



2057 Commerce Drive
Midland, TX 79703

432.520.7720 PHONE
432.520.7701 FAX

www.trcsolutions.com

APPROVED

By Olivia Yu at 4:10 pm, Mar 08, 2018

NMOCD approves of the delineation completed for 1RP-4965 and the proposed remediation plan. Backfill approval is granted for the excavated area on the wellpad.

February 27, 2017

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

Re: Remediation Workplan and Partial Backfill Request
COG Boone 16 2H (1RP-4965)
GPS: N 32.47246° W 103.57525°
Unit Letter "O", Section 16, Township 21 South, Range 33 East
Lea County, New Mexico

Dear Ms. Yu,

TRC Environmental Corporation (TRC) has prepared the following "Remediation Workplan and Partial Backfill Request" on behalf of Plains Pipeline, L.P. (Plains), in regard to the COG Boone 16 2H crude oil release site (1RP-4965). The release site is located approximately twenty (20) miles southeast of Monument in Lea County, New Mexico, in Unit Letter "O", Section 16, Township 21 South, Range 34 East. The GPS coordinates for the site are N 32.47246° and W 103.57525 °. The affected property is located on private land. A "Site Location Map" is provided as Attachment #1

On February 5, 2018, a release was discovered on the LACT Unit at COG Operating's Boone 16 2H production facility. The release was attributed to the failure of a one-half (1/2) inch (in.) nipple, resulting in a release of approximately fifty (50) barrels (bbls) of crude oil. The release affected an area on the caliche well pad measuring approximately 6,100 sq. ft. Overspray from the release affected an area within the pasture north of the facility measuring approximately 50,000 sq. ft. During initial response activities, approximately forty-five (45) bbls of crude oil were recovered and saturated soils were excavated by hand and stockpiled on-site atop a polyurethane liner.

A reference map utilized by the New Mexico Oil Conservation Division (NMOCD) indicated groundwater should be encountered at approximately one hundred forty (140) ft. below ground surface (bgs). No surface waters or water wells were observed within one thousand (1,000) ft. of the release site. Based on the NMOCD Site Classification criteria, the Recommended Remediation Action Levels (RRAL) are 10 mg/kg for benzene, 50 mg/kg for benzene, toluene, ethylbenzene and xylene (BTEX) and 5,000 mg/kg for total petroleum hydrocarbons (TPH).

Field Activities

On February 9, 2018, remediation activities commenced at the release site. Areas within the pasture affected by overspray were washed down and treated with approximately 1,500 gallons of a Microblaze® solution over the course of three (3) days in accordance with the landowner. Saturated soils adjacent to the affected LACT unit and above ground piping was excavated by hand. Excavated soil was stockpiled on-site, atop an impermeable liner.

On February 13, 2018, TRC conducted an initial delineation event at the site. During the delineation event, a series of hand-augered soil bores (SP-1 through SP-3) were advanced within the affected area in an effort to characterize the vertical extent of soil impacts. SP-1 was advanced on the caliche well pad, SP-2 was advanced within a pooling area on the north side of the tank battery, and SP-3 was advanced in the primary pooling area on the east side of the tank battery. During the advancement of the soil bores, three (3) soil samples (SP-1 @ 1', SP-2 @ 3', SP-3 @ 5') were collected and submitted to the laboratory for analysis of BTEX, TPH and chloride concentration. Laboratory analytical results indicated benzene concentrations were less than the applicable laboratory reporting limit (RL) in each of the submitted soil samples. BTEX concentrations were less than the applicable laboratory RL in each of the submitted soil sample with the exception of SP-3 @ 5', which exhibited a BTEX concentration of 0.00956 mg/kg. Chloride concentrations were less than the applicable laboratory RL in each of the submitted soil samples with the exception of SP-1 @ 1', which exhibited a chloride concentration of 456 mg/kg.

Additional confirmation soil samples (SP-1 @ 2', SP-2 @ 4', SP-3 @ 6'), collected from deeper intervals, were submitted to the laboratory for analysis of TPH concentrations which were determined to be below the NMOCD RRAL. Based on laboratory analytical results from delineation soil samples it was determined that soil was not affected above the NMOCD RRAL beyond one (1) ft. bgs in the area characterized by sample point SP-1, three (3) ft. bgs in the area characterized by sample point SP-3 and five (5) ft. bgs in the area characterized by sample point SP-3.

In addition, eight (8) soil samples (OS-1 @ 0-3", OS-1 @ 6", OS-2 @ 0-3", OS-2 @ 6", OS-3 @ 0-3", OS-3 @ 6", OS-4 @ 0-3" and OS-4 @ 6") were collected from within the affected pasture and submitted to the laboratory for analysis of TPH and chloride concentrations. Laboratory analytical results indicated TPH concentrations ranged from less than the applicable laboratory RL in soil sample OS-3 @ 6" and OS-4 @ 6" to 1,384.5 mg/kg in soil sample OS-2 @ 0-3". Chloride concentrations were less than the applicable laboratory RL in each of the submitted soil samples with the exception of OS-1 @ 6", which exhibited a chloride concentration of 6.43 mg/kg.

Upon receiving laboratory analytical results from delineation soil samples, excavation activities commenced at the release site. The affected area on the caliche well pad was excavated to approximately one (1) ft. bgs. Upon excavating impacted soil on the caliche well pad, twenty (20) excavation confirmation soil samples (SP-1 FL-1, SP-1 FL-2, SP-1 FL-3, SP-1 FL-4, SP-1 FL-5, SP-1 FL-6, SP-1 NSW, SP-1 ESW 1, SP-1 ESW 2, SP-1 ESW 3, SP-1 ESW 4, SP-1 ESW 5, SP-1 SSW 1, SP-1 SSW 2, SP-1 SSW 3, SP-1 WSW 1, SP-1 WSW 2, SP-1 WSW 3, SP-1 WSW 4 and SP-1 WSW 5) were collected from the floor and sidewalls of the excavated area and submitted to the laboratory for analysis of BTEX and TPH concentrations. Laboratory analytical results indicated BTEX concentrations ranged from less than the applicable laboratory RL in soil samples SP-1 FL-1, SP-1 FL-3, SP-1 NSW, SP-1 ESW 1, SP-1 ESW 2, SP-1 ESW 3, SP-1 ESW 4, SP-1 ESW 5, SP-1 SSW 2, SP-1 WSW 1, SP-1 WSW 2, SP-1 WSW 3, SP-1 WSW 4 and SP-1 WSW 5 to 0.0615 mg/kg in soil sample SP-1 SSW 3. TPH

concentrations ranged from less than the applicable laboratory RL in soil samples SP-1 ESW 2, SP-1 ESW 4 and SP-1 WSW 1 to 2,827.1 mg/kg in soil sample SP-1 SSW 3. Laboratory analytical results indicated BTEX and TPH concentrations were below the NMOCD RRAL in each of the submitted soil samples. A “Site & Sample Location Map” is provided as Attachment #2. A “Soil Chemistry Table” is provided as Attachment #3.

Proposed Activities

Plains proposes the following field activities designed to advance the Boone 16 2H Release toward and NMOCD-approved closure:

Remediation Strategy

Pasture Area

- Continue to monitor effectiveness of the Microblaze[®] washing/treatment of the pasture area affected by the light overspray.
- Hand-dig and/or “till” any areas inferred to be affected above the NMOCD RRAL, or exhibiting evidences of hydrocarbon impact unacceptable to the landowner.
- Collect confirmation soil samples for laboratory analysis of BTEX concentrations.
- Reseed the affected area with a landowner approved seed mixture in the Spring, as per the landowner.

Well Pad and Pooling Areas

- Utilizing mechanical equipment and/or shovels, excavate impacted soil within the release margins. Excavated soil will be temporarily stockpiled on-site, atop an impermeable liner, pending transportation to an NMOCD-permitted facility for disposal.
- The floor and sidewalls of the excavation will be advanced until laboratory analytical results from confirmation soil samples indicate BTEX and TPH concentrations are below the NMOCD RRAL.
- The collection of representative soil samples from the floor and sidewalls of the excavated area at increments not to exceed every fifty 50 linear ft. for confirmation analysis of BTEX and TPH. Select soil samples will also be analyzed for chloride.
- Upon receiving laboratory analytical from excavation confirmation soil samples, the excavated area will be backfilled with locally sourced, non-impacted material.
- Transport impacted soil to an NMOCD-permitted facility for disposal.

Partial Backfill Request

Based on laboratory analytical results from confirmation soil samples collected from the excavated area on the caliche well pad (SP-1 FL-1, SP-1 FL-2, SP-1 FL-3, SP-1 FL-4, SP-1 FL-5, SP-1 FL-6, SP-1 NSW, SP-1 ESW 1, SP-1 ESW 2, SP-1 ESW 3, SP-1 ESW 4, SP-1 ESW 5, SP-1 SSW 1, SP-1 SSW 2, SP-1 SSW 3, SP-1 WSW 1, SP-1 WSW 2, SP-1 WSW 3, SP-1 WSW 4 and SP-1 WSW 5), Plains request NMOCD permission to backfill the excavated areas with locally sourced, non-impacted caliche.

Timely backfilling of the excavated area on the caliche well pad will assist in restoring the function of the well pad and gaining access to portions of the release site.

Upon completion of remediation activities, a "Remediation Summary and Soil Closure Request" will be prepared summarizing field activities and laboratory analytical results from confirmation soil samples. If you have any questions or need any additional information, please feel free to contact Joel Lowry or Amber Groves by phone or email.

Attachments:

Figure 1 – Site Location Map

Figure 2 – Site & Sample Map

Table 1 – Concentrations of benzene, BTEX, TPH and Chloride in Soil
Release Notification and Corrective Action (Form C-141)

Laboratory Analytical Reports

Photographic Documentation

cc: Camille Bryant
Plains Pipeline, L.P.
505 North Big Spring, Suite 600
Midland, TX 79701

