		SIT	E INFORMA			
	Report	Type: Wo	rk Plan 1	RP-4738	8 & 1RP-4732	
General Site Info	ormation:					
Site:		Warren State #	1			
Company:		Marathon Oil C	company			
Section, Towns	hip and Range	Unit P	Sec. 35	T 15S	R 37E	
Lease Number:	· · ·	API No. 30-025	-34034			
County:		Lea County				
GPS:			2.9701576º N		103.165047º W	
Surface Owner:		Angell #2 Famil	y LTD Partnershi	p		
Mineral Owner:		State Of NM	, ,			
Directions:			TION OF US-82 AN 25MI, TRN W 0.5N		O S ON CR-89 4.5MI, TRN E ON MIDW TION.	'AY RD
Release Data:						
Date Released:		6/6/2017		6/8/2017		
Type Release:		Produced Wate	r	Produced V	Water	
Source of Contar	mination.	Produce Water		Produce W		
Fluid Released:		200 bbls	Tank	1200 bbls		
Fluids Recovered	4.	200 bbls		200 bbls		
Official Commu		200 0013		200 0013		
Name:	Callie Karrigan				Ike Tavarez	
Company:	Martathon Oil Comp	any			Tetra Tech	
Address:	2423 Bonita Street				4000 N. Big Spring	
					Ste 401	
City:	Carlsbad, New Mex				Midland, Texas	
		0				
Phone number:	<mark>405-202-1028</mark>				(432) 687-8110	
Fax:						
Email:	cnkarrigan@mara	thonoil.com			<u>lke.Tavarez@tetratech.com</u>	
Ranking Criteria	1					
Depth to Groundy	water:		Ranking Score		Site Data	
<50 ft			20		Sito Butu	
50-99 ft			10		57'	
>100 ft.			0			
WellHead Protect	ion:		Ranking Score		Site Data	
	000 ft., Private <200 ft		20			
Water Source >1,	000 ft., Private >200 ft		0		0	
Surface Body of V	Nater:		Ranking Score		Site Data	
<200 ft.			20		one buta	
200 ft - 1,000 ft.			10			
>1,000 ft.			0		0	
T	otal Ranking Score	:	10			
		Acceptab	ole Soil RRAL (m	g/kg)	1	
		Benzene	Total BTEX	TPH	1	
		10	50	1,000	1	
				,		



May 4, 2018

Ms. Olivia Yu Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240 NMOCD approves of the delineation completed and proposed remediation for 1RP-4732 & 1RP-4738 with these stipulations: 1) Confirmation sidewall and bottom samples are required; 2) Mark dimensions of lined areas with GPS coordinates; and 3) Photo documentation of release area and associated activities.

Re: Work Plan for the Marathon Oil Company, Warren State #1, Unit P, Section 35, Township 15 South, Range 37 East, Lea County, New Mexico. 1RP-4732 and 1RP-4738.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by Marathon Oil Company, to evaluate and assess a release that occurred at the Warren State #1, Unit P, Section 35, Township 15 South, Range 37 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.9701576°, W 103.165047°. The site location is shown on Figures 1 and 2.

Background

Two releases occurred at the site impacting the tank battery facility and migrated into the pasture, measuring approximately 185' x 40' inside the facility and 270' x 75 in the pasture'. The initial C-141 Forms are included in Appendix A. The releases are summarized below:

- On June 6, 2017, the high-level switch on the produced water tank was manually bypassed, causing the tanks to overflow, resulting in the release of two hundred (200) barrels of produced water inside the lined containment. A vacuum truck was used to remove all freestanding fluids, recovering approximately two hundred (200) barrels of produced water.
- On June 8, 2017, a thunderstorm interfered with the SCADA system causing the tanks to overflow, resulting in a release of twelve hundred (1,200) barrels of produced water. A vacuum truck was used to remove the standing fluids, recovering two hundred (200) barrels of produced water. The release occurred inside the bermed facility and migrated into the adjacent pasture. The area that migrated into pasture was removed down to a liner, which was previously placed around the well pad at the request of the landowner.



Groundwater

One well is listed in Section 35 on the New Mexico Office of the State Engineers database with a reported depth to groundwater of 45 feet below surface. Additionally, one well is listed in Section 35 on the USGS National Water Information System with a reported depth to groundwater of 57 feet below surface. During the soil investigation, one of the borehole was installed to a total depth of 55 feet below surface and no groundwater was encountered. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is around 50' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Soil Assessment and Analytical Results

Prior to performing the assessment, the tank battery and the equipment were removed from the area. On November 7, 2017, Tetra Tech personnel were onsite to evaluate and sample the impacted areas. A total of nine (9) boreholes (BH-1 through BH-9) were installed in the release area to total depths ranging between 20.0' to 55.0' below surface to vertically define extents. Boreholes (BH-1 through BH-5) were installed in the pasture and BH-6 through BH-9 were installed the tank battery area. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The borehole locations are shown on Figure 3.

Pasture Area

Referring to Table 1, none of the samples analyzed showed benzene, total BTEX, or TPH concentrations above the RRALs. However, chlorides were detected in all of the boreholes, with the exception of borehole (BH-5). Borehole (BH-5) did not show a significant chloride impact to the soils with a chloride high of 739 mg/kg at 6-7' below surface. Boreholes (BH-2, BH-3 and BH-4) showed a shallow impact to the soils with moderate chloride concentrations in the subsurface soils, which declined with depth at 9-10' (BH-2), 6-7' (BH-3) and 4-5' (BH-4). The area of borehole (BH-1) showed the deepest chloride impact to the soils and declined below the 600 mg/kg delineation threshold at 34-35' below surface. The area detected a chloride ranging from 979 mg/kg at 29-30' to 2,980 mg/kg at 4-5' below surface.



Tank Battery

Referring to Table 1, none of the samples analyzed showed benzene or total BTEX concentrations above RRALs. However, elevated TPH concentrations were detected at the at the tank battery. The areas of boreholes (BH-6, BH-7, BH-8 and BH-9) showed TPH highs of 4,810, mg/kg, 8,820 mg/kg, 5,340 mg/kg, and 7,650 mg/kg at 0-1' below surface, respectively. The TPH concentrations declined with depth and showed bottom hole concentrations ranging from <15.0 mg/kg to 90.3 mg/kg.

In addition, the areas of boreholes (BH-6, BH-7 and BH-9) showed elevated chloride concentrations to the deeper soils, with chloride highs of 3,590 mg/kg at 24-25', 3,640 mg/kg at 4-5', and 4,190 mg/kg at 0-1' below surface, respectively. The chloride concentrations in these areas declined with depth to below the 600 mg/kg threshold at 55' (BH-6), 24-25' (BH-7) and 19-20' (BH-9). Additionally, the area of borehole (BH-8) showed chloride impact to the shallow soils, which declined with depth to below the 600 mg/kg threshold at 9-10' below surface.

Work Plan

Based on the laboratory results, Marathon Oil Company proposes to remove the impacted material as highlighted (green) on Table 1 and shown on Figure 4.

