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Midland, TX 79703

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APPROVED
By Olivia Yu at 10:43 am, Apr 30, 2018

NMOCD approves of the delineation completed and proposed remediation for 1RP-4971 with one clarification: provide data from field tests and photos identifying the margins of the inferred release area.

March 16, 2018

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

Re: **Initial Investigation Summary and Proposed Remediation Strategy**
Pan Head Fee #011H
API No. 30-025-42817
GPS: 32.85579, -103.74374
UL "D", Sec. 11, T17S, R32E
Lea Co, NM
NMOCD Ref. No. 1RP-4971

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Initial Investigation Summary and Proposed Remediation Strategy* for the release site known as the **Pan Head Fee #011H**. Details of the release are summarized below:

RELEASE DETAILS			
Type of Release: Crude Oil and Produced Water	**Volume of Release:** 4 bbls Oil, 4 bbls Produced Water		
	Volume Recovered: 3 bbls Oil, 3 bbls Produced Water		
Source of Release: One quarter (1/4) inch valve	**Date of Release:** 02/17/18	**Date of Discovery:** 02/17/18	
Was Immediate Notice Given? Not Required	**If YES, to Whom?** Not Applicable		
Was a Watercourse Reached? No	**Volume Impacted the Watercourse:** Not Applicable		
Cause of Problem and Remedial Action Taken:			
The release was attributed to the failure of a 1/4-inch valve. During initial response activities, saturated soil was scrapped up from the surface of the well pad and transported to an NMOCD-approved disposal facility.			

A Site Location Map is provided as Attachment #1. A copy of the initial Release Notification and Corrective Action (NMOCD Form C-141) is provided as Attachment #5.

REGULATORY FRAMEWORK

Crude oil facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). Impact of soil due to a surface release is addressed in the NMOCD guidance document titled *Guidelines for Remediation of Leaks, Spills and Releases* , dated August 13, 1993.

The guidance document provides direction for initial response actions, site assessment, sampling procedures and provides a total ranking score based on the depth to groundwater, distance to private and domestic water sources, and the distance to the nearest surface water body as follows:

RANKING SCORE CRITERIA		
General Site Characteristics		**Score**
Depth to Groundwater	< 50 Feet	**20**
	50-99 Feet	**10**
	> 100 Feet	**0**
Well Head Protection Area, <1,000 Feet from water source, or <200 Feet from private domestic water source	Yes	**20**
	No	**0**
Distance to Surface Water Body	< 200 Feet	**20**
	200 - 1,000 Feet	**10**
	> 1,000 Feet	**0**

A search of a groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) was conducted to determine the average depth to groundwater within the Section and identify any registered water wells within 1,000 ft. of the release site. If none were identified, the approximate depth to groundwater was extrapolated from a Depth to Groundwater Map utilized by the NMOCD. The results of the groundwater database search are provided as Attachment #3.

TOTAL RANKING SCORE FOR SITE		
Ranking Score Criteria		**Score**
Depth to Groundwater	125 Feet	**0**
Well Head Protection Area, <1,000 Feet from water source, or <200 Feet from private domestic water source	No	**0**
Distance to Surface Water Body	> 1,000 Feet	**0**
TOTAL RANKING SCORE FOR SITE		**0**

The NMOCD guidelines indicated the Site has an initial ranking score of **0** points. The NMOCD Recommended Remediation Action Levels (RRAL) for a Site with a ranking score of **0** points are as follows:

RECOMMENDED REMEDIATION ACTION LEVELS	
Benzene	**10 mg/kg**
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	**50 mg/kg**
Total Petroleum Hydrocarbons (TPH)	**5,000 mg/kg**
Chloride	**600 mg/kg**

INITIAL INVESTIGATION

On **February 23, 2017**, an initial investigation was conducted at the Site by TRC. **Fourteen (14)** representative soil samples were collected from a grid established in the inferred affected area in an effort to determine if impacted soil affected above the NMOCD RRAL remained in-situ after initial response activities. The collected soil samples were submitted to an approved laboratory for analysis of benzene, BTEX, TPH and chloride concentrations. A table summarizing laboratory analytical results from soil samples collected during the initial assessment is provided below:

