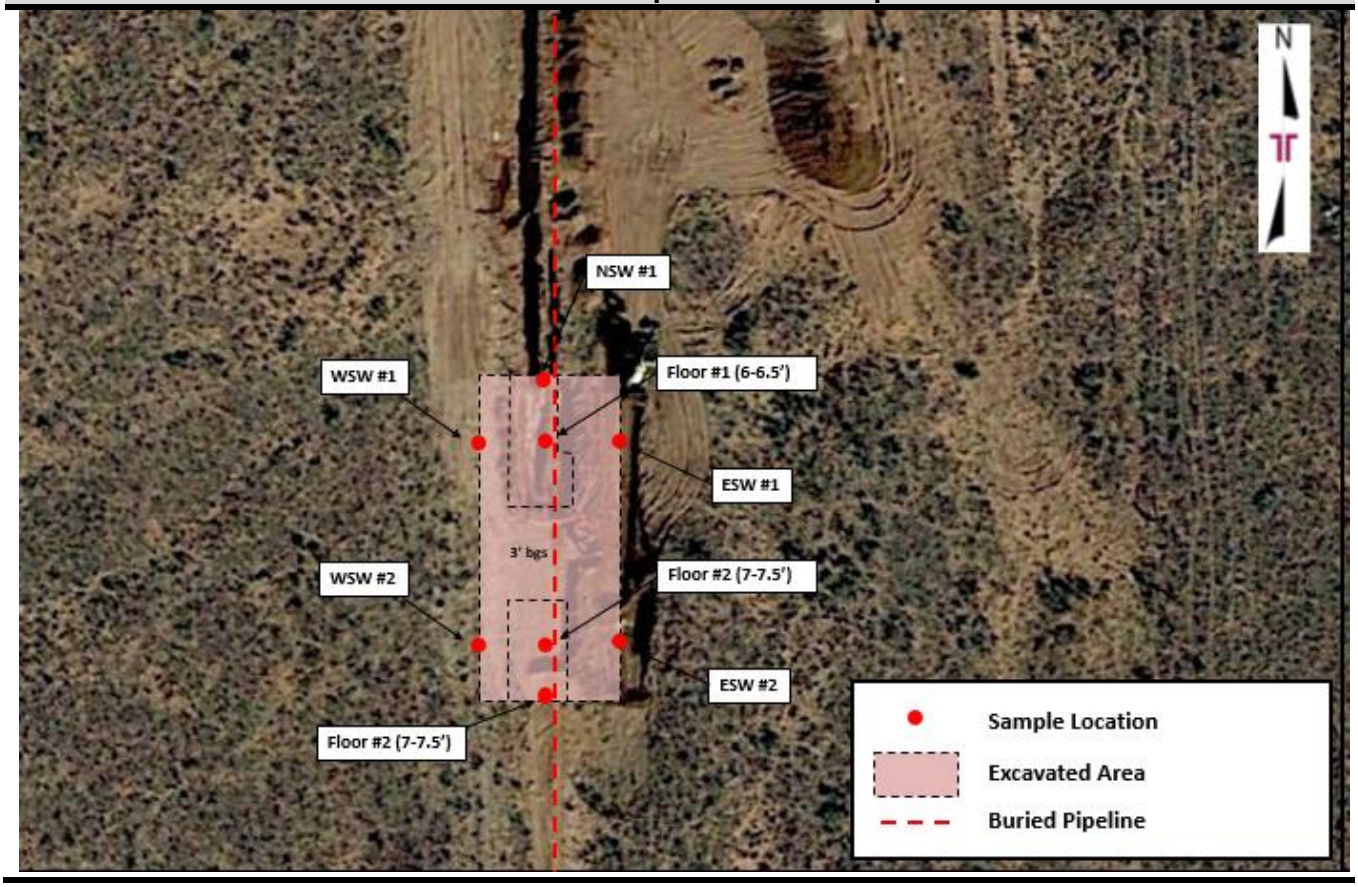
Recommended Remediation Action Levels	
Benzene	**10 mg/kg**
BTEX	**50 mg/kg**
TPH	**5,000 mg/kg**
Chloride	**1,000 mg/kg**

Field Activities

Dec. 7, 2016

Terracon conducted an initial release assessment (IRA) at the site. During the initial release assessment, an open excavation was discovered within the pipeline right-of-way in the vicinity of the ETC provided GPS coordinates. Terracon collected eight confirmation soil samples (NSW #1 @ 3', ESW #1 @ 3', ESW #2 @ 3', SSW #1 @ 6', WSW #1 @ 3', WSW #2 @ 3', Floor #1 6-6.5' and Floor #2 7-7.5') from the floor and sidewalls of the excavated area and submitted them to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were less than the NMOCD Recommended Remediation Action Levels in each of the submitted soil samples with the exception of the TPH and total BTEX concentrations in soil sample WSW #2 @ 3' and the chloride concentrations in soil samples Floor #1 (6-6.5') and Floor #2 (7-7.5').