File

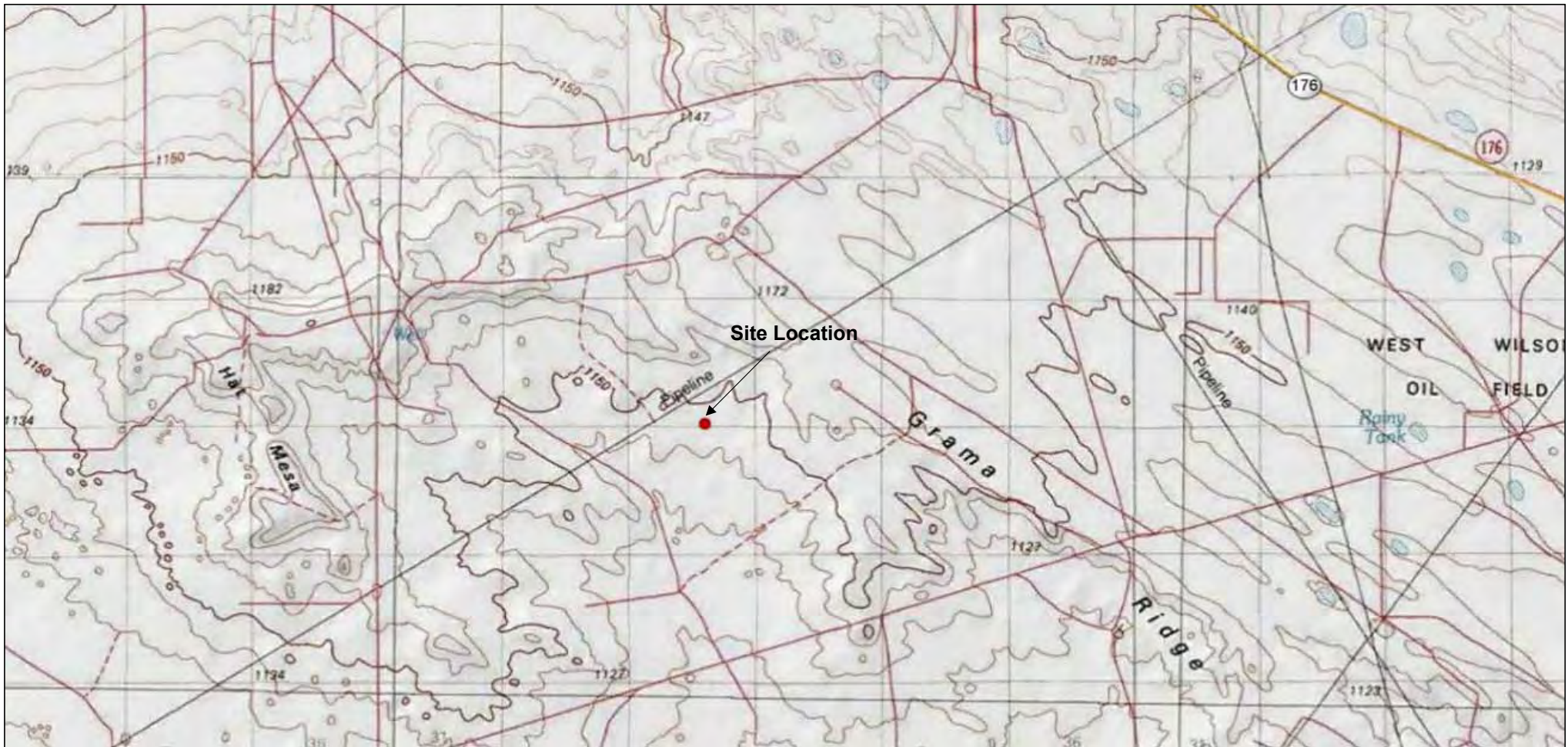


Figure 1

Site Location Map
Plains Pipeline, LP
COG Boone 16 2H

Lea County, New Mexico

Scale 1" = ~6,000'

Drafted by: ZC

Checked by: JL

Draft: February 26, 2018

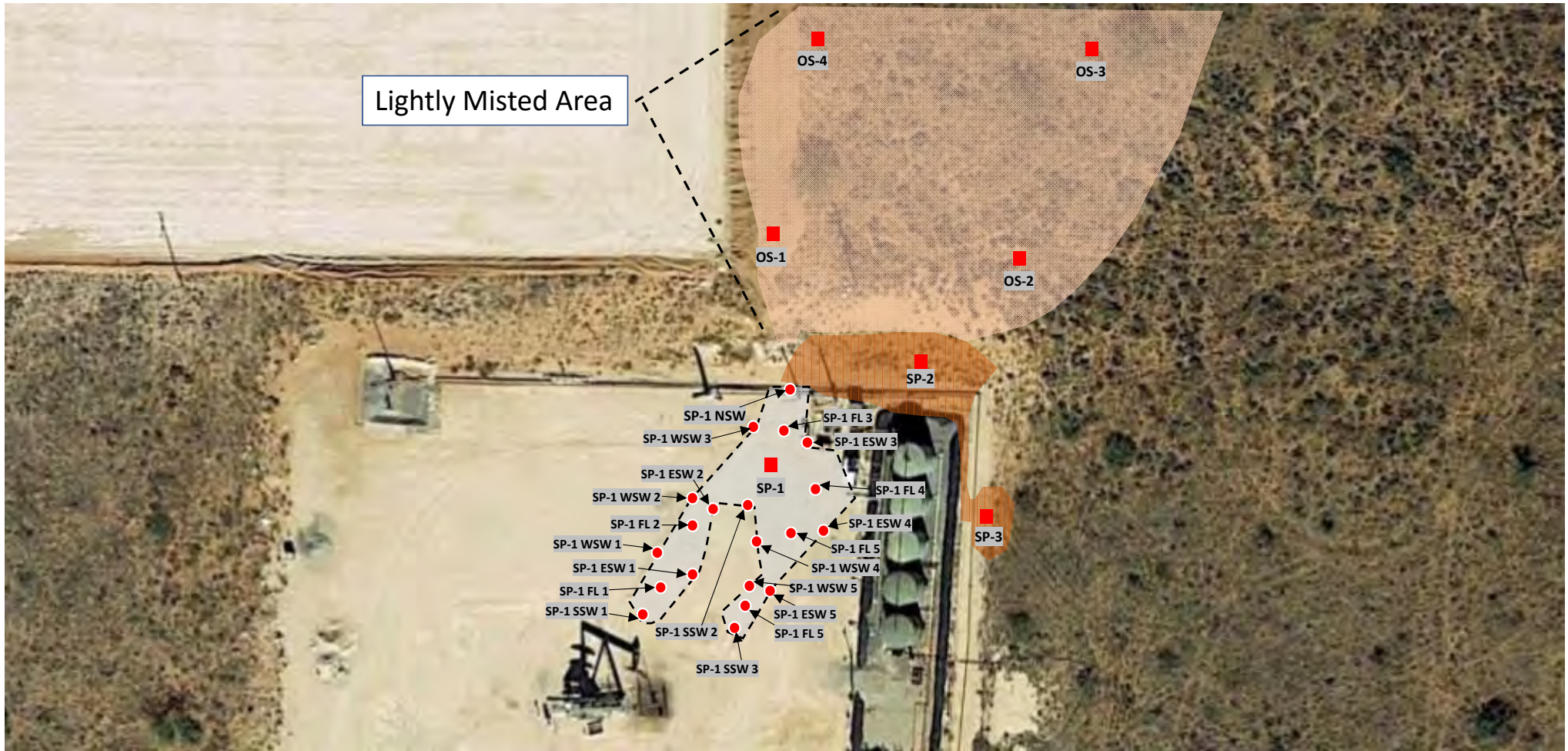
Lat. N 32.47246 Long. W 103.57525

UL "O", Sec. 16, T21S, R33E

TRC Proj. No.: 297190



2057 Commerce Drive
Midland, Texas 79703
432.520.7720



LEGEND:

- | | |
|--|--|
| ■ Vertical Delineation Sample Location | Overspray Area |
| ● Confirmation Sample Locations | Saturated Area |
| Excavated Area | |

Figure 2
 Site & Sample Location Map
 Plains Pipeline, LP
 COG Boone 16 Tank Battery
 Lea Co, New Mexico

Scale 1" = ~75'

Drafted by: ZC | Checked by: JL

Draft: February 27, 2018

Lat. N 32.472150 Long. W 103.575634

UL "O", Sec. 16, T21S, R33E

TRC Proj. No.: 297190



2057 Commerce Drive
 Midland, Texas 79703
 432.520.7720

TABLE 1
CONCENTRATIONS OF BENZENE, BTEX, TPH, AND CHLORIDE IN SOIL
COG BOONE 16 2H
PLAINS PIPELINE, L.P.
LEA COUNTY, NM
NMOCD REF. No. 1RP-4965

SAMPLE LOCATION	SAMPLE DATE	SAMPLE DEPTH	STATUS	Methods: EPA SW 846-8021B, 5030					Methods:				Method:
				BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL- BENZENE (mg/Kg)	XYLENES, TOTAL (mg/Kg)	TOTAL BTEX (mg/Kg)	EPA SW 846-8015M				CHLORIDE (mg/Kg)
									GRO (mg/Kg)	DRO (mg/Kg)	ORO (mg/Kg)	TOTAL TPH (mg/Kg)	
SP-1 @ 1'	2/13/2018	1'	In-Situ	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	456
SP-1 @ 2'	2/13/2018	2'	In-Situ	-	-	-	-	-	<15.0	<15.0	160	160	-
SP-2 @ 3'	2/13/2018	3'	In-Situ	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	115	<15.0	115	<4.91
SP-2 @ 4'	2/13/2018	4'	In-Situ	-	-	-	-	-	<15.0	60.9	172	232.9	-
SP-3 @ 5'	2/13/2018	5'	In-Situ	<0.00201	<0.00201	<0.00201	0.00956	0.00956	<15.0	180	<15.0	180	<4.96
SP-3 @ 6'	2/13/2018	6'	In-Situ	-	-	-	-	-	<15.0	18.7	157	175.7	-
OS-1 @ 0-3"	2/13/2018	0-3"	In-Situ	-	-	-	-	-	14.9	797.0	81.4	878.4	<5.00
OS-1 @ 6"	2/13/2018	6"	In-Situ	-	-	-	-	-	<15.0	36.2	<15.0	36.2	6.43
OS-2 @ 0-3"	2/13/2018	0-3"	In-Situ	-	-	-	-	-	<14.9	1,290.0	94.5	1,384.5	<4.97
OS-2 @ 6"	2/13/2018	6"	In-Situ	-	-	-	-	-	<15.0	32.6	<15.0	36.2	<4.92
OS-3 @ 0-3"	2/13/2018	0-3"	In-Situ	-	-	-	-	-	<15.0	797.0	81.1	878.1	<4.97
OS-3 @ 6"	2/13/2018	6"	In-Situ	-	-	-	-	-	<15.0	<15.0	<15.0	<15.0	<5.00
OS-4 @ 0-3"	2/13/2018	0-3"	In-Situ	-	-	-	-	-	<15.0	225.0	21.4	246.4	<4.97
OS-4 @ 6"	2/13/2018	6"	In-Situ	-	-	-	-	-	<15.0	<15.0	<15.0	<15.0	<5.00
SP-1 FL 1	2/21/2018	1'	In-Situ	<0.000388	<0.000459	<0.000569	<0.000347	<0.000347	<7.99	12.2	<8.11	12.2	-
SP-1 FL 2	2/21/2018	1'	In-Situ	<0.000386	0.000863	0.00128	0.00837	0.010513	11.9	376	24.5	412.4	-
SP-1 FL 3	2/21/2018	1'	In-Situ	<0.000389	<0.000460	<0.000570	<0.000348	<0.000348	<7.97	92.9	<8.10	92.9	-
SP-1 FL 4	2/21/2018	1'	In-Situ	<0.000383	0.001040	<0.000561	0.003264	0.004304	<7.99	37.6	<8.12	37.6	-
SP-1 FL 5	2/21/2018	1'	In-Situ	<0.000384	0.00106	<0.000564	0.00485	0.00591	<7.97	8.18	<8.10	8.18	-
SP-1 FL 6	2/21/2018	1'	In-Situ	<0.000386	0.000651	<0.000566	0.00222	0.002871	<7.99	129	13.5	142.5	-
SP-1 NSW	2/21/2018	6"	In-Situ	<0.000388	<0.000459	<0.000569	<0.000347	<0.000347	<7.98	111	<8.10	111	-
SP-1 ESW 1	2/21/2018	6"	In-Situ	<0.00388	<0.000459	<0.000569	<0.000347	<0.000347	<8.00	<8.13	<8.13	<8	-
SP-1 ESW 2	2/21/2018	6"	In-Situ	<0.000384	<0.000455	<0.000564	<0.000344	<0.000344	<7.98	<8.10	<8.10	<7.98	-
SP-1 ESW 3	2/21/2018	6"	In-Situ	<0.000386	<0.00457	<0.000566	<0.000345	<0.000345	<7.99	48.5	11.2	59.7	-
SP-1 ESW 4	2/21/2018	6"	In-Situ	<0.00383	<0.000453	<0.000561	<0.000342	<0.000342	<7.97	<8.10	<8.10	<7.97	-
SP-1 ESW 5	2/21/2018	6"	In-Situ	<0.000381	<0.000451	<0.00100	<0.00341	<0.00341	<7.99	87.3	13.7	101	-
SP-1 SSW 1	2/21/2018	6"	In-Situ	<0.000386	0.000802	0.001430	0.009930	0.012162	17.1	468	33.7	518.8	-
SP-1 SSW 2	2/21/2018	6"	In-Situ	<0.000387	<0.000458	<0.000568	<0.000346	<0.000346	9.24	9.36	<8.10	18.6	-
SP-1 SSW 3	2/21/2018	6"	In-Situ	<0.000389	0.00458	0.00872	0.0482	0.0615	63.3	2,670	93.8	2,827.1	-
SP-1 WSW 1	2/21/2018	6"	In-Situ	<0.00383	<0.000453	<0.000561	<0.000342	<0.000342	<7.99	<8.12	<8.12	<7.99	-
SP-1 WSW 2	2/21/2018	6"	In-Situ	<0.000388	<0.000459	<0.000569	<0.000347	<0.000347	8.97	<8.11	<8.11	8.97	-
SP-1 WSW 3	2/21/2018	6"	In-Situ	<0.000384	<0.000455	<0.000564	<0.000344	<0.000344	<8.00	9.2	<8.13	9.2	-
SP-1 WSW 4	2/21/2018	6"	In-Situ	<0.000383	<0.000453	<0.000561	<0.000342	<0.000342	8.65	9.97	<8.10	18.62	-
SP-1 WSW 5	2/21/2018	6"	In-Situ	<0.000386	<0.00457	<0.000567	<0.000346	<0.000346	9.59	200	18.8	228.39	-
NMOCD Regulatory Guideline				10	-	-	-	50	-	-	-	5,000	600