Pasture

To remove the elevated chlorides and soil above the RRALs, the impacted areas in the pasture will be excavated to depths ranging from 4.0' to 6.0' below surface. Once excavated to the appropriate depths, confirmation samples will be collected from the area of boreholes (BH-2, BH-3 and BH-4) for chlorides. If a deeper impact is encountered, the area will be capped with a 20-mil liner for proper closure of the site. The assessment data from borehole (BH-1) showed a deeper chloride impact to the subsurface soils and this area will be excavated to 4-5' and capped with a 20-mil liner.

Tank Battery

The area of borehole (BH-6) showed the deepest TPH and chloride impact to the area. This area will be excavated to a maximum depth of 20.0' below surface to attempt to remove of the TPH impacted soil above the RRAL. Once excavated, confirmation samples will be collected from the bottom of the excavation and analyzed for TPH. The area will be backfilled with clean soil to a depth of approximately 4.0' below surface and capped with a 20-mil liner to prevent vertical migration of the deeper chloride impact. However, if a dense formation is encountered that hinders the excavation, the NMOCD will be notified and the area will be capped at 4.0' below surface. The remaining areas boreholes (BH-7, BH-8 and BH-9) will be excavated to a depth of 4-5' below surface. Additionally, the areas of boreholes (BH-7 and BH-9) will be capped with 20-mil liner to prevent vertical migration of the deeper chloride impact.



Once excavated to the appropriate depth, the excavation will be backfilled with clean material to surface grade. All of the excavated material will be transported offsite for proper disposal.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, Marathon Oil Company will excavate the impacted soils to the maximum extent practicable.

Conclusion

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

Respectfully submitted, TETRA TECH

Clair Gonzales, Project Manager

Ike Tavarez, Senior Project Manager, P.G.

Figures



Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo





Mapped By: Isabel Marmolejo

Tables

Table 1 Marathon Warren State #1 Lea County, New Mexico

		Sample	Soil	Status		TPH (mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Depth (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
asture Area							1		1					
BH-1	11/7/2017	0-1	Х		<15.0	384	88.8	473	<0.00201	<0.00201	<0.00201	0.00463	0.00463	2,750
	"	2-3	Х		<15.0	89.9	<15.0	89.8	-	-	-	-	-	2,740
	"	4-5	Х		-	-	-	-	-	-	-	-	-	2,980
	"	6-7	Х		-	-	-	-	-	-	-	-	-	2,570
	"	9-10	Х		-	-	-	-	-	-	-	-	-	1,980
	"	14-15	Х		-	-	-	-	-	-	-	-	-	1,070
	"	19-20	Х		-	-	-	-	-	-	-	-	-	2,500
	"	24-25	Х		-	-	-	-	-	-	-	-	-	2,920
	"	29-30	Х		-	-	-	-	-	-	-	-	-	979
	"	34-35	Х		-	-	-	-	-	-	-	-	-	144
	"	39-40	Х		-	-	-	-	-	-	-	-	-	115
	"	44-45	Х		-	-	-	-	-	-	-	-	-	58.1
	"	50	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	41.0
BH-2	11/7/2017	0-1	Х		<15.0	85.7	17.3	103	< 0.00202	< 0.00202	<0.00202	< 0.00202	< 0.00202	63.1
	"	2-3	Х		<15.0	58.0	<15.0	58.0	-	-	-	_	-	89.7
	"	4-5	Х		-	-	-	-	-	-	-	-	-	1,170
	"	6-7	Х		-	-	-	-	-	-	-	-	-	1,400
	"	9-10	Х		-	-	-	-	-	-	-	-	-	544
	"	14-15	Х		_	-	-	-	_	-	-	_	-	495
	"	19-20	Х		-	-	-	-	-	-	-	-	-	709
	"	24-25	Х		-	-	-	-	-	-	-	-	-	266
	"	30	Х		-	-	-	-	-	-	-	-	-	199
	"	40	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	42.6
BH-3	11/7/2017	0-1	Х		<15.0	72.9	<15.0	72.9	<0.00199	< 0.00199	<0.00199	<0.00199	<0.00199	554
	"	2-3	X		-	-	-	-	-	-	-	-	-	855
	"	4-5	X		_	-	_	-	_	_	_	_	-	1,750
	"	6-7	X		_	_	-	_	-	_	_	_	-	168
	"	9-10	X		-	-	-	-	-	-	_	-	-	211
	"	14-15	X		-	-	-	-	-	-	_	_	-	653
	"	19-20	X		_	_	_	-		_	_		-	239
	"	24-25	X		_	_	_	-	_	_	_		_	135
	"	29-30	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	280

Table 1 Marathon Warren State #1 Lea County, New Mexico

		Sample	Soil	Status		TPH (mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Depth (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH-4	11/7/2017	0-1	Х		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	1,190
	"	2-3	Х		-	-	-	-	-	-	-	-	-	1,320
	"	4-5	Х		-	-	-	-	-	-	-	-	-	330
	"	6-7	Х		-	-	-	-	-	-	-	-	-	198
	"	9-10	Х		-	-	-	-	-	-	-	-	-	69.7
	"	14-15	Х		-	-	-	-	-	-	-	-	-	59.8
	"	19-20	Х		<14.9	<14.9	<14.9	<14.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	66.6
BH-5	11/7/2017	0-1	Х		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	32.8
	"	2-3	Х		-	-	-	-	-	-	-	-	-	34.9
	"	4-5	Х		-	-	-	-	-	-	-	-	-	587
	"	6-7	Х		-	-	-	-	-	-	-	-	-	739
	"	9-10	Х		-	-	-	-	-	-	-	-	-	228
	"	14-15	Х		-	-	-	-	-	-	-	-	-	124
	"	19-20	Х		-	-	-	-	-	-	-	-	-	107
	"	24-25	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	30.6
Tank Battery														
BH-6	11/7/2017	0-1	Х		258	3,960	587	4,810	0.00740	0.00699	0.0101	0.0925	0.117	1,790
BII-0	"	2-3	X		86.0	790	103	979	-	-		0.0925	-	1,490
		2-3 4-5	X		223	1,090	99.3	1,410	-	-	-	-	-	1,490
	"	4-3 6-7	X		326	1,180	72.7	1,580						1,100
	"	9-10	X		528	3,460	377	4,370	-	_	-	-		975
	"	14-15	X		798	3,450	362	4,610	-	_	-	-	-	1,110
	"	19-20	X		235	1,440	147	1,820	-	_		-	_	2,590
	"	24-25	X		<14.9	90.3	<14.9	90.3	-	-	-	-	-	3,590
	"	29-30	X		-	-	-	-		_		-		2,200
	"	40	X			-				_	-	-	_	1,120
	"	50	X			-	-	-	-	_		-	-	860
	"	55	X		<15.0	<15.0	<15.0	<15.0	<0.00332	<0.00332	<0.00332	<0.00332	<0.00332	553