Sample ID	Depth	Soil Status	SW 846 8021b		SW-846 8015M					E300
			Benzene	Total BTEX	TPH GRO C_6-C_{10}	TPH DRO C_{10}-C_{28}	TPH ORO C_{28}-C_{35}	TOTAL TPH C_6-C_{28}	TOTAL TPH C_6-C_{35}	CHLORIDE
SP-1	6"	In-Situ	<0.00202	<0.00202	<15.0	406	18.9	-	424.9	113
SP-1	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	<5.00
SP-2	6"	In-Situ	<0.00199	<0.00199	<14.9	45.7	<14.9	-	45.7	<4.95
SP-2	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	<5.00
SP-3	6"	In-Situ	<0.00200	<0.002	<14.9	<14.9	<14.9	-	<14.9	12.1
SP-3	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	<4.99
SP-4	6"	In-Situ	<0.00201	0.02571	<15.0	1,310.0	55.2	-	1,365.2	75.8
SP-4	1'	In-Situ	-	-	<15.0	30.3	<15.0	-	30.3	<5.00
SP-5	6"	In-Situ	<0.00201	<0.00201	<15.0	187.0	36.4		223.4	**747**
SP-5	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	385
SP-6	6"	In-Situ	<0.00202	<0.00202	<15.0	<15.0	<15.0	-	<15	<5.00
SP-6	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	<4.99
SP-7	6"	In-Situ	<0.00199	<0.00199	<15.0	<15.0	<15.0	-	<15	220
SP-7	1'	In-Situ	-	-	<15.0	<15.0	<15.0	-	<15	142
NMOCD RRAL			**10**	**50**	**-**	**-**	**-**	**-**	**5,000**	**600**

Laboratory analytical reports are provided as Attachment #4. A "Site & Sample Location Map" is provided as Attachment #2.

PROPOSED REMEDIATION ACTIVITIES AND REMEDIATION WORKPLAN

Based on laboratory analytical results, site conditions and field observations made during the initial release assessment, COG proposes the following remediation activities designed to advance the Release Site toward an NMOCD approved closure:

- Utilizing a backhoe, excavate the Release Site to a depth of approximately one (1) foot bgs in the area represented by sample point SP-5. The excavated soil will be stockpiled on-site, atop a 6 mil poly liner, pending transportation under manifest to a NMOCD approved disposal facility.
- The areas represented by the remaining sample points (SP-1, SP-2, SP-3, SP-4, SP-6, SP-7) will be aesthically addressed and contoured to meet the needs of the well pad.
- Upon excavating impacted soil from within the release margins, confirmation soil samples will be collected from the floor and sidewalls of the excavated area and submitted to the laboratory for determination of BTEX, TPH and chloride concentrations.
- On receipt of favorable analytical results (below NMOCD regulatory guidelines), the excavation will be backfilled with locally sourced non-impacted caliche.
- Upon completion of remediation activities, TRC will prepare and submit a "Remediation Summary and Site Closure Request" to the NMOCD on behalf of COG.

If you have any questions, or if additional is required, please feel free to contact Becky Haskell or either of the undersigned by phone or email.