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 Plains Pipeline	Contact Amber Groves	
Address 1911 Connie Rd, Carlsbad NM 88220	Telephone No. (575)200-5517	
Facility Name COG Boone 16 2H	Facility Type Tank Battery	
Surface Owner Merchant Livestock	Mineral Owner State	API No.

LOCATION OF RELEASE

Unit Letter O	Section 16	Township 21S	Range 33E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude 32.4724 Longitude -103.5752 NAD83

NATURE OF RELEASE

Type of Release Crude Oil	Volume of Release 50 bbls	Volume Recovered 45 bbls
Source of Release 1/2 inch Nipple	Date and Hour of Occurrence 2/5/2018 @ 5:30 PM	Date and Hour of Discovery 2/5/2018 @ 5:30 PM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Voicemail to Olivia Yu	
By Whom? Amber Groves	Date and Hour 2/6/2018 @ 3:06 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED

By Olivia Yu at 9:31 am, Feb 12, 2018

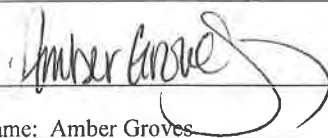
Describe Cause of Problem and Remedial Action Taken.*

1/2" nipple broke on the downstream side of the triplex pump. The nipple broke below the valve where chemical is injected.

Describe Area Affected and Cleanup Action Taken.*

Impacted area includes the pad, approximately 50,000 square feet off of the pad including an overspray area. All areas will be remediated as per current NMOCD guidelines.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Amber Groves	Approved by Environmental Specialist: 	
Title: Remediation Coordinator	Approval Date: 2/12/2018	Expiration Date:
E-mail Address: algroves@paalp.com	Conditions of Approval: see attached directive	Attached ☒
Date:	Phone:	

* Attach Additional Sheets If Necessary

1RP-4965

fOY1804335139

nOY1804335493

pOY1804335408



Certificate of Analysis Summary 576746

TRC Solutions, Inc, Midland, TX

Project Name: COG Boone 16



Project Id:

Contact: Joel Lowry

Project Location: Lea Co,NM

Date Received in Lab: Fri Feb-16-18 11:30 am

Report Date: 02-MAR-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	576746-001	576746-002	576746-003	576746-004	576746-005	576746-006
	<i>Field Id:</i>	SP-1 @ 1'	SP-1 @ 2'	SP-2 @ 3'	SP-2 @ 4'	SP-3 @ 5'	SP-3 @ 6'
	<i>Depth:</i>	1- ft	2- ft	3- ft	4- ft	5- ft	6- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Feb-13-18 09:00	Feb-13-18 09:05	Feb-13-18 09:10	Feb-13-18 09:15	Feb-13-18 09:20	Feb-13-18 09:25
BTEX by EPA 8021B	<i>Extracted:</i>	Feb-21-18 08:00		Feb-20-18 15:00		Feb-20-18 15:00	
	<i>Analyzed:</i>	Feb-21-18 19:37		Feb-22-18 00:05		Feb-22-18 01:01	
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL		mg/kg RL	
Benzene		<0.00199 0.00199		<0.00199 0.00199		<0.00201 0.00201	
Toluene		<0.00199 0.00199		<0.00199 0.00199		<0.00201 0.00201	
Ethylbenzene		<0.00199 0.00199		<0.00199 0.00199		<0.00201 0.00201	
m,p-Xylenes		<0.00398 0.00398		<0.00398 0.00398		0.00733 0.00402	
o-Xylene		<0.00199 0.00199		<0.00199 0.00199		0.00223 0.00201	
Xylenes, Total		<0.00199 0.00199		<0.00199 0.00199		0.00956 0.00201	
Total BTEX		<0.00199 0.00199		<0.00199 0.00199		0.00956 0.00201	
Chloride by EPA 300	<i>Extracted:</i>	Feb-22-18 14:20		Feb-22-18 14:20		Feb-22-18 14:20	
	<i>Analyzed:</i>	Feb-22-18 18:56		Feb-22-18 19:01		Feb-22-18 19:06	
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL		mg/kg RL	
Chloride		456 5.00		<4.91 4.91		<4.96 4.96	
TPH by SW8015 Mod	<i>Extracted:</i>	Feb-20-18 07:00	Feb-27-18 17:00	Feb-20-18 07:00	Feb-27-18 17:00	Feb-20-18 07:00	Feb-27-18 17:00
	<i>Analyzed:</i>	Feb-20-18 09:08	Feb-28-18 19:02	Feb-20-18 10:27	Feb-28-18 19:30	Feb-20-18 10:53	Feb-28-18 19:54
	<i>Units/RL:</i>	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)		<15.0 15.0	<15.0 15.0	115 15.0	60.9 15.0	180 15.0	18.7 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	160 15.0	<15.0 15.0	172 15.0	<15.0 15.0	157 15.0
Total TPH		<15 15	160 15	115 15	232.9 15	180 15	175.7 15

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 576746

TRC Solutions, Inc, Midland, TX

Project Name: COG Boone 16



Project Id:

Contact: Joel Lowry

Project Location: Lea Co,NM

Date Received in Lab: Fri Feb-16-18 11:30 am

Report Date: 02-MAR-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	576746-007	576746-008	576746-009	576746-010	576746-011	576746-012
	Field Id:	OS-1 @ 0-3"	OS-1 @ 6"	OS-2 @ 0-3"	OS-2 @ 6"	OS-3 @ 0-3"	OS-3 @ 6"
	Depth:	0-3 In	6 In	0-3 In	6 In	0-3 In	6 In
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Feb-13-18 09:30	Feb-13-18 09:35	Feb-13-18 09:40	Feb-13-18 09:45	Feb-13-18 10:00	Feb-13-18 10:05
Chloride by EPA 300	Extracted:	Feb-22-18 14:20	Feb-22-18 14:20	Feb-22-18 14:20	Feb-22-18 16:00	Feb-22-18 16:00	Feb-22-18 16:00
	Analyzed:	Feb-22-18 19:12	Feb-22-18 19:23	Feb-22-18 19:28	Feb-22-18 20:00	Feb-22-18 20:16	Feb-22-18 20:21
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		<5.00 5.00	6.43 5.00	<4.97 4.97	<4.92 4.92	<4.97 4.97	<5.00 5.00
TPH by SW8015 Mod	Extracted:	Feb-26-18 08:00	Feb-26-18 08:00	Feb-26-18 08:00	Feb-26-18 08:00	Feb-26-18 08:00	Feb-26-18 08:00
	Analyzed:	Feb-26-18 11:55	Feb-26-18 12:20	Feb-26-18 12:48	Feb-26-18 13:14	Feb-26-18 13:40	Feb-26-18 14:05
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<14.9 14.9	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		797 14.9	36.2 15.0	1290 14.9	32.6 15.0	797 15.0	<15.0 15.0
Oil Range Hydrocarbons (ORO)		81.4 14.9	<15.0 15.0	94.5 14.9	<15.0 15.0	81.1 15.0	<15.0 15.0
Total TPH		878.4 14.9	36.2 15	1384.5 14.9	32.6 15	878.1 15	<15 15

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 576746

TRC Solutions, Inc, Midland, TX

Project Name: COG Boone 16



Project Id:

Contact: Joel Lowry

Project Location: Lea Co,NM

Date Received in Lab: Fri Feb-16-18 11:30 am

Report Date: 02-MAR-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	576746-013	576746-014				
	Field Id:	OS-4 @ 0-3"	OS-4 @ 6"				
	Depth:	0-3 In	6 In				
	Matrix:	SOIL	SOIL				
	Sampled:	Feb-13-18 10:10	Feb-13-18 10:15				
Chloride by EPA 300	Extracted:	Feb-22-18 16:00	Feb-22-18 16:00				
	Analyzed:	Feb-22-18 20:26	Feb-22-18 20:32				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		<4.97 4.97	<5.00 5.00				
TPH by SW8015 Mod	Extracted:	Feb-26-18 08:00	Feb-26-18 08:00				
	Analyzed:	Feb-26-18 14:31	Feb-26-18 14:56				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0				
Diesel Range Organics (DRO)		225 15.0	<15.0 15.0				
Oil Range Hydrocarbons (ORO)		21.4 15.0	<15.0 15.0				
Total TPH		246.4 15	<15 15				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Kelsey Brooks
Project Manager

Analytical Report 576746

for
TRC Solutions, Inc

Project Manager: Joel Lowry

COG Boone 16

02-MAR-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco-Atlanta: Louisiana (04176)

Xenco-Tampa: Florida (E87429), North Carolina (483), DoD (LI0-135), Kentucky (123066)

Xenco-Lakeland: Florida (E84098)



02-MAR-18

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

Reference: XENCO Report No(s): **576746**
COG Boone 16
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) 576746. 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. 576746 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

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

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TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-1 @ 1'	S	02-13-18 09:00	1 ft	576746-001
SP-1 @ 2'	S	02-13-18 09:05	2 ft	576746-002
SP-2 @ 3'	S	02-13-18 09:10	3 ft	576746-003
SP-2 @ 4'	S	02-13-18 09:15	4 ft	576746-004
SP-3 @ 5'	S	02-13-18 09:20	5 ft	576746-005
SP-3 @ 6'	S	02-13-18 09:25	6 ft	576746-006
OS-1 @ 0-3"	S	02-13-18 09:30	0 - 3 In	576746-007
OS-1 @ 6"	S	02-13-18 09:35	- 6 In	576746-008
OS-2 @ 0-3"	S	02-13-18 09:40	0 - 3 In	576746-009
OS-2 @ 6"	S	02-13-18 09:45	- 6 In	576746-010
OS-3 @ 0-3"	S	02-13-18 10:00	0 - 3 In	576746-011
OS-3 @ 6"	S	02-13-18 10:05	- 6 In	576746-012
OS-4 @ 0-3"	S	02-13-18 10:10	0 - 3 In	576746-013
OS-4 @ 6"	S	02-13-18 10:15	- 6 In	576746-014



CASE NARRATIVE

Client Name: TRC Solutions, Inc

Project Name: COG Boone 16

Project ID:

Work Order Number(s): 576746

Report Date: 02-MAR-18

Date Received: 02/16/2018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3041729 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3041964 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-1 @ 1'**
Lab Sample Id: 576746-001