Table 1 Marathon Warren State #1 Lea County, New Mexico

Come la ID	Comple Data	Sample	Soil	Status		TPH (mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chlori
Sample ID	Sample Date	Depth (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/k
BH-7	11/7/2017	0-1	Х		418	7,280	1,120	8,820	<0.00201	0.00654	0.0100	0.109	0.125	3,03
	"	2-3	Х		54.9	548	76.6	680	-	-	-	-	-	2,98
	"	4-5	Х		<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	3,64
	"	6-7	Х		-	-	-	-	-	-	-	-	-	1,85
	"	9-10	Х		-	-	-	-	-	-	-	-	-	1,08
	"	14-15	Х		-	-	-	-	-	-	-	-	-	1,25
	"	19-20	Х		-	-	-	-	-	-	-	-	-	1,14
	"	24-25	Х		-	-	-	-	-	-	-	-	-	33
	"	29-30	Х		-	-	-	-	-	-	-	-	-	147
	"	40	Х		<14.9	<14.9	<14.9	<14.9	<0.00330	<0.00330	<0.00330	<0.00330	<0.00330	17.
BH-8	11/7/2017	0-1	Х		133	4,480	724	5,340	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	2,6
	"	2-3	Х		38.5	595	102	736	-	-	-	-	-	2,40
	"	4-5	Х		<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	2,12
	"	6-7	Х		-	-	-	-	-	-	-	-	-	82
	"	9-10	Х		-	-	-	-	-	-	-	-	-	51
	"	14-15	Х		-	-	-	-	-	-	-	-	-	22
	"	19-20	Х		-	-	-	-	-	-	-	-	-	14
	"	24-25	Х		-	-	-	-	-	-	-	-	-	87.
	"	29-30	Х		<15.0	<15.0	<15.0	<15.0	<0.00334	<0.00334	<0.00334	<0.00334	<0.00334	38.
BH-9	11/7/2017	0-1	Х		500	6,390	759	7,650	0.00336	0.0454	0.0307	0.210	0.289	4,1
	"	2-3	Х		151	586	62.9	800	-	-	-	-	-	2,5
	"	4-5	Х		86.8	386	37.4	510	-	-	-	-	-	99
	"	6-7	Х		<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	1,1 ⁻
	"	9-10	Х		-	-	-	-	-	-	-	-	-	1,2
	"	14-15	Х		-	-	-	-	-	-	_	-	-	84
	"	19-20	Х		-	-	-	-	-	-	-	-	-	39
	"	24-25	Х		-	-	-	-	-	-	-	-	-	28
	"	29-30	Х		-	-	-	-	-	-	-	-	-	25
	"	40	Х		<15.0	<15.0	<15.0	<15.0	<0.00322	<0.00322	<0.00322	<0.00322	<0.00322	72.

Proposed Excavation Depths

Proposed Liner Depths

Photos

Marathon Oil Company Warren State #1 Lea County, New Mexico



View North East-Area of BH-1 and BH-2



View West-Area of BH-3

Marathon Oil Company Warren State #1 Lea County, New Mexico



View north East-Area of BH-3 and BH-4



View North East-Area of BH-4 and BH-5

Marathon Oil Company Warren State #1 Lea County, New Mexico



View Southwest–Area of BH-6 and BH-7



View North – Area of BH-8 and BH-9

Appendix A

Ρ

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

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

Release Notification and Corrective Action									
		OPERATOR	Initial Report	Final Report					
Name of Company Marathon Oil Company		Contact Wendy Gram							
Address 5555 San Felipe Street, Houston, Texas	s 77056	Telephone No. 701-690-6519 (cell) 713-296-2862 (office)							
Facility Name Warren State #1		Facility Type Producing well							
Surface Owner Angell #2 Family LTD Partnership	Mineral Owner	The State of New Mexico	API No.30-025-34	034					
	LOCATIO	ON OF RELEASE							

Section Feet from the North/South Lin East/West Line Unit Letter Township Feet from the County Range 35 15S 37E 1,295 South 880 East Lea

Latitude 32.9701576 Longitude -103.165047 NAD83

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 1200 barrels	Volume Recovered 200 barrels
Source of Release Produced water tank	Date and Hour of Occurrence	Date and Hour of Discovery
	6/8/2017	6/9/2017
Was Immediate Notice Given?	If YES, To Whom?	
🛛 Yes 🗌 No 🗌 Not Required	Olivia Yu	
By Whom? Wendy Gram	Date and Hour 6/9/2017 Approxima	tely 5 p.m
Was a Watercourse Reached?	If YES, Volume Impacting the Wate	ercourse.
🗌 Yes 🖾 No		
If a Watercourse was Impacted, Describe Fully.*	RECEIVED	
Not applicable.	ALCLIVLD	
	By Olivia Yu at 4:48	pm, Jun 26, 2017

Describe Cause of Problem and Remedial Action Taken.*

A thunderstorm during the evening of June 8, 2017 interfered with the SCADA system. The system showed that the pump which pumped the produced water from the Warren State #1 well to the nearby South Denton 6 State #2 injection well was running when in fact it was not. Both 500-barrel produced water tanks on location were overfilled. The release was to lined secondary containment on location which then overflowed off the pad area into a pasture.

Describe Area Affected and Cleanup Action Taken.*

Produced water in the containment area was removed with a vacuum truck and trucked for offsite disposal. The recovered volume of release was based on the amount recovered by the vacuum truck. Outside the containment area, soil was removed down to a liner that had been placed around the well pad at the request of the land owner after a previous spill. The Warren State #1 well was shut in.

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.

	OIL CONSERVATION	DIVISION
Wendy Gram	Y	
Signature:	Approved by Environmental Specialist:	
Printed Name: Wendy Gram		•
Title: Sr. HES Professional	Approval Date: 6/26/2017 Expiration D	Date:
E-mail Address: wwgram@marathonoil.com	Conditions of Approval:	
Date: June 19, 2017	see attached directive	Attached N
Phone: 701-690-6519 (cell) 713-296-2862 (office)	1RP-4738 nOY1717830382	
		pOY1717832324

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised April 3, 2017

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Rele	ease Notifica	tion and Corrective Ac	tion				
		OPERATOR	\boxtimes	Initial Report		Final Report	
Name of Company Marathon Oil Company	1	Contact Wendy Gram		a set a set a			
Address 5555 San Felipe Street, Houston, T	exas 77056	Telephone No. 701-690-6519 (cell) 713-296-2862 (office)					
Facility Name Warren State #1		Facility Type Producing well					
Surface Owner Angell #2 Family LTD Partnership	Mineral Ov	vner The State of New Mexico	A	PI No.30-025-34	4034		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the 1,295	North/South Lin	Feet from the	East/West Line	County
P	35	15S	37E		South	880	East	Lea