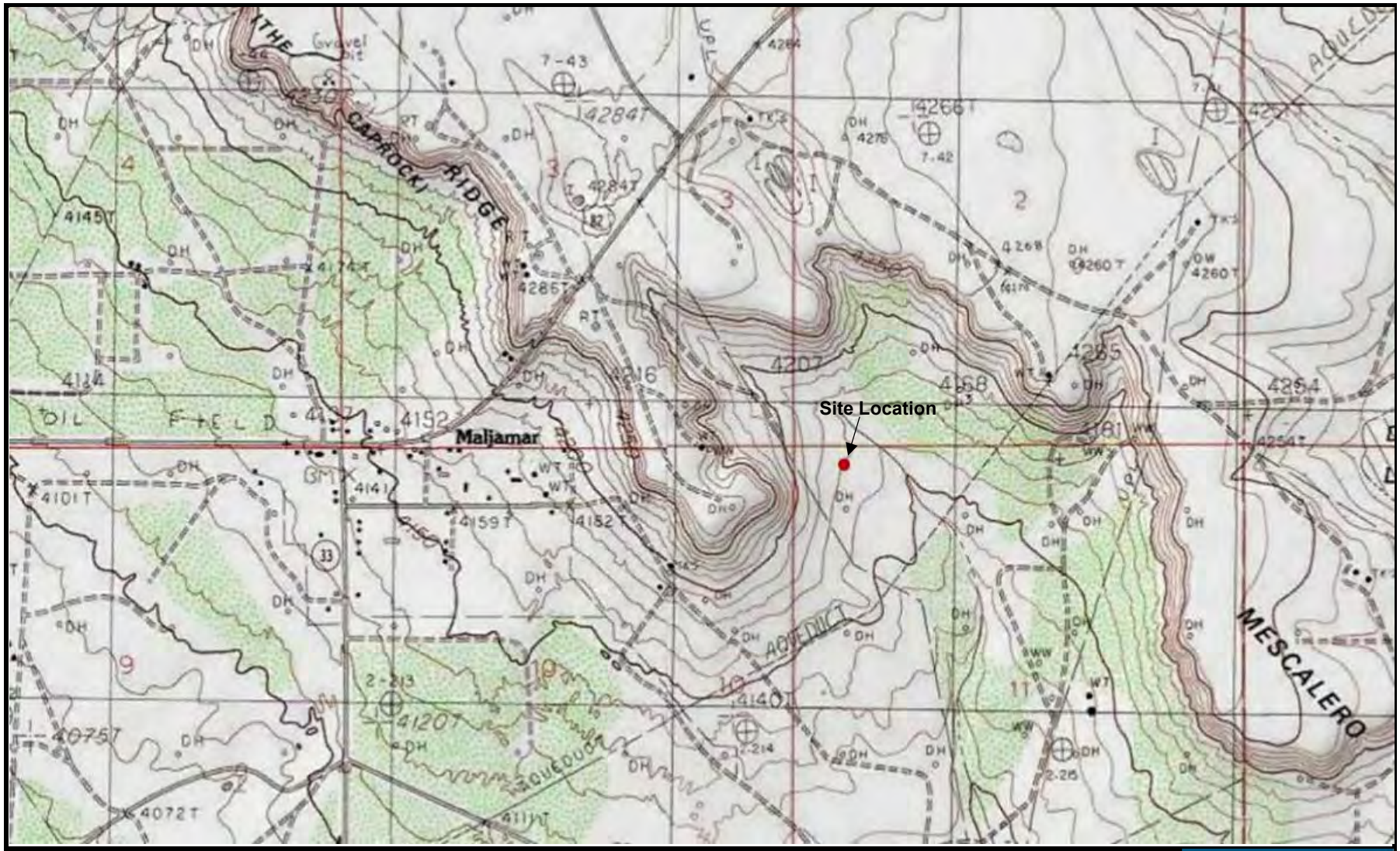
Respectfully,

Joel Lowry
Senior Project Manager
TRC Environmental Corp.

Curt Stanley
Senior Project Manager
TRC Environmental Corp.

Attachments:

Attachment #1-	Figure 1 - Site Location Map
Attachment #2-	Figure 2 - Site & Sample Location Map
Attachment #3-	Groundwater Database Search
Attachment #4-	Laboratory Analytical Reports
Attachment #5-	Release Notification and Corrective Action (FORM C-141)



LEGEND:

● Site Location

Figure 1

Site Location Map
COG Operating, LLC
Pan Head Fee #011H
Lea Co, NM

Scale 1" = 2,000'	
Drafted by: ZC | Checked by: JL	
Draft: March 7, 2018	
GPS: 32.85579, -103.74374	
UL "D", Sec. 11, T17S, R32E	
TRC Proj. No:	298626.1

TRC
Results you can rely on

LEGEND:

Inferred Release Margins

Soil Sample Location

Figure 2

Site & Sample Location Map
COG Operating, LLC
Pan Head Fee #011H
Lea Co, NM

Scale 1" = 50'	
Drafted by: ZC | Checked by: JL	
Draft: March 7, 2018	
GPS: 32.85579, -103.74374	
UL "D", Sec. 11, T17S, R32E	
TRC Proj. No:	298626.1

TRC
Results you can rely on

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	Twns	Rng	X	Y	Depth Well	Depth Water	Water Column
L 13047 POD1		L	LE				11	17S	32E	618187	3635254*	140		
RA 11684 POD1			LE	1	1	4	11	17S	32E	618216	3635124	275		
RA 11684 POD2			LE	1	1	4	11	17S	32E	618313	3635248	275		
RA 11684 POD3			LE	3	3	1	11	17S	32E	618262	3635371	275		
RA 11684 POD4			LE	1	3	2	11	17S	32E	618334	3635521	275		
RA 11684 POD5			LE	3	1	4	11	17S	32E	618353	3635047	275		

Average Depth to Water: --
Minimum Depth: --
Maximum Depth: --

Record Count: 6

PLSS Search:

Section(s): 11 **Township:** 17S **Range:** 32E

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

2/20/18 10:42 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Analytical Report 577774

for

TRC Solutions, Inc

Project Manager: Joel Lowry

Pan Head Fee #011H

07-MAR-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

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

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

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

07-MAR-18

Project Manager: **Joel Lowry**
TRC Solutions, Inc
2057 Commerce
Midland, TX 79703

Reference: XENCO Report No(s): **577774**
Pan Head Fee #011H
Project Address: Lea Co, NM

Joel Lowry:

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) 577774. 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. 577774 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 577774