Matrix: Soil
Date Collected: 02.13.18 09.00

Date Received: 02.16.18 11.30
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: LRI
Analyst: OJS
Seq Number: 3041899

Date Prep: 02.22.18 14.20

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	456	5.00	mg/kg	02.22.18 18.56		1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3041815

Date Prep: 02.20.18 07.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.20.18 09.08	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.20.18 09.08	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.20.18 09.08	U	1
Total TPH	PHC635	<15	15	mg/kg	02.20.18 09.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	107	%	70-135	02.20.18 09.08		
o-Terphenyl	84-15-1	110	%	70-135	02.20.18 09.08		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-1 @ 1'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-001

Date Collected: 02.13.18 09.00

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.21.18 08.00

Basis: Wet Weight

Seq Number: 3041729

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.21.18 19.37	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.21.18 19.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	80-120	02.21.18 19.37		
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.21.18 19.37		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-1 @ 2'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-002

Date Collected: 02.13.18 09.05

Sample Depth: 2 ft

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.27.18 17.00

Basis: Wet Weight

Seq Number: 3042497

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.28.18 19.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.28.18 19.02	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	160	15.0	mg/kg	02.28.18 19.02		1
Total TPH	PHC635	160	15	mg/kg	02.28.18 19.02		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	103	%	70-135	02.28.18 19.02		
o-Terphenyl	84-15-1	99	%	70-135	02.28.18 19.02		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-2 @ 3'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-003

Date Collected: 02.13.18 09.10

Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 14.20

Basis: Wet Weight

Seq Number: 3041899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.91	4.91	mg/kg	02.22.18 19.01	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.20.18 07.00

Basis: Wet Weight

Seq Number: 3041815

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.20.18 10.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	115	15.0	mg/kg	02.20.18 10.27		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.20.18 10.27	U	1
Total TPH	PHC635	115	15	mg/kg	02.20.18 10.27		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	02.20.18 10.27	
o-Terphenyl	84-15-1	106	%	70-135	02.20.18 10.27	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-2 @ 3'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-003

Date Collected: 02.13.18 09.10

Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.20.18 15.00

Basis: Wet Weight

Seq Number: 3041964

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.22.18 00.05	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.22.18 00.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	99	%	80-120	02.22.18 00.05		
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.22.18 00.05		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-2 @ 4'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-004

Date Collected: 02.13.18 09.15

Sample Depth: 4 ft

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.27.18 17.00

Basis: Wet Weight

Seq Number: 3042497

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.28.18 19.30	U	1
Diesel Range Organics (DRO)	C10C28DRO	60.9	15.0	mg/kg	02.28.18 19.30		1
Oil Range Hydrocarbons (ORO)	PHCG2835	172	15.0	mg/kg	02.28.18 19.30		1
Total TPH	PHC635	232.9	15	mg/kg	02.28.18 19.30		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	98	%	70-135	02.28.18 19.30		
o-Terphenyl	84-15-1	96	%	70-135	02.28.18 19.30		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-3 @ 5'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-005

Date Collected: 02.13.18 09.20

Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 14.20

Basis: Wet Weight

Seq Number: 3041899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	02.22.18 19.06	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.20.18 07.00

Basis: Wet Weight

Seq Number: 3041815

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.20.18 10.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	180	15.0	mg/kg	02.20.18 10.53		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.20.18 10.53	U	1
Total TPH	PHC635	180	15	mg/kg	02.20.18 10.53		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	113	%	70-135	02.20.18 10.53	
o-Terphenyl	84-15-1	123	%	70-135	02.20.18 10.53	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-3 @ 5'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-005

Date Collected: 02.13.18 09.20

Sample Depth: 5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.20.18 15.00

Basis: Wet Weight

Seq Number: 3041964

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.22.18 01.01	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.22.18 01.01	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.22.18 01.01	U	1
m,p-Xylenes	179601-23-1	0.00733	0.00402	mg/kg	02.22.18 01.01		1
o-Xylene	95-47-6	0.00223	0.00201	mg/kg	02.22.18 01.01		1
Xylenes, Total	1330-20-7	0.00956	0.00201	mg/kg	02.22.18 01.01		1
Total BTEX		0.00956	0.00201	mg/kg	02.22.18 01.01		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101		%	80-120	02.22.18 01.01	
1,4-Difluorobenzene	540-36-3	81		%	80-120	02.22.18 01.01	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **SP-3 @ 6'**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-006

Date Collected: 02.13.18 09.25

Sample Depth: 6 ft

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.27.18 17.00

Basis: Wet Weight

Seq Number: 3042497

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.28.18 19.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	18.7	15.0	mg/kg	02.28.18 19.54		1
Oil Range Hydrocarbons (ORO)	PHCG2835	157	15.0	mg/kg	02.28.18 19.54		1
Total TPH	PHC635	175.7	15	mg/kg	02.28.18 19.54		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	102	%	70-135	02.28.18 19.54		
o-Terphenyl	84-15-1	98	%	70-135	02.28.18 19.54		



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **OS-1 @ 0-3"**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-007

Date Collected: 02.13.18 09.30

Sample Depth: 0 - 3 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 14.20

Basis: Wet Weight

Seq Number: 3041899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	02.22.18 19.12	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.26.18 11.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	797	14.9	mg/kg	02.26.18 11.55		1
Oil Range Hydrocarbons (ORO)	PHCG2835	81.4	14.9	mg/kg	02.26.18 11.55		1
Total TPH	PHC635	878.4	14.9	mg/kg	02.26.18 11.55		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	02.26.18 11.55	
o-Terphenyl	84-15-1	113	%	70-135	02.26.18 11.55	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: OS-1 @ 6"

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-008

Date Collected: 02.13.18 09.35

Sample Depth: 6 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 14.20

Basis: Wet Weight

Seq Number: 3041899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6.43	5.00	mg/kg	02.22.18 19.23		1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 12.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	36.2	15.0	mg/kg	02.26.18 12.20		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.26.18 12.20	U	1
Total TPH	PHC635	36.2	15	mg/kg	02.26.18 12.20		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	02.26.18 12.20	
o-Terphenyl	84-15-1	107	%	70-135	02.26.18 12.20	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: OS-2 @ 0-3"

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-009

Date Collected: 02.13.18 09.40

Sample Depth: 0 - 3 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 14.20

Basis: Wet Weight

Seq Number: 3041899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	02.22.18 19.28	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.26.18 12.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	1290	14.9	mg/kg	02.26.18 12.48		1
Oil Range Hydrocarbons (ORO)	PHCG2835	94.5	14.9	mg/kg	02.26.18 12.48		1
Total TPH	PHC635	1384.5	14.9	mg/kg	02.26.18 12.48		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	02.26.18 12.48	
o-Terphenyl	84-15-1	125	%	70-135	02.26.18 12.48	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: OS-2 @ 6"

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-010

Date Collected: 02.13.18 09.45

Sample Depth: 6 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 16.00

Basis: Wet Weight

Seq Number: 3041902

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.92	4.92	mg/kg	02.22.18 20.00	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 13.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	32.6	15.0	mg/kg	02.26.18 13.14		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.26.18 13.14	U	1
Total TPH	PHC635	32.6	15	mg/kg	02.26.18 13.14		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	02.26.18 13.14	
o-Terphenyl	84-15-1	93	%	70-135	02.26.18 13.14	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **OS-3 @ 0-3"**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-011

Date Collected: 02.13.18 10.00

Sample Depth: 0 - 3 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 16.00

Basis: Wet Weight

Seq Number: 3041902

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	02.22.18 20.16	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 13.40	U	1
Diesel Range Organics (DRO)	C10C28DRO	797	15.0	mg/kg	02.26.18 13.40		1
Oil Range Hydrocarbons (ORO)	PHCG2835	81.1	15.0	mg/kg	02.26.18 13.40		1
Total TPH	PHC635	878.1	15	mg/kg	02.26.18 13.40		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	02.26.18 13.40	
o-Terphenyl	84-15-1	124	%	70-135	02.26.18 13.40	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: OS-3 @ 6"

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-012

Date Collected: 02.13.18 10.05

Sample Depth: 6 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 16.00

Basis: Wet Weight

Seq Number: 3041902

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	02.22.18 20.21	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 14.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.26.18 14.05	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.26.18 14.05	U	1
Total TPH	PHC635	<15	15	mg/kg	02.26.18 14.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	02.26.18 14.05	
o-Terphenyl	84-15-1	94	%	70-135	02.26.18 14.05	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: **OS-4 @ 0-3"**

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-013

Date Collected: 02.13.18 10.10

Sample Depth: 0 - 3 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 16.00

Basis: Wet Weight

Seq Number: 3041902

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	02.22.18 20.26	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 14.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	225	15.0	mg/kg	02.26.18 14.31		1
Oil Range Hydrocarbons (ORO)	PHCG2835	21.4	15.0	mg/kg	02.26.18 14.31		1
Total TPH	PHC635	246.4	15	mg/kg	02.26.18 14.31		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	02.26.18 14.31	
o-Terphenyl	84-15-1	90	%	70-135	02.26.18 14.31	



Certificate of Analytical Results 576746



TRC Solutions, Inc, Midland, TX

COG Boone 16

Sample Id: OS-4 @ 6"

Matrix: Soil

Date Received: 02.16.18 11.30

Lab Sample Id: 576746-014

Date Collected: 02.13.18 10.15

Sample Depth: 6 In

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: LRI

% Moisture:

Analyst: OJS

Date Prep: 02.22.18 16.00

Basis: Wet Weight

Seq Number: 3041902

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	02.22.18 20.32	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 02.26.18 08.00

Basis: Wet Weight

Seq Number: 3042219

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.26.18 14.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.26.18 14.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.26.18 14.56	U	1
Total TPH	PHC635	<15	15	mg/kg	02.26.18 14.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	02.26.18 14.56	
o-Terphenyl	84-15-1	94	%	70-135	02.26.18 14.56	

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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TRC Solutions, Inc
COG Boone 16

Analytical Method: Chloride by EPA 300

Seq Number: 3041899

MB Sample Id: 7639621-1-BLK

Matrix: Solid

LCS Sample Id: 7639621-1-BKS

Prep Method: E300P

Date Prep: 02.22.18

LCSD Sample Id: 7639621-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	256	102	258	103	90-110	1	20	mg/kg	02.22.18 16:31	

Analytical Method: Chloride by EPA 300

Seq Number: 3041902

MB Sample Id: 7639624-1-BLK

Matrix: Solid

LCS Sample Id: 7639624-1-BKS

Prep Method: E300P

Date Prep: 02.22.18

LCSD Sample Id: 7639624-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	255	102	262	105	90-110	3	20	mg/kg	02.22.18 19:49	

Analytical Method: Chloride by EPA 300

Seq Number: 3041899

Parent Sample Id: 576570-001

Matrix: Soil

MS Sample Id: 576570-001 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 576570-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	276	248	529	102	558	114	90-110	5	20	mg/kg	02.22.18 18:11	X

Analytical Method: Chloride by EPA 300

Seq Number: 3041899

Parent Sample Id: 577098-001

Matrix: Soil

MS Sample Id: 577098-001 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 577098-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	31.3	251	293	104	294	105	90-110	0	20	mg/kg	02.22.18 16:47	

Analytical Method: Chloride by EPA 300

Seq Number: 3041902

Parent Sample Id: 576746-010

Matrix: Soil

MS Sample Id: 576746-010 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 576746-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.92	246	254	103	266	108	90-110	5	20	mg/kg	02.22.18 20:05	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 576746

TRC Solutions, Inc COG Boone 16

Analytical Method: Chloride by EPA 300

Seq Number: 3041902

Parent Sample Id: 576779-006

Matrix: Soil

MS Sample Id: 576779-006 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 576779-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	78.6	246	338	105	339	106	90-110	0	20	mg/kg	02.22.18 21:19	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3041815