Latitude 32.9701576 Longitude -103.165047 NAD83

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 200 barrels	Volume Recovered 200 barrels				
Source of Release Produced water tank	Date and Hour of Occurrence 6/6/2017	Date and Hour of Discovery 6/6/2017 11 a.m.				
Was Immediate Notice Given?	If YES, To Whom? Maxey Brown					
By Whom? Wendy Gram	Date and Hour 6/6/2017 1:44 p.m.					
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	atercourse.				
If a Watercourse was Impacted, Describe Fully,* Not applicable.	RECEIVED By Olivia Yu at 3:54	pm, Jun 19, 2017				
The high-level switch on the produced water tank at the Warren State #1 v well to be pumped from the tanks to the nearby South Denton 6 State #2 in The release was to lined secondary containment on location. Describe Area Affected and Cleanup Action Taken.* Produced water in the containment area was removed with a vacuum truck amount recovered by the vacuum truck.	njection well. Both 500-barrel produ	uced water tanks on location were overfilled.				
I hereby certify that the information given above is true and complete to the regulations all operators are required to report and/or file certain release ne public health or the environment. The acceptance of a C-141 report by the should their operations have failed to adequately investigate and remediate or the environment. In addition, NMOCD acceptance of a C-141 report d federal, state, or local laws and/or regulations.	otifications and perform corrective a e NMOCD marked as "Final Report" e contamination that pose a threat to	ctions for releases which may endanger "does not relieve the operator of liability ground water, surface water, human health				
Signature: Wandy W Fran	OIL CONSER	IIIST:				
	Approval Date: 6/19/2017	Expiration Date:				

 E-mail Address: wwgram@marathonoil.com
 Conditions of Approval:
 Attached

 Date: June 19, 2017
 Please inspect liner in question. Provide
 Attached

 Phone: 701-690-6519 (cell) 713-296-2862 (office)
 MOCD with a concise report of the
 Inspection with affirmation the liner has and will continue to contain liquids.
 IRP-4732

nOY1717057887

Appendix B

Water Well Data Average Depth to Groundwater (ft) Marathon-Warren State #1 Lea County, New Mexico

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

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

	16 Sc	outh	37	East	
6	5	4	3	2	1
7 66	8	9	10	11 <mark>80</mark>	12
18	17	16	15	14	13
19 <mark>55</mark> 82	20 44	21 50	22	23	24
30 52	29 44	28 <mark>34</mark>	27 73	26	25 70
31 Site 53	32 <mark>38</mark>	33 60	34 60	35	36

	14	South	37	37 East			
6	5	4	3	2	1		
7	8	9	10	11	12		
18	17	16	15	14	13		
19	20	21 90	22	23	24		
30	29	28	27 74	26	25 <mark>85</mark>		
75	75 7	7 81	62	44	55 65		
31 <mark>80</mark>	32	74 33	34 <mark>58</mark>	35	68 36 55		
	73		83 79		63 71		

	15 South			37 East		
6	5	4 74	3	2 42	1 49	
			58	40		
7	8	9	10	11	12	
96			49	57		
18	17	16	15	14	13	
	79					
19	20	21	22	23	24	
30	29	28	27	26	25	
			50			
31	32	33	34	35	36	
				45'		

	16 Sc	outh	38		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

-	14 Se	outh	38		
6	5	4	3	2	1
7	8	9	10	11	12
18 <mark>91</mark>	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	15 Sc	outh	38	East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)

- 34 NMOCD Groundwater Data
- 123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD l replaced, O=orphan C=the file closed)	ied,		arters					√ 4=SE) (NAD8	83 UTM in mete	rs)	(In feet)	
POD Number	Code	POD Sub- basin	County	Q Q 6416	-		Tws	Rng	х	Y	DepthWellDo	epthWater	Water Column
<u>L 03240</u>		L	LE	2	4	35	15S	37E	671534	3649681*	120	45	75
										Average Depth	to Water:	45	feet
										Minim	um Depth:	45	feet
										Maxim	ım Depth:	45	feet
Record Count: 1													
PLSS Search:													
Section(s): 35	1	Fownshi	p: 15S	Ra	nge	: 37E	8						
*UTM location was derive													

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/30/18 10:25 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C

Analytical Report 568179

for Tetra Tech- Midland

Project Manager: Ike Tavarez

Marathon

Warren State #1

03-DEC-17

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)



03-DEC-17



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

Reference: XENCO Report No(s): **568179 Marathon** Project Address: Lea Co, NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 568179. 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. 568179 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,

he p

Mike Kimmel Client Services 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



Sample Cross Reference 568179



Tetra Tech- Midland, Midland, TX

Marathon

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH #1 (0-1') 2'BEB	S	11-07-17 00:00		568179-001
BH #1 (2-3') 2'BEB	S	11-07-17 00:00		568179-002
BH #1 (4-5') 2'BEB	S	11-07-17 00:00		568179-003
BH #1 (6-7') 2'BEB	S	11-07-17 00:00		568179-004
BH #1 (9-10') 2'BEB	S	11-07-17 00:00		568179-005
BH #1 (14-15') 2'BEB	S	11-07-17 00:00		568179-006
BH #1 (19-20') 2'BEB	S	11-07-17 00:00		568179-007
BH #1 (24-25') 2'BEB	S	11-07-17 00:00		568179-008
BH #1 (29-30') 2'BEB	S	11-07-17 00:00		568179-009
BH #1 (34-35') 2'BEB	S	11-07-17 00:00		568179-010
BH #1 (39-40') 2'BEB	S	11-07-17 00:00		568179-011
BH #1 (44-45') 2'BEB	S	11-07-17 00:00		568179-012
BH #1 (50') 2'BEB	S	11-07-17 00:00		568179-013
BH #2 (0-1')	S	11-07-17 00:00		568179-014
BH #2 (2-3')	S	11-07-17 00:00		568179-015
BH #2 (4-5')	S	11-07-17 00:00		568179-016
BH#2 (6-7')	S	11-07-17 00:00		568179-017
BH #2 (9-10')	S	11-07-17 00:00		568179-018
BH #2 (14-15')	S	11-07-17 00:00		568179-019
BH #2 (19-20')	S	11-07-17 00:00		568179-020
BH #2 (24-25')	S	11-07-17 00:00		568179-021
BH #2 (30')	S	11-07-17 00:00		568179-022
BH #2 (40')	S	11-07-17 00:00		568179-023
BH #3 (0-1') 1.5'BEB	S	11-07-17 00:00		568179-025
BH #3 (2-3') 1.5'BEB	S	11-07-17 00:00		568179-026
BH #3 (4-5') 1.5'BEB	S	11-07-17 00:00		568179-027
BH #3 (6-7') 1.5'BEB	S	11-07-17 00:00		568179-028
BH #3 (9-10') 1.5'BEB	S	11-07-17 00:00		568179-029
BH #3 (14-15') 1.5'BEB	S	11-07-17 00:00		568179-030
BH #3 (19-20') 1.5'BEB	S	11-07-17 00:00		568179-031
BH #3 (24-25') 1.5'BEB	S	11-07-17 00:00		568179-032
BH #3 (29-30') 1.5'BEB	S	11-07-17 00:00		568179-033
BH #4 (0-1') 1.5'BEB	S	11-09-17 00:00		568179-036
BH #4 (2-3') 1.5'BEB	S	11-09-17 00:00		568179-037
BH #4 (4-5') 1.5'BEB	S	11-09-17 00:00		568179-038
BH #4 (6-7') 1.5'BEB	S	11-09-17 00:00		568179-039
BH #4 (9-10') 1.5'BEB	S	11-09-17 00:00		568179-040
BH #4 (14-15') 1.5'BEB	S	11-09-17 00:00		568179-041
BH #4 (19-20') 1.5'BEB	S	11-09-17 00:00		568179-042
BH #5 (0-1')	S	11-09-17 00:00		568179-043
BH #5 (2-3')	S	11-09-17 00:00		568179-044
BH #5 (4-5')	S	11-09-17 00:00		568179-045
BH #5 (6-7')	S	11-09-17 00:00		568179-046