TRC Solutions, Inc, Midland, TX

Pan Head Fee #011H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-1 @ 6"	S	02-23-18 13:00	6 In	577774-001
SP-1 @ 1'	S	02-23-18 13:05	1 ft	577774-002
SP-2 @ 6"	S	02-23-18 13:10	6 In	577774-003
SP-2 @ 1'	S	02-23-18 13:15	1 ft	577774-004
SP-3 @ 6"	S	02-23-18 13:20	6 In	577774-005
SP-3 @ 1'	S	02-23-18 13:25	1 ft	577774-006
SP-4 @ 6"	S	02-23-18 13:30	6 In	577774-007
SP-4 @ 1'	S	02-23-18 13:35	1 ft	577774-008
SP-5 @ 6"	S	02-23-18 13:40	6 In	577774-009
SP-5 @ 1'	S	02-23-18 13:45	1 ft	577774-010
SP-6 @ 6"	S	02-23-18 13:50	6 In	577774-011
SP-6 @ 1'	S	02-23-18 13:55	1 ft	577774-012
SP-7 @ 6"	S	02-23-18 14:00	6 In	577774-013
SP-7 @ 1'	S	02-23-18 14:05	1 ft	577774-014

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3042716 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 577774

TRC Solutions, Inc, Midland, TX

Project Name: Pan Head Fee #011H

Project Id:
Contact: Joel Lowry
Project Location: Lea Co, NM

Date Received in Lab: Wed Feb-28-18 02:30 pm
Report Date: 07-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	577774-001		577774-002		577774-003		577774-004		577774-005		577774-006	
	Field Id:	SP-1 @ 6"		SP-1 @ 1'		SP-2 @ 6"		SP-2 @ 1'		SP-3 @ 6"		SP-3 @ 1'	
	Depth:	6- In		1- ft		6- In		1- ft		6- In		1- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-23-18 13:00		Feb-23-18 13:05		Feb-23-18 13:10		Feb-23-18 13:15		Feb-23-18 13:20		Feb-23-18 13:25	
BTEX by EPA 8021B	***Extracted:***	Mar-03-18 08:30				Mar-03-18 08:30				Mar-03-18 08:30			
	Analyzed:	Mar-05-18 10:11				Mar-05-18 10:12				Mar-05-18 10:12			
	Units/RL:	mg/kg	RL			mg/kg	RL			mg/kg	RL		
Benzene		<0.00202	0.00202			<0.00199	0.00199			<0.00200	0.00200		
Toluene		<0.00202	0.00202			<0.00199	0.00199			<0.00200	0.00200		
Ethylbenzene		<0.00202	0.00202			<0.00199	0.00199			<0.00200	0.00200		
m,p-Xylenes		<0.00403	0.00403			<0.00398	0.00398			<0.00399	0.00399		
o-Xylene		<0.00202	0.00202			<0.00199	0.00199			<0.00200	0.00200		
Total Xylenes		<0.00202	0.00202			<0.00199	0.00199			<0.002	0.002		
Total BTEX		<0.00202	0.00202			<0.00199	0.00199			<0.002	0.002		
Chloride by EPA 300	***Extracted:***	Mar-05-18 17:00		Mar-05-18 17:00		Mar-05-18 17:00		Mar-05-18 17:00		Mar-05-18 17:00		Mar-05-18 17:00	
	Analyzed:	Mar-06-18 03:06		Mar-06-18 03:48		Mar-06-18 03:53		Mar-06-18 03:59		Mar-06-18 04:04		Mar-06-18 04:09	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		113	4.99	<5.00	5.00	<4.95	4.95	<5.00	5.00	12.1	5.00	<4.99	4.99
TPH by SW8015 Mod	***Extracted:***	Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00	
	Analyzed:	Mar-03-18 22:13		Mar-03-18 22:40		Mar-03-18 23:05		Mar-04-18 00:25		Mar-04-18 00:50		Mar-04-18 01:16	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0	<14.9	14.9	<15.0	15.0
Diesel Range Organics (DRO)		406	15.0	<15.0	15.0	45.7	14.9	<15.0	15.0	<14.9	14.9	<15.0	15.0
Oil Range Hydrocarbons (ORO)		18.9	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0	<14.9	14.9	<15.0	15.0
Total TPH		424.9	15	<15	15	45.7	14.9	<15	15	<14.9	14.9	<15	15