MB Sample Id: 7639517-1-BLK

Matrix: Solid

LCS Sample Id: 7639517-1-BKS

Prep Method: TX1005P

Date Prep: 02.20.18

LCSD Sample Id: 7639517-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	875	88	868	87	70-135	1	35	mg/kg	02.20.18 08:17	
Diesel Range Organics (DRO)	<15.0	1000	963	96	961	96	70-135	0	35	mg/kg	02.20.18 08:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	119		109		107		70-135	%	02.20.18 08:17
o-Terphenyl	125		107		106		70-135	%	02.20.18 08:17

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042219

MB Sample Id: 7639805-1-BLK

Matrix: Solid

LCS Sample Id: 7639805-1-BKS

Prep Method: TX1005P

Date Prep: 02.26.18

LCSD Sample Id: 7639805-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	887	89	1020	102	70-135	14	35	mg/kg	02.26.18 09:41	
Diesel Range Organics (DRO)	<15.0	1000	915	92	1040	104	70-135	13	35	mg/kg	02.26.18 09:41	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	109		109		124		70-135	%	02.26.18 09:41
o-Terphenyl	112		107		121		70-135	%	02.26.18 09:41

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042497

MB Sample Id: 7639972-1-BLK

Matrix: Solid

LCS Sample Id: 7639972-1-BKS

Prep Method: TX1005P

Date Prep: 02.28.18

LCSD Sample Id: 7639972-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	965	97	963	96	70-135	0	35	mg/kg	02.28.18 08:22	
Diesel Range Organics (DRO)	<15.0	1000	988	99	983	98	70-135	1	35	mg/kg	02.28.18 08:22	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	103		110		101		70-135	%	02.28.18 08:22
o-Terphenyl	106		107		110		70-135	%	02.28.18 08:22

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 576746

TRC Solutions, Inc COG Boone 16

Analytical Method: TPH by SW8015 Mod

Seq Number: 3041815

Parent Sample Id: 576746-001

Matrix: Soil

MS Sample Id: 576746-001 S

Prep Method: TX1005P

Date Prep: 02.20.18

MSD Sample Id: 576746-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	868	87	858	86	70-135	1	35	mg/kg	02.20.18 09:34	
Diesel Range Organics (DRO)	<15.0	998	966	97	960	96	70-135	1	35	mg/kg	02.20.18 09:34	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	110		107		70-135	%	02.20.18 09:34
o-Terphenyl	106		105		70-135	%	02.20.18 09:34

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042219

Parent Sample Id: 577421-001

Matrix: Soil

MS Sample Id: 577421-001 S

Prep Method: TX1005P

Date Prep: 02.26.18

MSD Sample Id: 577421-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	971	97	907	91	70-135	7	35	mg/kg	02.26.18 11:02	
Diesel Range Organics (DRO)	<15.0	999	1070	107	1000	100	70-135	7	35	mg/kg	02.26.18 11:02	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		107		70-135	%	02.26.18 11:02
o-Terphenyl	113		107		70-135	%	02.26.18 11:02

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042497

Parent Sample Id: 577419-021

Matrix: Soil

MS Sample Id: 577419-021 S

Prep Method: TX1005P

Date Prep: 02.28.18

MSD Sample Id: 577419-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1070	107	953	95	70-135	12	35	mg/kg	02.28.18 09:38	
Diesel Range Organics (DRO)	<15.0	999	1180	118	1060	106	70-135	11	35	mg/kg	02.28.18 09:38	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	94		90		70-135	%	02.28.18 09:38
o-Terphenyl	82		83		70-135	%	02.28.18 09:38

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

TRC Solutions, Inc
COG Boone 16

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041964

MB Sample Id: 7639673-1-BLK

Matrix: Solid

LCS Sample Id: 7639673-1-BKS

Prep Method: SW5030B

Date Prep: 02.20.18

LCSD Sample Id: 7639673-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0823	83	0.0935	94	70-130	13	35	mg/kg	02.21.18 20:15	
Toluene	<0.00199	0.0994	0.0887	89	0.101	101	70-130	13	35	mg/kg	02.21.18 20:15	
Ethylbenzene	<0.00199	0.0994	0.102	103	0.117	117	71-129	14	35	mg/kg	02.21.18 20:15	
m,p-Xylenes	<0.00398	0.199	0.201	101	0.229	114	70-135	13	35	mg/kg	02.21.18 20:15	
o-Xylene	<0.00199	0.0994	0.0994	100	0.114	114	71-133	14	35	mg/kg	02.21.18 20:15	
Xylenes, Total	0	0.2984	0.3004	101	0.343	114	71-133	0	20	mg/kg	02.21.18 20:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	83		87		86		80-120	%	02.21.18 20:15
4-Bromofluorobenzene	99		108		112		80-120	%	02.21.18 20:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041729

MB Sample Id: 7639538-1-BLK

Matrix: Solid

LCS Sample Id: 7639538-1-BKS

Prep Method: SW5030B

Date Prep: 02.21.18

LCSD Sample Id: 7639538-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0936	94	0.0880	87	70-130	6	35	mg/kg	02.21.18 07:15	
Toluene	<0.00200	0.100	0.0992	99	0.0939	93	70-130	5	35	mg/kg	02.21.18 07:15	
Ethylbenzene	<0.00200	0.100	0.114	114	0.107	106	71-129	6	35	mg/kg	02.21.18 07:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	88		84		88		80-120	%	02.21.18 07:15
4-Bromofluorobenzene	116		114		115		80-120	%	02.21.18 07:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041964

Parent Sample Id: 576848-003

Matrix: Soil

MS Sample Id: 576848-003 S

Prep Method: SW5030B

Date Prep: 02.20.18

MSD Sample Id: 576848-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0730	72	0.0738	74	70-130	1	35	mg/kg	02.21.18 20:53	
Toluene	0.00225	0.101	0.0781	75	0.0777	76	70-130	1	35	mg/kg	02.21.18 20:53	
Ethylbenzene	<0.00202	0.101	0.0875	87	0.0848	85	71-129	3	35	mg/kg	02.21.18 20:53	
m,p-Xylenes	<0.00403	0.202	0.171	85	0.166	83	70-135	3	35	mg/kg	02.21.18 20:53	
o-Xylene	<0.00202	0.101	0.0859	85	0.0823	83	71-133	4	35	mg/kg	02.21.18 20:53	
Xylenes, Total	0	0.303	0.2569	85	0.2483	83	71-133	0	20	mg/kg	02.21.18 20:53	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	83		87		80-120	%	02.21.18 20:53
4-Bromofluorobenzene	106		105		80-120	%	02.21.18 20:53

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C-A) / B$
 $RPD = 200 * | (C-E) / (C+E) |$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

TRC Solutions, Inc
COG Boone 16

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041729

Parent Sample Id: 576780-001

Matrix: Soil

MS Sample Id: 576780-001 S

Prep Method: SW5030B

Date Prep: 02.21.18

MSD Sample Id: 576780-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0615	62	0.0618	61	70-130	0	35	mg/kg	02.21.18 07:54	X
Toluene	<0.00201	0.100	0.0625	63	0.0655	65	70-130	5	35	mg/kg	02.21.18 07:54	X
Ethylbenzene	<0.00201	0.100	0.0747	75	0.0718	71	71-129	4	35	mg/kg	02.21.18 07:54	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	91		82		80-120	%	02.21.18 07:54
4-Bromofluorobenzene	102		117		80-120	%	02.21.18 07:54

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: TRC Solutions, Inc

Date/ Time Received: 02/16/2018 11:30:00 AM

Work Order #: 576746

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)?	1.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by:

Connie Hernandez

Date: 02/16/2018

Checklist reviewed by:

Kelsey Brooks

Date: 02/16/2018

Analytical Report 577385

for
TRC Solutions, Inc

Project Manager: Joel Lowry

COG Boone 16 Tank Battery

02-MAR-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco-Atlanta: Louisiana (04176)

Xenco-Tampa: Florida (E87429), North Carolina (483), DoD (LI0-135), Kentucky (123066)

Xenco-Lakeland: Florida (E84098)

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02-MAR-18

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

Reference: XENCO Report No(s): **577385**
COG Boone 16 Tank Battery
Project Address: Lea County, 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) 577385. 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. 577385 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

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-1 FL 1	S	02-21-18 09:00	1 ft	577385-001
SP-1 FL 2	S	02-21-18 09:05	1 ft	577385-002
SP-1 FL 3	S	02-21-18 09:10	1 ft	577385-003
SP-1 FL 4	S	02-21-18 09:15	1 ft	577385-004
SP-1 FL 5	S	02-21-18 09:20	1 ft	577385-005
SP-1 FL 6	S	02-21-18 09:25	1 ft	577385-006
SP-1 NSW	S	02-21-18 09:30	6 In	577385-007
SP-1 ESW 1	S	02-21-18 09:35	6 In	577385-008
SP-1 ESW 2	S	02-21-18 09:40	6 In	577385-009
SP-1 ESW 3	S	02-21-18 09:45	6 In	577385-010
SP-1 ESW 4	S	02-21-18 09:50	6 In	577385-011
SP-1 ESW 5	S	02-21-18 09:55	6 In	577385-012
SP-1 SSW 1	S	02-21-18 10:00	6 In	577385-013
SP-1 SSW 2	S	02-21-18 10:05	6 In	577385-014
SP-1 SSW 3	S	02-21-18 10:10	6 In	577385-015
SP-1 WSW 1	S	02-21-18 10:15	6 In	577385-016
SP-1 WSW 2	S	02-21-18 10:20	6 In	577385-017
SP-1 WSW 3	S	02-21-18 10:25	6 In	577385-018
SP-1 WSW 5	S	02-21-18 10:30	6 In	577385-019
SP-1 NSW	S	02-21-18 10:35	6 In	577385-020



CASE NARRATIVE

Client Name: TRC Solutions, Inc

Project Name: COG Boone 16 Tank Battery

Project ID:

Work Order Number(s): 577385

Report Date: 02-MAR-18

Date Received: 02/23/2018

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3042198 BTEX by EPA 8021

Lab Sample ID 577385-009 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m_p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 577385-008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

The Laboratory Control Sample for Toluene, Benzene, Ethylbenzene, m_p-Xylenes, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3042224 BTEX by EPA 8021

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3042346 BTEX by EPA 8021

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: **SP-1 FL 1**

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-001

Date Collected: 02.21.18 09.00

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.24.18 17:12	U	1
Diesel Range Organics (DRO)	C10C28DRO	12.2	15.0	8.11	mg/kg	02.24.18 17:12	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.11	15.0	8.11	mg/kg	02.24.18 17:12	U	1
Total TPH	PHC635	12.2		7.99	mg/kg	02.24.18 17:12	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	113	70 - 135	%		
o-Terphenyl	113	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	02.24.18 23:35	U	1
Toluene	108-88-3	<0.000459	0.00202	0.000459	mg/kg	02.24.18 23:35	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	02.24.18 23:35	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	02.24.18 23:35	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	02.24.18 23:35	U	1
Xylenes, Total	1330-20-7	<0.000347		0.000347	mg/kg	02.24.18 23:35	U	
Total BTEX		<0.000347		0.000347	mg/kg	02.24.18 23:35	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	112	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 FL 2