Tetra Tech- Midland, Midland, TX

Marathon

BH #5 (9-10')	S	11-09-17 00:00	568179-047
BH #5 (14-15')	S	11-09-17 00:00	568179-048
BH #5 (19-20')	S	11-09-17 00:00	568179-049
BH #5 (24-25')	S	11-09-17 00:00	568179-050
BH #6 (0-1')	S	11-09-17 00:00	568179-051
BH #6 (2-3')	S	11-09-17 00:00	568179-052
BH #6 (4-5')	S	11-09-17 00:00	568179-053
BH #6 (6-7')	S	11-09-17 00:00	568179-054
BH #6 (9-10')	S	11-09-17 00:00	568179-055
BH #6 (14-15')	S	11-09-17 00:00	568179-056
BH #6 (19-20')	S	11-09-17 00:00	568179-057
BH #6 (24-25')	S	11-09-17 00:00	568179-058
BH #6 (29-30')	S	11-09-17 00:00	568179-059
BH #6 (40')	S	11-09-17 00:00	568179-060
BH #6 (50')	S	11-09-17 00:00	568179-061
BH #6 (55')	S	11-09-17 00:00	568179-062
BH #7 (0-1')	S	11-09-17 00:00	568179-063
BH #7 (2-3')	S	11-09-17 00:00	568179-064
BH #7 (4-5')	S	11-09-17 00:00	568179-065
BH #7 (6-7')	S	11-09-17 00:00	568179-066
BH #7 (9-10')	S	11-09-17 00:00	568179-067
BH #7 (14-15')	S	11-09-17 00:00	568179-068
BH #7 (19-20')	S	11-09-17 00:00	568179-069
BH #7 (24-25')	S	11-09-17 00:00	568179-070
BH #7 (29-30')	S	11-09-17 00:00	568179-071
BH #7 (40')	S	11-09-17 00:00	568179-072
BH #8 (0-1')	S	11-09-17 00:00	568179-073
BH #8 (2-3')	S	11-09-17 00:00	568179-074
BH #8 (4-5')	S	11-09-17 00:00	568179-075
BH #8 (6-7')	S	11-09-17 00:00	568179-076
BH #8 (9-10')	S	11-09-17 00:00	568179-077
BH #8 (14-15')	S	11-09-17 00:00	568179-078
BH #8 (19-20')	S	11-09-17 00:00	568179-079
BH #8 (24-25')	S	11-09-17 00:00	568179-080
BH #8 (29-30')	S	11-09-17 00:00	568179-081
BH #9 (0-1')	S	11-09-17 00:00	568179-082
BH #9 (2-3')	S	11-09-17 00:00	568179-083
BH #9 (4-5')	S	11-09-17 00:00	568179-084
BH #9 (6-7')	S	11-09-17 00:00	568179-085
BH #9 (9-10')	S	11-09-17 00:00	568179-086
BH #9 (14-15')	S	11-09-17 00:00	568179-087
BH #9 (19-20')	S	11-09-17 00:00	568179-088
BH #9 (24-25')	S	11-09-17 00:00	568179-089
BH #9 (29-30')	S	11-09-17 00:00	568179-090



BH #9 (40') BH #2 (50') BH #3 (40') 1.5'BEB BH #3 (50') 1.5'BEB BH #9 (50')

Sample Cross Reference 568179



Tetra Tech- Midland, Midland, TX

Marathon

S	11-09-17 00:00	568179-091
S	11-07-17 00:00	Not Analyzed
S	11-07-17 00:00	Not Analyzed
S	11-07-17 00:00	Not Analyzed
S	11-09-17 00:00	Not Analyzed



CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Marathon

Project ID: Warren State #1 Work Order Number(s): 568179 Report Date: 03-DEC-17 Date Received: 11/13/2017

Sample receipt non conformances and comments:

11/21/2017: Revised report to add 2'-3' depths of BH-1,BH-2,BH-6,BH-7,BH-8, and BH-9 11/22/17: Depths 4-5/6-7/9-10 taken off of hold for sampels BH-6,BH-7,BH-8,BH-9.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3033393 Inorganic Anions by EPA 300/300.1

Lab Sample ID 568179-009 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride 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: 568179-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

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

Batch: LBA-3033394 Inorganic Anions by EPA 300/300.1

Lab Sample ID 568179-026 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride 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: 568179-021, -022, -023, -025, -026, -027, -028, -029, -030, -031, -032, -033.

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

Batch: LBA-3033435 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3033476 Inorganic Anions by EPA 300/300.1

Lab Sample ID 568179-060 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride 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: 568179-060, -062, -063, -064, -065, -066, -067, -068, -069, -070, -071, -072, -073, -074, -075, -076, -077, -078, -079.

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

Batch: LBA-3033483 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Marathon

Project ID:Warren State #1Work Order Number(s):568179

 Report Date:
 03-DEC-17

 Date Received:
 11/13/2017

Batch: LBA-3033607 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3034077 TPH By SW8015 Mod

Lab Sample ID 568179-057 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Diesel Range Organics (DRO) 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: 568179-056, -057, -058, -085.

The Laboratory Control Sample for Diesel Range Organics (DRO) is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0	001	568179-0	02	568179-0	03	568179-0	004	568179-0	005	568179-0	06
Amaluaia Doguostad	Field Id:	BH #1 (0-1')	2'BEB	BH #1 (2-3')	2'BEB	BH #1 (4-5') 2	2'BEB	BH #1 (6-7')	2'BEB	BH #1 (9-10')	2'BEB	BH #1 (14-15')	2'BEB
Analysis Requested	Depth:												
	Matrix:	SOIL	,	SOIL									
	Sampled:	Nov-07-17	00:00	Nov-07-17 (00:00	Nov-07-17 (00:00	Nov-07-17	00:00	Nov-07-17	00:00	Nov-07-17 (00:00
BTEX by EPA 8021B	Extracted:	Nov-15-17	Nov-15-17 11:30										
	Analyzed:	Nov-16-17	01:11										
	Units/RL:	mg/kg	RL										
Benzene		< 0.00201	0.00201										
Toluene		< 0.00201	0.00201										
Ethylbenzene		< 0.00201	0.00201										
m,p-Xylenes		0.00463	0.00402										
o-Xylene		< 0.00201	0.00201										
Total Xylenes		0.00463	0.00201										
Total BTEX		0.00463	0.00201										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	11:00	Nov-14-17 11:00		Nov-14-17 11:00		Nov-14-17	11:00	Nov-14-17	11:00	Nov-14-17 1	1:00
	Analyzed:	Nov-14-17	15:11	Nov-14-17 15:18		Nov-14-17 15:24		Nov-14-17 15:30		Nov-14-17 15:49		Nov-14-17 15:56	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2750	24.9	2740	24.9	2980	24.7	2570	24.7	1980	25.0	1070	25.0
TPH By SW8015 Mod	Extracted:	Nov-16-17	09:00	Nov-20-17	15:00								
	Analyzed:	Nov-16-17	12:32	Nov-21-17 (09:43								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0								
Diesel Range Organics (DRO)		384	15.0	89.8	15.0								
Oil Range Hydrocarbons (ORO)		88.8	15.0	<15.0	15.0								
Total TPH		473	15.0	89.8	15.0								