Site and Sample Location Map



Terracon

Confirmation Soil Sample Analytical Results – TPH, BTEX and Chloride

Sample I.D.	Sample Depth (bgs)	TPH (8015 M Ext.)				BTEX (8021b)		Chloride (E300)
		C_6-C_{12}	C_{12}-C_{28}	C_{28}-C_{35}	C_6-C_{35}	Benzene	Total BTEXal BTEX	
NSW #1 @ 3'	3'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	93.4
ESW #1 @ 3'	3'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<25.0
ESW #2 @ 3'	3'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	118
SSW #1 @ 6'	6'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	456
WSW #1 @ 3'	3"	6.01	<50.0	<50.0	<50.0	<0.0200	<0.0200	250
WSW #2 @ 3'	3"	4,160	4,280	<1,000	**8,440**	5.85	**142**	974
Floor #1	6–6.5	2,220	2,080	375	4,675	0.321	42.2	**2,550**
Floor #2	7–7.5	1,760	1,050	<250	2,810	0.725	48.6	**1,570**
NMOCD Recommended Remediation Action Levels					**5,000**	**10**	**50**	**1,000**

1. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015 M. Ext.
2. BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8021b.
3. Chloride = Chloride analyzed by EPA Method E300.

< = Constituent not detected above the indicated laboratory reporting limits (RL).

Concentrations in milligrams per kilogram (mg/kg)

Conclusions

Review of laboratory analytical results from confirmation soil samples collected from the floor and sidewalls of the excavated area indicates soil remaining in-situ in the areas characterized by sample points NSW #1, ESW #1, ESW #2, SSW #1 and WSW #1 is not affected above the NMOCD Recommended Remediation Action Levels.

Soil sample WSW #2 @ 3' exhibited a TPH concentration of 8,440 milligrams per kilogram (mg/kg) and a total BTEX concentration of 142 mg/kg. Soil samples Floor #1 (6-6.5') and Floor #2 (7-7.5') exhibited chloride concentrations of 2,550 and 1,570 mg/kg, respectively. The detected TPH, total BTEX and/or chloride concentrations in soil samples WSW #2 @ 3', Floor #1 (6-6.5') and Floor #2 (7-7.5') exceeds the NMOCD Recommended Remediation Action Levels. In the event soil impacts extend to within 100 ft. of groundwater, the Recommended Remediation Action Levels may change, prompting additional

Recommendations

Based on field observations made during the initial release assessment and the review of laboratory analytical results from confirmation soil samples, Terracon recommends further investigation and remediation of affected soil in the areas characterized by soil samples WSW #2 @ 3', Floor #1 (6-6.5') and Floor #2 (7-7.5'). In the event soil impacts extend to within 100 ft. of groundwater,

Please contact either of the undersigned at (806) 300-0140 if you have any questions regarding this project.

Joel Lowry
Project Geologist

for: Erin Loyd, PG
Senior Associate
Office Manager

Attached: Photographic Log
Laboratory Analytical Reports

Photographic Log

PHOTO 1: View of the excavated area and sample locations, facing east.

PHOTO 2: View of the excavated area and sample locations, facing east.

PHOTO 3: View of the excavated area and sample locations, facing southeast.

PHOTO 4: View of the excavated area and sample locations, facing northwest.

Summary Report

Joel Lowry
Terracon-Lubbock
5827 50th
Suite 1
Lubbock, TX 79424

Report Date: December 16, 2016

Work Order: 16120818

Project Name: Truck-M

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
433191	NSW #1 @ 3'	soil	2016-12-06	15:15	2016-12-08
433192	ESW #1 @ 3'	soil	2016-12-06	15:20	2016-12-08
433193	ESW #2 @ 3'	soil	2016-12-06	15:25	2016-12-08
433194	SSW #2 @ 6'	soil	2016-12-06	15:30	2016-12-08
433195	WSW #1 @ 3'	soil	2016-12-06	15:35	2016-12-08
433196	WSW #2 @ 3'	soil	2016-12-06	15:40	2016-12-08
433197	Floor #1 (6-6.5)	soil	2016-12-06	15:45	2016-12-08
433198	Floor #2 (7-7.5)	soil	2016-12-06	15:55	2016-12-08