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-002

Date Collected: 02.21.18 09.05

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	11.9	15.0	7.99	mg/kg	02.24.18 18:33	J	1
Diesel Range Organics (DRO)	C10C28DRO	376	15.0	8.11	mg/kg	02.24.18 18:33		1
Oil Range Hydrocarbons (ORO)	PHCG2835	24.5	15.0	8.11	mg/kg	02.24.18 18:33		1
Total TPH	PHC635	412.4		7.99	mg/kg	02.24.18 18:33		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	117	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.25.18 00:30	U	1
Toluene	108-88-3	0.000863	0.00201	0.000457	mg/kg	02.25.18 00:30	J	1
Ethylbenzene	100-41-4	0.00128	0.00201	0.000567	mg/kg	02.25.18 00:30	J	1
m_p-Xylenes	179601-23-1	0.00525	0.00402	0.00102	mg/kg	02.25.18 00:30		1
o-Xylene	95-47-6	0.00312	0.00201	0.000346	mg/kg	02.25.18 00:30		1
Xylenes, Total	1330-20-7	0.00837		0.000346	mg/kg	02.25.18 00:30		
Total BTEX		0.010513		0.000346	mg/kg	02.25.18 00:30		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	80 - 120	%		
4-Bromofluorobenzene	117	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: **SP-1 FL 3**

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-003

Date Collected: 02.21.18 09.10

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.97	14.9	7.97	mg/kg	02.24.18 19:01	U	1
Diesel Range Organics (DRO)	C10C28DRO	92.9	14.9	8.10	mg/kg	02.24.18 19:01		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	14.9	8.10	mg/kg	02.24.18 19:01	U	1
Total TPH	PHC635	92.9		7.97	mg/kg	02.24.18 19:01		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	93	70 - 135	%		
o-Terphenyl	94	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000389	0.00202	0.000389	mg/kg	02.25.18 00:49	U	1
Toluene	108-88-3	<0.000460	0.00202	0.000460	mg/kg	02.25.18 00:49	U	1
Ethylbenzene	100-41-4	<0.000570	0.00202	0.000570	mg/kg	02.25.18 00:49	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00404	0.00102	mg/kg	02.25.18 00:49	U	1
o-Xylene	95-47-6	<0.000348	0.00202	0.000348	mg/kg	02.25.18 00:49	U	1
Xylenes, Total	1330-20-7	<0.000348		0.000348	mg/kg	02.25.18 00:49	U	
Total BTEX		<0.000348		0.000348	mg/kg	02.25.18 00:49	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	81	80 - 120	%		
4-Bromofluorobenzene	119	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: **SP-1 FL 4**

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-004

Date Collected: 02.21.18 09.15

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.24.18 19:27	U	1
Diesel Range Organics (DRO)	C10C28DRO	37.6	15.0	8.12	mg/kg	02.24.18 19:27		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.12	15.0	8.12	mg/kg	02.24.18 19:27	U	1
Total TPH	PHC635	37.6		7.99	mg/kg	02.24.18 19:27		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	108	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.25.18 01:08	U	1
Toluene	108-88-3	0.00151	0.00200	0.000457	mg/kg	02.25.18 01:08	J	1
Ethylbenzene	100-41-4	0.000902	0.00200	0.000566	mg/kg	02.25.18 01:08	J	1
m_p-Xylenes	179601-23-1	0.00284	0.00401	0.00102	mg/kg	02.25.18 01:08	J	1
o-Xylene	95-47-6	0.00157	0.00200	0.000345	mg/kg	02.25.18 01:08	J	1
Xylenes, Total	1330-20-7	0.00441		0.000345	mg/kg	02.25.18 01:08		
Total BTEX		0.006822		0.000345	mg/kg	02.25.18 01:08		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	85	80 - 120	%		
4-Bromofluorobenzene	112	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 FL 5

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-005

Date Collected: 02.21.18 09.20

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.97	14.9	7.97	mg/kg	02.24.18 19:53	U	1
Diesel Range Organics (DRO)	C10C28DRO	8.18	14.9	8.10	mg/kg	02.24.18 19:53	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	14.9	8.10	mg/kg	02.24.18 19:53	U	1
Total TPH	PHC635	8.18		7.97	mg/kg	02.24.18 19:53	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	93	70 - 135	%		
o-Terphenyl	90	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.25.18 01:25	U	1
Toluene	108-88-3	0.00104	0.00199	0.000453	mg/kg	02.25.18 01:25	J	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	02.25.18 01:25	U	1
m_p-Xylenes	179601-23-1	0.00231	0.00398	0.00101	mg/kg	02.25.18 01:25	J	1
o-Xylene	95-47-6	0.000954	0.00199	0.000342	mg/kg	02.25.18 01:25	J	1
Xylenes, Total	1330-20-7	0.003264		0.000342	mg/kg	02.25.18 01:25		
Total BTEX		0.004304		0.000342	mg/kg	02.25.18 01:25		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	80	80 - 120	%		
4-Bromofluorobenzene	110	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 FL 6

Matrix: Soil

Sample Depth: 1 ft

Lab Sample Id: 577385-006

Date Collected: 02.21.18 09.25

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.24.18 20:21	U	1
Diesel Range Organics (DRO)	C10C28DRO	129	15.0	8.11	mg/kg	02.24.18 20:21		1
Oil Range Hydrocarbons (ORO)	PHCG2835	13.5	15.0	8.11	mg/kg	02.24.18 20:21	J	1
Total TPH	PHC635	142.5		7.99	mg/kg	02.24.18 20:21		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	94	70 - 135	%		
o-Terphenyl	94	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.25.18 01:44	U	1
Toluene	108-88-3	0.00106	0.00200	0.000455	mg/kg	02.25.18 01:44	J	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.25.18 01:44	U	1
m_p-Xylenes	179601-23-1	0.00314	0.00399	0.00101	mg/kg	02.25.18 01:44	J	1
o-Xylene	95-47-6	0.00171	0.00200	0.000344	mg/kg	02.25.18 01:44	J	1
Xylenes, Total	1330-20-7	0.00485		0.000344	mg/kg	02.25.18 01:44		
Total BTEX		0.00591		0.000344	mg/kg	02.25.18 01:44		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	108	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 NSW

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-007

Date Collected: 02.21.18 09.30

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	7.98	mg/kg	02.24.18 20:49	U	1
Diesel Range Organics (DRO)	C10C28DRO	111	15.0	8.10	mg/kg	02.24.18 20:49		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	8.10	mg/kg	02.24.18 20:49	U	1
Total TPH	PHC635	111		7.98	mg/kg	02.24.18 20:49		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	109	70 - 135	%		
o-Terphenyl	109	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042346

Date Prep: 02.27.18 09.30

Prep seq: 7639907

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.27.18 10:34	U	1
Toluene	108-88-3	0.000651	0.00200	0.000457	mg/kg	02.27.18 10:34	J	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	02.27.18 10:34	U	1
m_p-Xylenes	179601-23-1	0.00222	0.00401	0.00102	mg/kg	02.27.18 10:34	J	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	02.27.18 10:34	U	1
Xylenes, Total	1330-20-7	0.00222		0.000345	mg/kg	02.27.18 10:34		
Total BTEX		0.002871		0.000345	mg/kg	02.27.18 10:34		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	78	70 - 130	%		
4-Bromofluorobenzene	97	70 - 130	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 ESW 1

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-008

Date Collected: 02.21.18 09.35

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	8.00	mg/kg	02.24.18 21:15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.13	15.0	8.13	mg/kg	02.24.18 21:15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.13	15.0	8.13	mg/kg	02.24.18 21:15	U	1
Total TPH	PHC635	<8		8	mg/kg	02.24.18 21:15	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	108	70 - 135	%		
o-Terphenyl	105	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	02.25.18 11:27	U	1
Toluene	108-88-3	<0.000459	0.00202	0.000459	mg/kg	02.25.18 11:27	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	02.25.18 11:27	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	02.25.18 11:27	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	02.25.18 11:27	U	1
Xylenes, Total	1330-20-7	<0.000347		0.000347	mg/kg	02.25.18 11:27	U	
Total BTEX		<0.000347		0.000347	mg/kg	02.25.18 11:27	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	114	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 ESW 2

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-009

Date Collected: 02.21.18 09.40

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.98	15.0	7.98	mg/kg	02.24.18 21:42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.10	15.0	8.10	mg/kg	02.24.18 21:42	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	8.10	mg/kg	02.24.18 21:42	U	1
Total TPH	PHC635	<7.98		7.98	mg/kg	02.24.18 21:42	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	90	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.25.18 11:08	UX	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	02.25.18 11:08	UX	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.25.18 11:08	UX	1
m_p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	02.25.18 11:08	UX	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.25.18 11:08	UX	1
Xylenes, Total	1330-20-7	<0.000344		0.000344	mg/kg	02.25.18 11:08	U	
Total BTEX		<0.000344		0.000344	mg/kg	02.25.18 11:08	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	80 - 120	%		
4-Bromofluorobenzene	110	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 ESW 3

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-010

Date Collected: 02.21.18 09.45

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.24.18 22:08	U	1
Diesel Range Organics (DRO)	C10C28DRO	48.5	15.0	8.11	mg/kg	02.24.18 22:08		1
Oil Range Hydrocarbons (ORO)	PHCG2835	11.2	15.0	8.11	mg/kg	02.24.18 22:08	J	1
Total TPH	PHC635	59.7		7.99	mg/kg	02.24.18 22:08		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	96	70 - 135	%		
o-Terphenyl	96	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.25.18 11:46	U	1
Toluene	108-88-3	<0.000457	0.00200	0.000457	mg/kg	02.25.18 11:46	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	02.25.18 11:46	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	02.25.18 11:46	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	02.25.18 11:46	U	1
Xylenes, Total	1330-20-7	<0.000345		0.000345	mg/kg	02.25.18 11:46	U	
Total BTEX		<0.000345		0.000345	mg/kg	02.25.18 11:46	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	87	80 - 120	%		
4-Bromofluorobenzene	116	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 ESW 4

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-011

Date Collected: 02.21.18 09.50

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.97	14.9	7.97	mg/kg	02.24.18 23:28	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.10	14.9	8.10	mg/kg	02.24.18 23:28	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	14.9	8.10	mg/kg	02.24.18 23:28	U	1
Total TPH	PHC635	<7.97		7.97	mg/kg	02.24.18 23:28	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	88	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.25.18 12:05	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	02.25.18 12:05	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	02.25.18 12:05	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	02.25.18 12:05	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	02.25.18 12:05	U	1
Xylenes, Total	1330-20-7	<0.000342		0.000342	mg/kg	02.25.18 12:05	U	
Total BTEX		<0.000342		0.000342	mg/kg	02.25.18 12:05	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	118	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 ESW 5

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-012

Date Collected: 02.21.18 09.55

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.24.18 23:56	U	1
Diesel Range Organics (DRO)	C10C28DRO	87.3	15.0	8.12	mg/kg	02.24.18 23:56		1
Oil Range Hydrocarbons (ORO)	PHCG2835	13.7	15.0	8.12	mg/kg	02.24.18 23:56	J	1
Total TPH	PHC635	101		7.99	mg/kg	02.24.18 23:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	94	70 - 135	%		
o-Terphenyl	96	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000381	0.00198	0.000381	mg/kg	02.25.18 12:24	U	1
Toluene	108-88-3	<0.000451	0.00198	0.000451	mg/kg	02.25.18 12:24	U	1
Ethylbenzene	100-41-4	<0.000559	0.00198	0.000559	mg/kg	02.25.18 12:24	U	1
m_p-Xylenes	179601-23-1	<0.00100	0.00396	0.00100	mg/kg	02.25.18 12:24	U	1
o-Xylene	95-47-6	<0.000341	0.00198	0.000341	mg/kg	02.25.18 12:24	U	1
Xylenes, Total	1330-20-7	<0.000341		0.000341	mg/kg	02.25.18 12:24	U	
Total BTEX		<0.000341		0.000341	mg/kg	02.25.18 12:24	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	80	80 - 120	%		
4-Bromofluorobenzene	108	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 SSW 1