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

Mike Kimmel Client Services Manager



Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0	07	568179-008		568179-009		568179-010		568179-011		568179-012	
Analysis Requested	Field Id:	BH #1 (19-20')	BH #1 (19-20') 2'BEB		BH #1 (24-25') 2'BEB		BH #1 (29-30') 2'BEB		BH #1 (34-35') 2'BEB		BH #1 (39-40') 2'BEB) 2'BEB
	Depth:												
	Matrix:	SOIL		SOIL									
	Sampled:	Nov-07-17 00:00		Nov-07-17 00:00									
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	Nov-14-17 11:00		11:00	Nov-14-17	1:00	Nov-14-17 11:00		Nov-14-17 11:00		Nov-14-17 11:00	
	Analyzed:	Nov-14-17 16:02		Nov-14-17 16:09		Nov-14-17 14:52		Nov-14-17 16:15		Nov-14-17 16:21		Nov-14-17 16:40	
	Units/RL:	mg/kg	RL	mg/kg	RL								
Chloride		2500	25.0	2920	24.8	979	4.93	144	4.95	115	4.92	58.1	4.93

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Mike Kimmel Client Services Manager



Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0)13	568179-0	14	568179-0	15	568179-0	16	568179-0	17	568179-0	18
	Field Id:	BH #1 (50')	2'BEB	BH #2 (0-1')		BH #2 (2-3')		BH #2 (4-5')		BH#2 (6-7')		BH #2 (9-	10')
Analysis Requested	Depth:				, I	× ×	- /	· ·	- /			(·	- /
	Matrix:	SOIL	SOIL		SOIL		SOIL		SOIL		SOIL		
	Sampled:	Nov-07-17		Nov-07-17 (00:00	Nov-07-17 00:00			Nov-07-17 00:00		Nov-07-17 00:00		00:00
BTEX by EPA 8021B	Extracted:	Nov-14-17	Nov-14-17 16:50		Nov-15-17 11:30								
	Analyzed:	Nov-15-17	Nov-15-17 10:15		Nov-16-17 00:52								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		<0.00200	0.00200	<0.00202	0.00202								
Toluene		< 0.00200	0.00200	< 0.00202	0.00202								
Ethylbenzene		< 0.00200	0.00200	< 0.00202	0.00202								
m,p-Xylenes		< 0.00401	0.00401	< 0.00404	0.00404								
o-Xylene		< 0.00200	0.00200	< 0.00202	0.00202								
Total Xylenes		< 0.00200	0.00200	< 0.00202	0.00202								
Total BTEX		< 0.00200	0.00200	< 0.00202	0.00202								
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	11:00	Nov-14-17 11:00		Nov-14-17 11:00		Nov-14-17 11:00		Nov-14-17	11:00	Nov-14-17 1	1:00
	Analyzed:	Nov-14-17	16:47	Nov-14-17 17:06		Nov-14-17 17:12		Nov-14-17 17:19		Nov-14-17 17:25		Nov-14-17 17:31	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		41.0	4.91	63.1	4.99	89.7	4.93	1170	4.98	1400	25.0	544	4.99
TPH By SW8015 Mod	Extracted:	Nov-16-17	09:00	Nov-16-17 ()9:00	Nov-20-17 1	5:00						
	Analyzed:	Nov-16-17	12:52	Nov-16-17 13:52		Nov-21-17 14:53							
	Units/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						
Diesel Range Organics (DRO)		<15.0	15.0	85.7	15.0	58.0	15.0						
Oil Range Hydrocarbons (ORO)		<15.0	15.0	17.3	15.0	<15.0	15.0						
Total TPH		<15.0	15.0	103	15.0	58.0	15.0						

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Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

							<u>a</u>							
	Lab Id:	568179-0)19	568179-0	568179-020		568179-021		568179-022		568179-023		568179-025	
Analysis Requested	Field Id:	BH #2 (14	BH #2 (14-15')		BH #2 (19-20')		BH #2 (24-25')		BH #2 (30')		BH #2 (40')		1.5'BEB	
Inulysis Requested	Depth:													
	Matrix:	SOIL	SOIL			SOIL		SOIL		SOIL		SOIL		
	Sampled:	Nov-07-17	00:00	Nov-07-17	00:00	Nov-07-17 (00:00	Nov-07-17	00:00	Nov-07-17	00:00	Nov-07-17	00:00	
BTEX by EPA 8021B	Extracted:									Nov-15-17 11:00		Nov-15-17 11:00		
	Analyzed:									Nov-16-17	21:10	Nov-16-17 15:18		
	Units/RL:									mg/kg	RL	mg/kg	RL	
Benzene										< 0.00200	0.00200	< 0.00199	0.00199	
Toluene										< 0.00200	0.00200	< 0.00199	0.00199	
Ethylbenzene										< 0.00200	0.00200	< 0.00199	0.00199	
m,p-Xylenes										< 0.00401	0.00401	< 0.00398	0.00398	
o-Xylene										< 0.00200	0.00200	< 0.00199	0.00199	
Total Xylenes										< 0.00200	0.00200	< 0.00199	0.00199	
Total BTEX										< 0.00200	0.00200	< 0.00199	0.00199	
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	11:00	Nov-14-17 11:00		Nov-14-17 14:00		Nov-14-17 14:00		Nov-14-17 14:00		Nov-14-17 14:00		
	Analyzed:	Nov-14-17	17:38	Nov-14-17 17:44		Nov-15-17 00:32		Nov-15-17 00:39		Nov-15-17 00:45		Nov-15-17 00:58		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Chloride		495	4.96	709	4.99	266	4.93	199	4.96	42.6	4.93	554	4.91	
TPH By SW8015 Mod	Extracted:									Nov-16-17	09:00	Nov-16-17	09:00	
	Analyzed:									Nov-16-17	14:12	Nov-16-17	14:31	
	Units/RL:									mg/kg	RL	mg/kg	RL	
Gasoline Range Hydrocarbons (GRO)										<15.0	15.0	<15.0	15.0	
Diesel Range Organics (DRO)										<15.0	15.0	72.9	15.0	
Oil Range Hydrocarbons (ORO)										<15.0	15.0	<15.0	15.0	
Total TPH										<15.0	15.0	72.9	15.0	