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 577774

TRC Solutions, Inc, Midland, TX

Project Name: Pan Head Fee #011H

Project Id:
Contact: Joel Lowry
Project Location: Lea Co, NM

Date Received in Lab: Wed Feb-28-18 02:30 pm
Report Date: 07-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	577774-007		577774-008		577774-009		577774-010		577774-011		577774-012	
	Field Id:	SP-4 @ 6"		SP-4 @ 1'		SP-5 @ 6"		SP-5 @ 1'		SP-6 @ 6"		SP-6 @ 1'	
	Depth:	6- In		1- ft		6- In		1- ft		6- In		1- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-23-18 13:30		Feb-23-18 13:35		Feb-23-18 13:40		Feb-23-18 13:45		Feb-23-18 13:50		Feb-23-18 13:55	
BTEX by EPA 8021B	***Extracted:***	Mar-03-18 08:30				Mar-03-18 08:30				Mar-03-18 08:30			
	Analyzed:	Mar-05-18 10:12				Mar-05-18 10:12				Mar-05-18 10:12			
	Units/RL:	mg/kg	RL			mg/kg	RL			mg/kg	RL		
Benzene		<0.00201	0.00201			<0.00201	0.00201			<0.00202	0.00202		
Toluene		<0.00201	0.00201			<0.00201	0.00201			<0.00202	0.00202		
Ethylbenzene		0.00845	0.00201			<0.00201	0.00201			<0.00202	0.00202		
m,p-Xylenes		0.0108	0.00402			<0.00402	0.00402			<0.00404	0.00404		
o-Xylene		0.00646	0.00201			<0.00201	0.00201			<0.00202	0.00202		
Total Xylenes		0.01726	0.00201			<0.00201	0.00201			<0.00202	0.00202		
Total BTEX		0.02571	0.00201			<0.00201	0.00201			<0.00202	0.00202		
Chloride by EPA 300	***Extracted:***	Mar-05-18 17:00		Mar-06-18 10:00		Mar-06-18 10:00		Mar-06-18 10:00		Mar-06-18 10:00		Mar-06-18 10:00	
	Analyzed:	Mar-06-18 04:15		Mar-06-18 12:49		Mar-06-18 13:05		Mar-06-18 13:10		Mar-06-18 13:16		Mar-06-18 13:21	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		75.8	4.98	<5.00	5.00	747	5.00	385	4.97	<5.00	5.00	<4.99	4.99
TPH by SW8015 Mod	***Extracted:***	Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00		Mar-03-18 10:00	
	Analyzed:	Mar-04-18 17:42		Mar-04-18 02:07		Mar-04-18 02:33		Mar-04-18 02:57		Mar-04-18 03:24		Mar-04-18 03:50	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		1310	15.0	30.3	15.0	187	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Oil Range Hydrocarbons (ORO)		55.2	15.0	<15.0	15.0	36.4	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		1365.2	15	30.3	15	223.4	15	<15	15	<15	15	<15	15

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 577774

TRC Solutions, Inc, Midland, TX

Project Name: Pan Head Fee #011H

Project Id:
Contact: Joel Lowry
Project Location: Lea Co, NM

Date Received in Lab: Wed Feb-28-18 02:30 pm
Report Date: 07-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested								
	Lab Id:	577774-013		577774-014				
	Field Id:	SP-7 @ 6"		SP-7 @ 1'				
	Depth:	6- In		1- ft				
	Matrix:	SOIL		SOIL				
	Sampled:	Feb-23-18 14:00		Feb-23-18 14:05				
BTEX by EPA 8021B	***Extracted:***	Mar-03-18 08:30						
	Analyzed:	Mar-05-18 10:12						
	Units/RL:	mg/kg	RL					
Benzene		<0.00199	0.00199					
Toluene		<0.00199	0.00199					
Ethylbenzene		<0.00199	0.00199					
m,p-Xylenes		<0.00398	0.00398					
o-Xylene		<0.00199	0.00199					
Total Xylenes		<0.00199	0.00199					
Total BTEX		<0.00199	0.00199					
Chloride by EPA 300	***Extracted:***	Mar-06-18 10:00		Mar-06-18 10:00				
	Analyzed:	Mar-06-18 13:37		Mar-06-18 13:42				
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		220	4.97	142	5.00			
TPH by SW8015 Mod	***Extracted:***	Mar-03-18 10:00		Mar-05-18 07:00				
	Analyzed:	Mar-04-18 04:18		Mar-05-18 11:39				
	Units/RL:	mg/kg	RL	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0			
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0			
Oil Range Hydrocarbons (ORO)		<15.0	15.0	<15.0	15.0			
Total TPH		<15	15	<15	15			

Kelsey Brooks
Project Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042786 **Sample:** 577774-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 22:13

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.2	99.8	97	70-135	
o-Terphenyl	53.3	49.9	107	70-135	

Lab Batch #: 3042786 **Sample:** 577774-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 22:40

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.1	99.7	94	70-135	
o-Terphenyl	48.0	49.9	96	70-135	

Lab Batch #: 3042786 **Sample:** 577774-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 23:05

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.8	99.6	95	70-135	
o-Terphenyl	49.4	49.8	99	70-135	