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-013

Date Collected: 02.21.18 10.00

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	17.1	15.0	7.99	mg/kg	02.25.18 00:22		1
Diesel Range Organics (DRO)	C10C28DRO	468	15.0	8.12	mg/kg	02.25.18 00:22		1
Oil Range Hydrocarbons (ORO)	PHCG2835	33.7	15.0	8.12	mg/kg	02.25.18 00:22		1
Total TPH	PHC635	518.8		7.99	mg/kg	02.25.18 00:22		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	97	70 - 135	%		
o-Terphenyl	103	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.25.18 12:44	U	1
Toluene	108-88-3	0.000802	0.00200	0.000457	mg/kg	02.25.18 12:44	J	1
Ethylbenzene	100-41-4	0.00143	0.00200	0.000566	mg/kg	02.25.18 12:44	J	1
m_p-Xylenes	179601-23-1	0.00647	0.00401	0.00102	mg/kg	02.25.18 12:44		1
o-Xylene	95-47-6	0.00346	0.00200	0.000345	mg/kg	02.25.18 12:44		1
Xylenes, Total	1330-20-7	0.00993		0.000345	mg/kg	02.25.18 12:44		
Total BTEX		0.012162		0.000345	mg/kg	02.25.18 12:44		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	83	80 - 120	%		
4-Bromofluorobenzene	98	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 SSW 2

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-014

Date Collected: 02.21.18 10.05

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	9.24	15.0	7.98	mg/kg	02.25.18 00:48	J	1
Diesel Range Organics (DRO)	C10C28DRO	9.36	15.0	8.10	mg/kg	02.25.18 00:48	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	8.10	mg/kg	02.25.18 00:48	U	1
Total TPH	PHC635	18.6		7.98	mg/kg	02.25.18 00:48		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	106	70 - 135	%		
o-Terphenyl	100	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000387	0.00201	0.000387	mg/kg	02.25.18 13:03	U	1
Toluene	108-88-3	<0.000458	0.00201	0.000458	mg/kg	02.25.18 13:03	U	1
Ethylbenzene	100-41-4	<0.000568	0.00201	0.000568	mg/kg	02.25.18 13:03	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.25.18 13:03	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.25.18 13:03	U	1
Xylenes, Total	1330-20-7	<0.000346		0.000346	mg/kg	02.25.18 13:03	U	
Total BTEX		<0.000346		0.000346	mg/kg	02.25.18 13:03	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	82	80 - 120	%		
4-Bromofluorobenzene	96	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 SSW 3

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-015

Date Collected: 02.21.18 10.10

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	63.3	15.0	7.98	mg/kg	02.25.18 01:15		1
Diesel Range Organics (DRO)	C10C28DRO	2670	15.0	8.10	mg/kg	02.25.18 01:15		1
Oil Range Hydrocarbons (ORO)	PHCG2835	93.8	15.0	8.10	mg/kg	02.25.18 01:15		1
Total TPH	PHC635	2827.1		7.98	mg/kg	02.25.18 01:15		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	103	70 - 135	%		
o-Terphenyl	129	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000389	0.00202	0.000389	mg/kg	02.25.18 13:22	U	1
Toluene	108-88-3	0.00458	0.00202	0.000460	mg/kg	02.25.18 13:22		1
Ethylbenzene	100-41-4	0.00872	0.00202	0.000570	mg/kg	02.25.18 13:22		1
m_p-Xylenes	179601-23-1	0.0318	0.00404	0.00102	mg/kg	02.25.18 13:22		1
o-Xylene	95-47-6	0.0164	0.00202	0.000348	mg/kg	02.25.18 13:22		1
Xylenes, Total	1330-20-7	0.0482		0.000348	mg/kg	02.25.18 13:22		
Total BTEX		0.0615		0.000348	mg/kg	02.25.18 13:22		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	82	80 - 120	%		
4-Bromofluorobenzene	119	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 WSW 1

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-016

Date Collected: 02.21.18 10.15

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<7.99	15.0	7.99	mg/kg	02.25.18 01:43	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.12	15.0	8.12	mg/kg	02.25.18 01:43	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.12	15.0	8.12	mg/kg	02.25.18 01:43	U	1
Total TPH	PHC635	<7.99		7.99	mg/kg	02.25.18 01:43	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	89	70 - 135	%		
o-Terphenyl	86	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.25.18 13:41	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	02.25.18 13:41	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	02.25.18 13:41	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	02.25.18 13:41	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	02.25.18 13:41	U	1
Xylenes, Total	1330-20-7	<0.000342		0.000342	mg/kg	02.25.18 13:41	U	
Total BTEX		<0.000342		0.000342	mg/kg	02.25.18 13:41	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	83	80 - 120	%		
4-Bromofluorobenzene	110	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 WSW 2

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-017

Date Collected: 02.21.18 10.20

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	8.97	15.0	7.99	mg/kg	02.25.18 02:10	J	1
Diesel Range Organics (DRO)	C10C28DRO	<8.11	15.0	8.11	mg/kg	02.25.18 02:10	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.11	15.0	8.11	mg/kg	02.25.18 02:10	U	1
Total TPH	PHC635	8.97		7.99	mg/kg	02.25.18 02:10	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	107	70 - 135	%		
o-Terphenyl	103	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	02.25.18 14:00	U	1
Toluene	108-88-3	<0.000459	0.00202	0.000459	mg/kg	02.25.18 14:00	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	02.25.18 14:00	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	02.25.18 14:00	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	02.25.18 14:00	U	1
Xylenes, Total	1330-20-7	<0.000347		0.000347	mg/kg	02.25.18 14:00	U	
Total BTEX		<0.000347		0.000347	mg/kg	02.25.18 14:00	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	82	80 - 120	%		
4-Bromofluorobenzene	110	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 WSW 3

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-018

Date Collected: 02.21.18 10.25

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	8.00	mg/kg	02.25.18 02:36	U	1
Diesel Range Organics (DRO)	C10C28DRO	9.20	15.0	8.13	mg/kg	02.25.18 02:36	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.13	15.0	8.13	mg/kg	02.25.18 02:36	U	1
Total TPH	PHC635	9.2		8	mg/kg	02.25.18 02:36	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	95	70 - 135	%		
o-Terphenyl	97	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.25.18 14:55	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	02.25.18 14:55	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.25.18 14:55	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	02.25.18 14:55	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.25.18 14:55	U	1
Xylenes, Total	1330-20-7	<0.000344		0.000344	mg/kg	02.25.18 14:55	U	
Total BTEX		<0.000344		0.000344	mg/kg	02.25.18 14:55	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	112	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 WSW 5

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-019

Date Collected: 02.21.18 10.30

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	8.65	15.0	7.98	mg/kg	02.25.18 03:03	J	1
Diesel Range Organics (DRO)	C10C28DRO	9.97	15.0	8.10	mg/kg	02.25.18 03:03	J	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.10	15.0	8.10	mg/kg	02.25.18 03:03	U	1
Total TPH	PHC635	18.62		7.98	mg/kg	02.25.18 03:03		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	113	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.25.18 15:14	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	02.25.18 15:14	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	02.25.18 15:14	U	1
m_p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	02.25.18 15:14	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	02.25.18 15:14	U	1
Xylenes, Total	1330-20-7	<0.000342		0.000342	mg/kg	02.25.18 15:14	U	
Total BTEX		<0.000342		0.000342	mg/kg	02.25.18 15:14	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	80 - 120	%		
4-Bromofluorobenzene	111	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: SP-1 NSW

Matrix: Soil

Sample Depth: 6 In

Lab Sample Id: 577385-020

Date Collected: 02.21.18 10.35

Date Received: 02.23.18 14.30

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	9.59	15.0	7.98	mg/kg	02.25.18 03:31	J	1
Diesel Range Organics (DRO)	C10C28DRO	200	15.0	8.10	mg/kg	02.25.18 03:31		1
Oil Range Hydrocarbons (ORO)	PHCG2835	18.8	15.0	8.10	mg/kg	02.25.18 03:31		1
Total TPH	PHC635	228.39		7.98	mg/kg	02.25.18 03:31		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	112	70 - 135	%		
o-Terphenyl	117	70 - 135	%		

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.25.18 15:33	U	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	02.25.18 15:33	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	02.25.18 15:33	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.25.18 15:33	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.25.18 15:33	U	1
Xylenes, Total	1330-20-7	<0.000346		0.000346	mg/kg	02.25.18 15:33	U	
Total BTEX		<0.000346		0.000346	mg/kg	02.25.18 15:33	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	83	80 - 120	%		
4-Bromofluorobenzene	102	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: 7639739-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 7639739-1-BLK

Date Collected:

Date Received:

Analytical Method: TPH by SW8015 Mod

Prep Method: 1005

Analyst: ARM

% Moist:

Tech: ARM

Seq Number: 3042064

Date Prep: 02.24.18 12.00

Prep seq: 7639739

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<8.00	15.0	8.00	mg/kg	02.24.18 15:52	U	1
Diesel Range Organics (DRO)	C10C28DRO	<8.13	15.0	8.13	mg/kg	02.24.18 15:52	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<8.13	15.0	8.13	mg/kg	02.24.18 15:52	U	1
Total TPH	PHC635	<8		8	mg/kg	02.24.18 15:52	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	102	70 - 135	%		
o-Terphenyl	107	70 - 135	%		

Sample Id: 7639790-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 7639790-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042198

Date Prep: 02.24.18 10.30

Prep seq: 7639790

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	02.25.18 10:49	U	1
Toluene	108-88-3	<0.000459	0.00202	0.000459	mg/kg	02.25.18 10:49	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	02.25.18 10:49	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	02.25.18 10:49	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	02.25.18 10:49	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	81	80 - 120	%		
4-Bromofluorobenzene	104	80 - 120	%		



Certificate of Analytical Results

577385



TRC Solutions, Inc, Midland, TX

COG Boone 16 Tank Battery

Sample Id: 7639837-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 7639837-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042224

Date Prep: 02.24.18 11.00

Prep seq: 7639837

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.24.18 20:31	U	1
Toluene	108-88-3	<0.000457	0.00200	0.000457	mg/kg	02.24.18 20:31	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	02.24.18 20:31	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	02.24.18 20:31	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	02.24.18 20:31	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	84	70 - 130	%		
4-Bromofluorobenzene	100	70 - 130	%		

Sample Id: 7639907-1-BLK

Matrix: Solid

Sample Depth:

Lab Sample Id: 7639907-1-BLK

Date Collected:

Date Received:

Analytical Method: BTEX by EPA 8021

Prep Method: 5030B

Analyst: ALJ

% Moist:

Tech: ALJ

Seq Number: 3042346

Date Prep: 02.27.18 09.30

Prep seq: 7639907

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.27.18 09:36	U	1
Toluene	108-88-3	<0.000457	0.00200	0.000457	mg/kg	02.27.18 09:36	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	02.27.18 09:36	U	1
m_p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	02.27.18 09:36	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	02.27.18 09:36	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1,4-Difluorobenzene	86	70 - 130	%		
4-Bromofluorobenzene	95	70 - 130	%		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	

Form 2 - Surrogate Recoveries

Project Name: COG Boone 16 Tank Battery

Work Orders : 577385,

Project ID:

Lab Batch #: 3042198

Sample: 7639790-1-BKS / BKS

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/25/18 08:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0355	0.0300	118	80-120	

Lab Batch #: 3042198

Sample: 7639790-1-BSD / BSD

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/25/18 09:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0269	0.0300	90	80-120	
4-Bromofluorobenzene	0.0336	0.0300	112	80-120	

Lab Batch #: 3042198

Sample: 577385-009 S / MS

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 02/25/18 09:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	0.0300	86	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 3042198