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Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0	26	568179-0	27	568179-0	28	568179-0	29	568179-	030	568179-0	31
Analysis Requested	Field Id:	BH #3 (2-3') 1	.5'BEB	BH #3 (4-5') 1	.5'BEB	BH #3 (6-7') 1	.5'BEB	BH #3 (9-10')	I.5'BEB	BH #3 (14-15)) 1.5'BEB	BH #3 (19-20')	1.5'BEB
Analysis Kequesteu	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-07-17 (00:00	Nov-07-17	00:00	Nov-07-17 (00:00	Nov-07-17	00:00	Nov-07-17	00:00	Nov-07-17 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	14:00	Nov-14-17	4:00	Nov-14-17	14:00	Nov-14-17	14:00	Nov-14-17	14:00	Nov-14-17 1	4:00
	Analyzed:	Nov-15-17 (01:04	Nov-15-17 (01:23	Nov-15-17 (01:30	Nov-15-17 (01:49	Nov-15-17	01:55	Nov-15-17 (02:02
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		855	5.00	1750	25.0	168	4.99	211	4.98	653	4.93	239	4.98

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Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0)32	568179-0	33	568179-0)36	568179-0	37	568179-0	38	568179-0	39
	Field Id:	BH #3 (24-25')		BH #3 (29-30')		BH #4 (0-1') 1		BH #4 (2-3') 1		BH #4 (4-5') 1		BH #4 (6-7') 1	
Analysis Requested	Depth:												
	-												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-07-17	00:00	Nov-07-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17 (00:00
BTEX by EPA 8021B	Extracted:			Nov-15-17	1:00	Nov-15-17	11:00						
	Analyzed:			Nov-16-17	15:37	Nov-16-17	15:56						
	Units/RL:			mg/kg	RL	mg/kg	RL						
Benzene				< 0.00200	0.00200	< 0.00202	0.00202						
Toluene				< 0.00200	0.00200	< 0.00202	0.00202						
Ethylbenzene				< 0.00200	0.00200	< 0.00202	0.00202						
m,p-Xylenes				< 0.00399	0.00399	< 0.00404	0.00404						
o-Xylene					0.00200	< 0.00202	0.00202						
Total Xylenes					0.00200	< 0.00202	0.00202						
Total BTEX				< 0.00200	0.00200	< 0.00202	0.00202						
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	14:00	Nov-14-17	4:00	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30
	Analyzed:	Nov-15-17	02:08	Nov-15-17 (02:15	Nov-14-17	17:22	Nov-14-17	17:49	Nov-14-17	17:58	Nov-14-17	18:06
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		135	4.92	280	4.99	1190	4.99	1320	4.93	330	4.93	198	4.93
TPH By SW8015 Mod	Extracted:			Nov-16-17 ()9:00	Nov-16-17	09:00						
	Analyzed:			Nov-16-17	4:51	Nov-16-17	15:11						
	Units/RL:			mg/kg	RL	mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)				<15.0	15.0	<15.0	15.0						
Diesel Range Organics (DRO)				<15.0	15.0	<15.0	15.0						
Oil Range Hydrocarbons (ORO)				<15.0	15.0	<15.0	15.0						
Total TPH				<15.0	15.0	<15.0	15.0						

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	Lab Id:	568179-0	040	568179-0	41	568179-0	042	568179-	043	568179-0	44	568179-0	45
	Field Id:	BH #4 (9-10')	1.5'BEB	BH #4 (14-15')	1.5'BEB	BH #4 (19-20')	1.5'BEB	BH #5 (0)-1')	BH #5 (2-	-3')	BH #5 (4-	-5')
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL	_	SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00
BTEX by EPA 8021B	Extracted:					Nov-15-17	11:00	Nov-15-17	11:00				
	Analyzed:					Nov-16-17	14:40	Nov-16-17	16:45				
	Units/RL:					mg/kg	RL	mg/kg	RL				
Benzene						< 0.00202	0.00202	< 0.00199	0.00199				
Toluene						< 0.00202	0.00202	< 0.00199	0.00199				
Ethylbenzene						< 0.00202	0.00202	< 0.00199	0.00199				
m,p-Xylenes						< 0.00403	0.00403	< 0.00398	0.00398				
o-Xylene						< 0.00202	0.00202	< 0.00199	0.00199				
Total Xylenes						< 0.00202	0.00202	< 0.00199	0.00199				
Total BTEX						< 0.00202	0.00202	< 0.00199	0.00199				
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	16:30	Nov-14-17 1	16:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30
	Analyzed:	Nov-14-17	18:15	Nov-14-17 1	8:42	Nov-14-17	18:51	Nov-14-17	18:59	Nov-14-17	19:08	Nov-14-17	19:17
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		69.7	4.98	59.8	4.99	66.6	4.92	32.8	4.90	34.9	4.99	587	4.98
TPH By SW8015 Mod	Extracted:					Nov-16-17	09:00	Nov-16-17	09:00				
	Analyzed:					Nov-16-17	15:31	Nov-16-17	15:51				
	Units/RL:					mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)						<14.9	14.9	<15.0	15.0				
Diesel Range Organics (DRO)						<14.9	14.9	<15.0	15.0				
Oil Range Hydrocarbons (ORO)						<14.9	14.9	<15.0	15.0				
Total TPH						<14.9	14.9	<15.0	15.0				

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	Lab Id:	568179-0	46	568179-0	47	568179-0	48	568179-0	49	568179-	050	568179-	051
	Field Id:	BH #5 (6	-7')	BH #5 (9-	10')	BH #5 (14-	-15')	BH #5 (19-	-20')	BH #5 (24	1-25')	BH #6 (()-1')
Analysis Requested	Depth:	(0	.,	(,	(->		(_	/	(, - ,
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00
BTEX by EPA 8021B	Extracted:									Nov-15-17	11:00	Nov-15-17	11:00
	Analyzed:									Nov-16-17	17:04	Nov-16-17	17:24
	Units/RL:									mg/kg	RL	mg/kg	RL
Benzene										< 0.00200	0.00200	0.00740	0.00201
Toluene										< 0.00200	0.00200	0.00699	0.00201
Ethylbenzene										< 0.00200	0.00200	0.0101	0.00201
m,p-Xylenes										< 0.00399	0.00399	0.0544	0.00402
o-Xylene										< 0.00200	0.00200	0.0381	0.00201
Total Xylenes										< 0.00200	0.00200	0.0925	0.00201
Total BTEX										< 0.00200	0.00200	0.117	0.00201
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17	16:30	Nov-14-17 1	6:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-14-17	16:30
	Analyzed:	Nov-14-17	19:26	Nov-14-17 1	19:52	Nov-14-17 2	20:01	Nov-14-17 2	20:28	Nov-14-17	20:37	Nov-14-17	20:46
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		739	4.98	228	4.95	124	4.96	107	4.91	30.6	4.93	1790	24.7
TPH By SW8015 Mod	Extracted:									Nov-16-17	09:00	Nov-16-17	09:00
	Analyzed:									Nov-16-17	16:11	Nov-16-17	17:11
	Units/RL:									mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)										<15.0	15.0	258	74.9
Diesel Range Organics (DRO)										<15.0	15.0	3960	74.9
Oil Range Hydrocarbons (ORO)										<15.0	15.0	587	74.9
Total TPH										<15.0	15.0	4810	74.9