Lab Batch #: 3042786 **Sample:** 577774-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 00:25

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.1	99.8	97	70-135	
o-Terphenyl	49.7	49.9	100	70-135	

Lab Batch #: 3042786 **Sample:** 577774-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 00:50

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.3	99.6	95	70-135	
o-Terphenyl	48.2	49.8	97	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: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042786 **Sample:** 577774-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 01:16

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.6	99.7	97	70-135	
o-Terphenyl	49.8	49.9	100	70-135	

Lab Batch #: 3042786 **Sample:** 577774-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 02:07

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.7	108	70-135	
o-Terphenyl	55.9	49.9	112	70-135	

Lab Batch #: 3042786 **Sample:** 577774-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 02:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.8	99.9	97	70-135	
o-Terphenyl	48.3	50.0	97	70-135	

Lab Batch #: 3042786 **Sample:** 577774-010 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 02:57

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	99.8	104	70-135	
o-Terphenyl	52.5	49.9	105	70-135	

Lab Batch #: 3042786 **Sample:** 577774-011 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 03:24

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.2	99.9	97	70-135	
o-Terphenyl	49.3	50.0	99	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: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042786 **Sample:** 577774-012 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 03:50

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	54.3	50.0	109	70-135	

Lab Batch #: 3042786 **Sample:** 577774-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 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	105	99.7	105	70-135	
o-Terphenyl	52.4	49.9	105	70-135	

Lab Batch #: 3042786 **Sample:** 577774-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/04/18 17:42

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	99.7	109	70-135	
o-Terphenyl	64.4	49.9	129	70-135	

Lab Batch #: 3042716 **Sample:** 577774-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0328	0.0300	109	70-130	
4-Bromofluorobenzene	0.0360	0.0300	120	70-130	

Lab Batch #: 3042716 **Sample:** 577774-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0244	0.0300	81	70-130	
4-Bromofluorobenzene	0.0336	0.0300	112	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042716 **Sample:** 577774-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0235	0.0300	78	70-130	
4-Bromofluorobenzene	0.0334	0.0300	111	70-130	

Lab Batch #: 3042716 **Sample:** 577774-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0213	0.0300	71	70-130	
4-Bromofluorobenzene	0.0347	0.0300	116	70-130	

Lab Batch #: 3042716 **Sample:** 577774-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0234	0.0300	78	70-130	
4-Bromofluorobenzene	0.0330	0.0300	110	70-130	

Lab Batch #: 3042716 **Sample:** 577774-011 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0225	0.0300	75	70-130	
4-Bromofluorobenzene	0.0322	0.0300	107	70-130	

Lab Batch #: 3042716 **Sample:** 577774-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:12

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0214	0.0300	71	70-130	
4-Bromofluorobenzene	0.0356	0.0300	119	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042902 **Sample:** 577774-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 11:39

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.3	99.7	93	70-135	
o-Terphenyl	47.3	49.9	95	70-135	

Lab Batch #: 3042786 **Sample:** 7640133-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 17:06

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	54.8	50.0	110	70-135	

Lab Batch #: 3042902 **Sample:** 7640248-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 08:40

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.7	100	99	70-135	
o-Terphenyl	50.2	50.0	100	70-135	

Lab Batch #: 3042716 **Sample:** 7640103-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0240	0.0300	80	70-130	
4-Bromofluorobenzene	0.0316	0.0300	105	70-130	

Lab Batch #: 3042786 **Sample:** 7640133-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 17:30

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	54.2	50.0	108	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042902 **Sample:** 7640248-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 09:05

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	61.0	50.0	122	70-135	

Lab Batch #: 3042716 **Sample:** 7640103-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0231	0.0300	77	70-130	
4-Bromofluorobenzene	0.0368	0.0300	123	70-130	

Lab Batch #: 3042786 **Sample:** 7640133-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/03/18 17:57

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	100	110	70-135	
o-Terphenyl	54.5	50.0	109	70-135	

Lab Batch #: 3042902 **Sample:** 7640248-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 09:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	100	115	70-135	
o-Terphenyl	56.7	50.0	113	70-135	

Lab Batch #: 3042716 **Sample:** 7640103-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0274	0.0300	91	70-130	
4-Bromofluorobenzene	0.0362	0.0300	121	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042786 **Sample:** 577665-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 18:48

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.8	99.7	100	70-135	
o-Terphenyl	48.1	49.9	96	70-135	

Lab Batch #: 3042716 **Sample:** 577773-002 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0262	0.0300	87	70-130	
4-Bromofluorobenzene	0.0349	0.0300	116	70-130	

Lab Batch #: 3042902 **Sample:** 577773-011 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:22