Sample: 577385-009 SD / MSD

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 02/25/18 09:52

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	0.0300	91	80-120	
4-Bromofluorobenzene	0.0358	0.0300	119	80-120	

Lab Batch #: 3042198

Sample: 7639790-1-BLK / BLK

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/25/18 10:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: COG Boone 16 Tank Battery

Work Orders : 577385,

Project ID:

Lab Batch #: 3042224

Sample: 7639837-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 02/24/18 18:58	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0299	0.0300	100	70-130
4-Bromofluorobenzene		0.0360	0.0300	120	70-130

Lab Batch #: 3042224

Sample: 7639837-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 02/24/18 19:16	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0302	0.0300	101	70-130
4-Bromofluorobenzene		0.0359	0.0300	120	70-130

Lab Batch #: 3042224

Sample: 577383-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 02/24/18 19:35	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0278	0.0300	93	70-130
4-Bromofluorobenzene		0.0347	0.0300	116	70-130

Lab Batch #: 3042224

Sample: 577383-004 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg	Date Analyzed: 02/24/18 19:53	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0290	0.0300	97	70-130
4-Bromofluorobenzene		0.0353	0.0300	118	70-130

Lab Batch #: 3042224

Sample: 7639837-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg	Date Analyzed: 02/24/18 20:31	SURROGATE RECOVERY STUDY			
BTEX by EPA 8021		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R
Analytes					
1,4-Difluorobenzene		0.0251	0.0300	84	70-130
4-Bromofluorobenzene		0.0300	0.0300	100	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: COG Boone 16 Tank Battery

Work Orders : 577385,

Project ID:

Lab Batch #: 3042346

Sample: 7639907-1-BKS / BKS

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/27/18 07:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	0.0300	91	70-130	
4-Bromofluorobenzene	0.0323	0.0300	108	70-130	

Lab Batch #: 3042346

Sample: 7639907-1-BSD / BSD

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/27/18 07:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0268	0.0300	89	70-130	
4-Bromofluorobenzene	0.0333	0.0300	111	70-130	

Lab Batch #: 3042346

Sample: 577420-010 S / MS

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 02/27/18 07:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0271	0.0300	90	70-130	
4-Bromofluorobenzene	0.0343	0.0300	114	70-130	

Lab Batch #: 3042346

Sample: 7639907-1-BLK / BLK

Batch: 1 **Matrix:** Solid

Units: mg/kg

Date Analyzed: 02/27/18 09:36

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0258	0.0300	86	70-130	
4-Bromofluorobenzene	0.0284	0.0300	95	70-130	

Lab Batch #: 3042346

Sample: 577420-010 SD / MSD

Batch: 1 **Matrix:** Soil

Units: mg/kg

Date Analyzed: 02/28/18 10:51

SURROGATE RECOVERY STUDY

BTEX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0261	0.0300	87	70-130	
4-Bromofluorobenzene	0.0328	0.0300	109	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: COG Boone 16 Tank Battery

Work Orders : 577385,

Project ID:

Lab Batch #: 3042064

Sample: 7639739-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02/24/18 15:52

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	53.4	50.0	107	70-135	

Lab Batch #: 3042064

Sample: 7639739-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02/24/18 16:18

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	54.0	50.0	108	70-135	

Lab Batch #: 3042064

Sample: 7639739-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02/24/18 16:45

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	100	106	70-135	
o-Terphenyl	52.7	50.0	105	70-135	

Lab Batch #: 3042064

Sample: 577385-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02/24/18 17:39

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.9	101	70-135	
o-Terphenyl	49.9	50.0	100	70-135	

Lab Batch #: 3042064

Sample: 577385-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02/24/18 18:06

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	99.8	112	70-135	
o-Terphenyl	53.8	49.9	108	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

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



BS / BSD Recoveries



Project Name: COG Boone 16 Tank Battery

Work Order #: 577385

Project ID:

Analyst: ALJ

Date Prepared: 02/24/2018

Date Analyzed: 02/25/2018

Lab Batch ID: 3042198

Sample: 7639790-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	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
Analytes											
Benzene	<0.000383	0.0994	0.0760	76	0.0998	0.0709	71	7	70-130	35	
Toluene	<0.000453	0.0994	0.0804	81	0.0998	0.0760	76	6	70-130	35	
Ethylbenzene	<0.000561	0.0994	0.0944	95	0.0998	0.0881	88	7	71-129	35	
m_p-Xylenes	<0.00101	0.199	0.186	93	0.200	0.173	87	7	70-135	35	
o-Xylene	<0.000342	0.0994	0.0957	96	0.0998	0.0890	89	7	71-133	35	

Analyst: ALJ

Date Prepared: 02/24/2018

Date Analyzed: 02/24/2018

Lab Batch ID: 3042224

Sample: 7639837-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	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
Analytes											
Benzene	<0.000384	0.0998	0.0805	81	0.100	0.0762	76	5	70-130	35	
Toluene	<0.000455	0.0998	0.0851	85	0.100	0.0770	77	10	70-130	35	
Ethylbenzene	<0.000564	0.0998	0.0899	90	0.100	0.0820	82	9	70-130	35	
m_p-Xylenes	<0.00101	0.200	0.174	87	0.201	0.160	80	8	70-130	35	
o-Xylene	<0.000344	0.0998	0.0902	90	0.100	0.0835	84	8	70-130	35	

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

Blank Spike Recovery [D] = $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] = $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: COG Boone 16 Tank Battery

Work Order #: 577385

Analyst: ALJ

Date Prepared: 02/27/2018

Project ID:

Date Analyzed: 02/27/2018

Lab Batch ID: 3042346

Sample: 7639907-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021	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
Analytes											
Benzene	<0.000383	0.0996	0.0899	90	0.0994	0.0887	89	1	70-130	35	
Toluene	<0.000454	0.0996	0.0945	95	0.0994	0.0941	95	0	70-130	35	
Ethylbenzene	<0.000563	0.0996	0.107	107	0.0994	0.107	108	0	70-130	35	
m_p-Xylenes	<0.00101	0.199	0.213	107	0.199	0.213	107	0	70-130	35	
o-Xylene	<0.000343	0.0996	0.104	104	0.0994	0.104	105	0	70-130	35	

Analyst: ARM

Date Prepared: 02/24/2018

Date Analyzed: 02/24/2018

Lab Batch ID: 3042064

Sample: 7639739-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod	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
Analytes											
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	891	89	1000	892	89	0	70-135	35	
Diesel Range Organics (DRO)	<8.13	1000	921	92	1000	921	92	0	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: COG Boone 16 Tank Battery

Work Order # : 577385

Project ID:

Lab Batch ID: 3042198

QC- Sample ID: 577385-009 S

Batch #: 1 Matrix: Soil

Date Analyzed: 02/25/2018

Date Prepared: 02/24/2018

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	<0.000384	0.0998	0.0517	52	0.100	0.0364	36	35	70-130	35	X
Toluene	<0.000455	0.0998	0.0571	57	0.100	0.0410	41	33	70-130	35	X
Ethylbenzene	<0.000564	0.0998	0.0652	65	0.100	0.0495	50	27	71-129	35	X
m_p-Xylenes	<0.00101	0.200	0.128	64	0.200	0.0952	48	29	70-135	35	X
o-Xylene	<0.000344	0.0998	0.0672	67	0.100	0.0532	53	23	71-133	35	X

Lab Batch ID: 3042224

QC- Sample ID: 577383-004 S

Batch #: 1 Matrix: Soil

Date Analyzed: 02/24/2018

Date Prepared: 02/24/2018

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	<0.000382	0.0992	0.0590	59	0.0998	0.0584	59	1	70-130	35	X
Toluene	0.000994	0.0992	0.0583	58	0.0998	0.0465	46	23	70-130	35	X
Ethylbenzene	0.000582	0.0992	0.0528	53	0.0998	0.0459	45	14	70-130	35	X
m_p-Xylenes	0.00427	0.198	0.103	50	0.200	0.0944	45	9	70-130	35	X
o-Xylene	0.00175	0.0992	0.0532	52	0.0998	0.0488	47	9	70-130	35	X

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

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

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: COG Boone 16 Tank Battery

Work Order # : 577385

Project ID:

Lab Batch ID: 3042346

QC- Sample ID: 577420-010 S

Batch #: 1 Matrix: Soil

Date Analyzed: 02/27/2018

Date Prepared: 02/27/2018

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021 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	<0.000383	0.0996	0.0839	84	0.0998	0.0602	60	33	70-130	35	X
Toluene	<0.000454	0.0996	0.0875	88	0.0998	0.0402	40	74	70-130	35	XF
Ethylbenzene	<0.000563	0.0996	0.0987	99	0.0998	0.0647	65	42	70-130	35	XF
m_p-Xylenes	<0.00101	0.199	0.194	97	0.200	0.127	64	42	70-130	35	XF
o-Xylene	<0.000343	0.0996	0.0959	96	0.0998	0.0628	63	42	70-130	35	XF

Lab Batch ID: 3042064

QC- Sample ID: 577385-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 02/24/2018

Date Prepared: 02/24/2018

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)	<7.99	999	856	86	998	949	95	10	70-135	35	
Diesel Range Organics (DRO)	12.2	999	951	94	998	1040	103	9	70-135	35	

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

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

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

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



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 1 of 1

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

XXXXX XENCO CONT

Xenoco Quote #

Xenoco Job #

577385

Client / Reporting Information

Company Name / Branch:

TRC Environmental

Company Address:

Project Information

Project Name/Number:

COG Boone 16 Tank Battery

Project Location:

Lea County, NM

Email:

jlomy@trcsolutions.com

Phone No:

Platts Pipeline, LP C/O Camille Bryant

Project Contact:

Joel Lowry

Invoice: SRS No.

Sampler'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
OI = Oil
WW = Waste Water
A = Air

No. Field ID / Point of Collection

Sample Depth

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

TPH 8015M

BTEX 8021B

1 SP-1 FL 1

2 SP-1 FL 2

3 SP-1 FL 3

4 SP-1 FL 4

5 SP-1 FL 5

6 SP-1 FL 6

7 SP-1 NSW

8 SP-1 ESW 1

9 SP-1 ESW 2

10 SP-1 ESW 3

11 SP-1 ESW 4

12 SP-1 ESW 5

13 SP-1 SSW 1

14 SP-1 SSW 2

15 SP-1 SSW 3

16 SP-1 WSW 1

17 SP-1 WSW 2

18 SP-1 WSW 3

19 SP-1 WSW 4

20 SP-1 WSW 5

Turnaround Time (Business days)

Same Day TAT

Next Day EMERGENCY

2 Day EMERGENCY

3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

22/12/2018

9:00

S

1

22/12/2018

9:05

S

1

22/12/2018

9:10

S

1

22/12/2018

9:15

S

1

22/12/2018

9:20

S

1

22/12/2018

9:25

S

1

22/12/2018

9:30

S

1

22/12/2018

9:35

S

1

22/12/2018

9:40

S

1

22/12/2018

9:45

S

1

22/12/2018

9:50

S

1

22/12/2018

9:55

S

1

22/12/2018

10:00

S

1

22/12/2018

10:05

S

1

22/12/2018

10:10

S

1

22/12/2018

10:15

S

1

22/12/2018

10:20

S

1

22/12/2018

10:25

S

1

22/12/2018

10:30

S

1



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: TRC Solutions, Inc

Date/ Time Received: 02/23/2018 02:30:00 PM

Work Order #: 577385

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)?	4.6
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by:

Katie Lowe

Date: 02/23/2018

Checklist reviewed by:

Kelsey Brooks

Date: 02/27/2018



Figure 1 - View of surface staining from the initial release, facing Southwest.



Figure 2 - View of surface staining from the initial release, facing Northeast.