	BTEX				MTBE	TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
433191 - NSW #1 @ 3'	<0.0200	<0.0200	<0.0200	<0.0200		<50.0	<4.00
433192 - ESW #1 @ 3'	<0.0200	<0.0200	<0.0200	<0.0200		<50.0	<4.00
433193 - ESW #2 @ 3'	<0.0200	<0.0200	<0.0200	<0.0200		<50.0	<4.00
433194 - SSW #2 @ 6'	<0.0200	<0.0200	<0.0200	<0.0200		<50.0	<4.00
433195 - WSW #1 @ 3'	<0.0200	<0.0200	<0.0200	<0.0200		<50.0	**6.01**
433196 - WSW #2 @ 3'	**5.85**	**56.0**	**66.7**	**142**		**4280**	**4160**
433197 - Floor #1 (6-6.5)	**0.321**	**6.05**	**12.2**	**42.4**		**2080**	**2200**
433198 - Floor #2 (7-7.5)	**0.725**	**14.5**	**25.6**	**48.6**		**1050**	**1760**

Sample: 433191 - NSW #1 @ 3'

Param	Flag	Result	Units	RL
Chloride		**93.4**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 433192 - ESW #1 @ 3'

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 433193 - ESW #2 @ 3'

Param	Flag	Result	Units	RL
Chloride		**118**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 433194 - SSW #2 @ 6'

Param	Flag	Result	Units	RL
Chloride		**456**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 433195 - WSW #1 @ 3'

Param	Flag	Result	Units	RL
Chloride		**250**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 433196 - WSW #2 @ 3'

Param	Flag	Result	Units	RL
Chloride		**974**	mg/Kg	25
ORO		<1000	mg/Kg	50

Sample: 433197 - Floor #1 (6-6.5)

Param	Flag	Result	Units	RL
Chloride		**2550**	mg/Kg	25
ORO		**375**	mg/Kg	50

Sample: 433198 - Floor #2 (7-7.5)

Param	Flag	Result	Units	RL
Chloride		**1570**	mg/Kg	25
ORO		<250	mg/Kg	50

REVIEWED
By Kristen Lynch at 12:50 pm, Nov 08, 2016

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 Report

Name of Company: ETC Field Services	Contact: Johnnie Bradford
Address: 600 N. Marienfeld Street, Ste. 700	Telephone No. (432) 250-5542 (cell) (817) 302-9812 (off)
Facility Name: Trunk M	Facility Type: Pipeline

Surface Owner:	Mineral Owner:	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	12	23S	36E	555.64	North	195.53	East	Lea

Latitude 32.31741N Longitude 103.21097W

NATURE OF RELEASE

Type of Release: Gas/Oil/Condensate	Volume of Release: ~5.5 BBLs Liquid/24 Mscf Gas	Volume Recovered: 0
Source of Release: Leaking Pipeline	Date and Hour of Occurrence: 10/28/2016 12:52	Date and Hour of Discovery: 10/28/2016 18:00
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour: N/A	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
A Watercourse was not affected.

Describe Cause of Problem and Remedial Action Taken.*
Due to external corrosion, a section of 20" gathering system pipeline developed a hole causing a release of natural gas and oil. The pipeline was immediately isolated and the leaking section of pipe dug up to reveal the hole. The contaminated soil was stockpiled and sampled to determine disposal options. This section of steel pipeline will be replaced with a section of poly.

Describe Area Affected and Cleanup Action Taken.*
The area affected was approximately 15'x10'x6'. The contaminated soil was stockpiled and sampled for disposal options. Considering that additional contamination remained, the hole will be deepened to expose uncontaminated soil. At that time, additional samples will be taken to demonstrate remediation to NMOCD Recommended Remediation Action Levels (RRALs). All contaminated material will be disposed in a NMOCD approved landfill or land farm. Once remediation is confirmed, the hole will be backfilled with uncontaminated soil.

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: Johnnie Bradford	OIL CONSERVATION DIVISION
Printed Name: Johnnie Bradford	Approved by Environmental Specialist: Kristen Lynch
Title: Sr. Environmental Specialist	Approval Date: 11/8/2016 Expiration Date: 1/8/2017
E-mail Address: johnnie.bradford@energytransfer.com	Conditions of Approval: See attached Directive Attached ☐ 1RP 4500
Date: 11/02/2016 Phone: (432) 250-5542	

* Attach Additional Sheets If Necessary

NMOCD accepts discrete samples
Notify OCD prior to sampling

nKL1631344306
pKL1631345662

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 11/2/2016 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP 4500 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 12/7/2016. 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.

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