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	99.9	115	70-135	
o-Terphenyl	53.3	50.0	107	70-135	

Lab Batch #: 3042786 **Sample:** 577665-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/03/18 19:13

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	103	99.9	103	70-135	
o-Terphenyl	48.3	50.0	97	70-135	

Lab Batch #: 3042716 **Sample:** 577773-002 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:11

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	70-130	
4-Bromofluorobenzene	0.0378	0.0300	126	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Pan Head Fee #011H

Work Orders : 577774,

Project ID:

Lab Batch #: 3042902 **Sample:** 577773-011 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/05/18 10:47

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.8	118	70-135	
o-Terphenyl	55.2	49.9	111	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Pan Head Fee #011H

Work Order #: 577774 **Project ID:**

Analyst: ALJ **Date Prepared:** 03/03/2018 **Date Analyzed:** 03/05/2018

Lab Batch ID: 3042716 **Sample:** 7640103-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0996	0.0869	87	0.100	0.0836	84	4	70-130	35	
Toluene	<0.00199	0.0996	0.0837	84	0.100	0.0825	83	1	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0877	88	0.100	0.0865	87	1	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.171	86	0.200	0.168	84	2	70-130	35	
o-Xylene	<0.00199	0.0996	0.0870	87	0.100	0.0856	86	2	70-130	35	

Analyst: OJS **Date Prepared:** 03/05/2018 **Date Analyzed:** 03/06/2018

Lab Batch ID: 3042878 **Sample:** 7640211-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	236	94	250	233	93	1	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: Pan Head Fee #011H

Work Order #: 577774 **Project ID:**

Analyst: OJS **Date Prepared:** 03/06/2018 **Date Analyzed:** 03/06/2018

Lab Batch ID: 3043009 **Sample:** 7640276-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	246	98	250	245	98	0	90-110	20	

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

Lab Batch ID: 3042786 **Sample:** 7640133-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	936	94	1000	950	95	1	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	958	96	1000	980	98	2	70-135	35	

Analyst: ARM **Date Prepared:** 03/05/2018 **Date Analyzed:** 03/05/2018

Lab Batch ID: 3042902 **Sample:** 7640248-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1030	103	1000	1030	103	0	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1060	106	1000	1050	105	1	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Pan Head Fee #011H

Work Order # : 577774 **Project ID:**

Lab Batch ID: 3042716 **QC- Sample ID:** 577773-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/05/2018 **Date Prepared:** 03/03/2018 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0994	0.115	116	0.0998	0.0861	86	29	70-130	35	
Toluene	<0.00199	0.0994	0.0759	76	0.0998	0.0840	84	10	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.0843	85	0.0998	0.0877	88	4	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.171	86	0.200	0.171	86	0	70-130	35	
o-Xylene	<0.00199	0.0994	0.0852	86	0.0998	0.0868	87	2	70-130	35	

Lab Batch ID: 3042878 **QC- Sample ID:** 577677-006 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/06/2018 **Date Prepared:** 03/05/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	5.88	250	244	95	250	250	98	2	90-110	20	

Lab Batch ID: 3042878 **QC- Sample ID:** 577774-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/06/2018 **Date Prepared:** 03/05/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	113	250	360	99	250	354	96	2	90-110	20	

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

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

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

Form 3 - MS / MSD Recoveries

Project Name: Pan Head Fee #011H

Work Order # : 577774 **Project ID:**

Lab Batch ID: 3043009 **QC- Sample ID:** 577774-008 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/06/2018 **Date Prepared:** 03/06/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	237	95	250	247	99	4	90-110	20	

Lab Batch ID: 3043009 **QC- Sample ID:** 577777-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/06/2018 **Date Prepared:** 03/06/2018 **Analyst:** OJS

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<4.99	250	241	96	250	275	110	13	90-110	20	

Lab Batch ID: 3042786 **QC- Sample ID:** 577665-001 S **Batch #:** 1 **Matrix:** Soil

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

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	905	91	999	909	91	0	70-135	35	
Diesel Range Organics (DRO)	<15.0	997	983	99	999	974	97	1	70-135	35	

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

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

Form 3 - MS / MSD Recoveries

Project Name: Pan Head Fee #011H

Work Order # : 577774 **Project ID:**

Lab Batch ID: 3042902 **QC- Sample ID:** 577773-011 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/05/2018 **Date Prepared:** 03/05/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1010	101	998	1040	104	3	70-135	35	
Diesel Range Organics (DRO)	<15.0	999	1060	106	998	1100	110	4	70-135	35	

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

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

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

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

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

CHAIN OF CUSTODY

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San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)
Phoenix, Arizona (480-355-0900)
www.xenco.com

Xenco Job # 577774

Client / Reporting Information	Project Information
Company Name / Branch: TRC Environmental Corporation	Project Name/Number: Pan Head Fee #011H
Company Address: 2057 Commerce Drive, Midland, TX 79703	Project Location: Lea Co, NM
Email: jlowry@trcsolutions.com, zconder@trcsolutions.com — Phone No: 432-466-4450	Invoice To: COG Operating C/O Becky Haskell
Project Contact: Joel Lowry	Invoice:
Samplers's Name: Zach Conder	

Analytical Information

Matrix Codes: W = Water; S = Soil/Sed/Solid; GW =Ground Water; DW = Drinking Water; P = Product; SW = Surface water; SL = Sludge; OW =Ocean/Sea Water; WI = Wipe; O = Oil; WW= Waste Water; A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH 8015 M Ext	Chloride E 300	BTEX 8021B	Hold	Field Comments
1	SP-1 @ 6"	6"	2/23/2018	1:00	S	1									X	X	X		
2	SP-1 @ 1'	1'	2/23/2018	1:05	S	1									X	X			
3	SP-2 @ 6"	6"	2/23/2018	1:10	S	1									X	X	X		
4	SP-2 @ 1'	1'	2/23/2018	1:15	S	1									X	X			
5	SP-3 @ 6"	6"	2/23/2018	1:20	S	1									X	X	X		
6	SP-3 @ 1'	1'	2/23/2018	1:25	S	1									X	X			
7	SP-4 @ 6"	6"	2/23/2018	1:30	S	1									X	X	X		
8	SP-4 @ 1'	1'	2/23/2018	1:35	S	1									X	X			
9	SP-5 @ 6"	6"	2/23/2018	1:40	S	1									X	X	X		
10	SP-5 @ 1'	1'	2/23/2018	1:45	S	1									X	X			
11	SP-6 @ 6"	6"	2/23/2018	1:50	S	1									X	X	X		
12	SP-6 @ 1'	1'	2/23/2018	1:55	S	1									X	X			
13	SP-7 @ 6"	6"	2/23/2018	2:00	S	1									X	X	X		
14	SP-7 @ 1'	1'	2/23/2018	2:05	S	1									X	X			

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [x] Contract TAT
- [ ] 3 Day EMERGENCY
- TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

jlowry@trcsolutions.com zconder@trcsolutions.com
rhaskell@concho.com
kblackburn@trcsolutions.com
dneel2@concho.com
FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		2/27 4:40	Brittany Cox	Brittany Cox	2/27 4:40	14:30
2						
3						
4						
5						

Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice
5		5			

Temp: 4.4 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 4.2

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: TRC Solutions, Inc

Date/ Time Received: 02/28/2018 02:30:00 PM

Work Order #: 577774

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

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	4.2	
#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?	**No**	TPH received in bulk jars
#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: Connie Hernandez Date: 02/28/2018

Checklist reviewed by: Kelsey Brooks Date: 03/02/2018

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: **COG Operating, LLC** (OGRID# 229137)	Contact: **Robert McNeill**
Address: **600 West Illinois Avenue, Midland TX 79701**	Telephone No.: **432-683-7443**
Facility Name**: Pan Head Fee #011H**	Facility Type**: Oil Well**

Surface Owner: Private	Mineral Owner: Private	API No.: 30-025-42817

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	11	17S	32E	195	North	600	West	Lea

Latitude: 32.85579986 **Longitude**: -103.7437411 NAD83

NATURE OF RELEASE

Type of Release: Oil & Produced Water	Volume of Release: 4bbls Oil & 4bbls PW	Volume Recovered: 3bbls Oil & 3bbls PW
Source of Release: 1/4" valve	Date and Hour of Occurrence: 2/17/2018	Date and Hour of Discovery: 2/17/2018 8:00am
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

RECEIVED
By Olivia Yu at 7:51 am, Feb 21, 2018

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The ¼" valve leading to the tubing gauge was left open. The valve busted overnight resulting in the release. The valve was replaced.

Describe Area Affected and Cleanup Action Taken.*

All of the fluid remained on location. A vacuum truck was utilized to recover all freestanding fluids. Concho will have the spill area evaluated for any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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

Signature: Sheldon Hitchcock

Printed Name: Sheldon L. Hitchcock

Title: HSE Coordinator

E-mail Address: slhitchcock@concho.com

Date: 2/19/2018 Phone: 575-746-2010

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 2/21/2018 Expiration Date:

Conditions of Approval:

see attached directive

Attached ☒

1RP-4971

nOY1805228848

pOY1805229062

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _2/19/2018_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4971__ 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 _3/21/2018_. 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
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us