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	Lab Id:	568179-0)52	568179-0)53	568179-0	54	568179-0	55	568179-0	56	568179-0	57
Analysis Requested	Field Id:	BH #6 (2	-3')	BH #6 (4	-5')	BH #6 (6-	-7')	BH #6 (9-	10')	BH #6 (14	-15')	BH #6 (19-	20')
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL									
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00								
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-14-17			16:30	Nov-14-17	16:30	Nov-14-17	16:30	Nov-15-17	09:00	Nov-15-17 (09:00
	Analyzed:	Nov-14-17			21:03	Nov-14-17	21:12	Nov-14-17	21:21	Nov-15-17	12:32	Nov-15-17 1	2:38
	Units/RL:	mg/kg	RL	mg/kg	RL								
Chloride		1490	24.7	1000	4.96	1100	4.90	975	4.95	1110	24.7	2590	24.9
TPH By SW8015 Mod	Extracted:	Nov-20-17	15:00	Nov-20-17	15:00	Nov-20-17	15:00	Nov-20-17	15:00	Nov-22-17	08:00	Nov-22-17 (08:00
	Analyzed:	Nov-21-17	10:45	Nov-21-17	13:36	Nov-21-17	16:18	Nov-21-17	16:59	Nov-22-17	12:09	Nov-22-17 1	2:31
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)		86.0	15.0	223	15.0	326	15.0	528	15.0	798	15.0	235	15.0
Diesel Range Organics (DRO)		790	15.0	1090	15.0	1180	15.0	3460	15.0	3450	15.0	1440	15.0
Oil Range Hydrocarbons (ORO)		103	15.0	99.3	15.0	72.7	15.0	377	15.0	362	15.0	147	15.0
Total TPH		979	15.0	1410	15.0	1580	15.0	4370	15.0	4610	15.0	1820	15.0

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	Lab Id:	568179-0)58	568179-0	59	568179-0	60	568179-0	61	568179-0)62	568179-0	063
	Field Id:	BH #6 (24-	-25')	BH #6 (29-	30')	BH #6 (4	0')	BH #6 (5	0')	BH #6 (5	55')	BH #7 (0)-1')
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	,
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00
BTEX by EPA 8021B	Extracted:									Nov-15-17	11:00	Nov-15-17	11:00
	Analyzed:									Nov-16-17	18:57	Nov-16-17	19:16
	Units/RL:									mg/kg	RL	mg/kg	RL
Benzene										< 0.00332	0.00332	< 0.00201	0.00201
Toluene										< 0.00332	0.00332	0.00654	0.00201
Ethylbenzene										< 0.00332	0.00332	0.0100	0.00201
m,p-Xylenes										< 0.00664	0.00664	0.0590	0.00402
o-Xylene										< 0.00332	0.00332	0.0498	0.00201
Total Xylenes										< 0.00332	0.00332	0.109	0.00201
Total BTEX										< 0.00332	0.00332	0.125	0.00201
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17	09:00	Nov-15-17 (9:00	Nov-15-17 1	11:00	Nov-15-17	4:00	Nov-15-17	11:00	Nov-15-17	11:00
	Analyzed:	Nov-15-17	12:44	Nov-15-17 1	2:51	Nov-15-17 1	16:21	Nov-15-17 2	20:11	Nov-15-17	16:47	Nov-15-17	16:53
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3590	24.6	2200	24.6	1120	5.00	860	4.93	553	4.97	3030	24.8
TPH By SW8015 Mod	Extracted:	Nov-22-17	08:00							Nov-16-17	09:00	Nov-16-17	09:00
	Analyzed:	Nov-22-17	13:32							Nov-16-17	17:31	Nov-16-17	17:52
	Units/RL:	mg/kg	RL							mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<14.9	14.9							<15.0	15.0	418	74.8
Diesel Range Organics (DRO)		90.3	14.9							<15.0	15.0	7280	74.8
Oil Range Hydrocarbons (ORO)		<14.9	14.9							<15.0	15.0	1120	74.8
Total TPH		90.3	14.9							<15.0	15.0	8820	74.8

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Mike Kimmel Client Services Manager



Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0)64	568179-0	65	568179-0	66	568179-0	67	568179-0)68	568179-0	69
Analysis Requested	Field Id:	BH #7 (2	-3')	BH #7 (4-	-5')	BH #7 (6-	-7')	BH #7 (9-	10')	BH #7 (14	-15')	BH #7 (19-	-20')
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17			11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17 1	11:00
	Analyzed:	Nov-15-17	-15-17 17:00 No		17:19	Nov-15-17	17:25	Nov-15-17	17:31	Nov-15-17	17:38	Nov-15-17 1	17:44
	Units/RL:	mg/kg	g/kg RL 1		RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2980	25.0	3640	25.0	1850	25.0	1080	4.98	1250	24.8	1140	5.00
TPH By SW8015 Mod	Extracted:	Nov-20-17	15:00	Nov-20-17 1	15:00								
	Analyzed:	Nov-21-17	11:06	Nov-21-17 1	13:56								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)		54.9	15.0	<15.0	15.0								
Diesel Range Organics (DRO)		548	15.0	<15.0	15.0								
Oil Range Hydrocarbons (ORO)		76.6	15.0	<15.0	15.0								
Total TPH		680	15.0	<15.0	15.0								

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Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0	070	568179-0	071	568179-0	72	568179-	073	568179-0	74	568179-07	75
	Field Id:	BH #7 (24		BH #7 (29-		BH #7 (4		BH #8 ((BH #8 (2		BH #8 (4-:	-
Analysis Requested		BH#/(24	-23)	БП #7 (29	-30)	ВП # 7 (4	.0)	БП #8 (()-1)	БП #0 (2	-3)	БП #0 (4	,,
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL	,	SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17 0	0:00
BTEX by EPA 8021B	Extracted:					Nov-15-17	11:00	Nov-15-17	11:00				
	Analyzed:					Nov-16-17	19:35	Nov-16-17	19:54				
	Units/RL:					mg/kg	RL	mg/kg	RL				
Benzene						< 0.00330	0.00330	< 0.00202	0.00202				
Toluene						< 0.00330	0.00330	< 0.00202	0.00202				
Ethylbenzene						< 0.00330	0.00330	< 0.00202	0.00202				
m,p-Xylenes						< 0.00660	0.00660	0.0232	0.00403				
o-Xylene						< 0.00330	0.00330	0.0224	0.00202				
Total Xylenes						< 0.00330	0.00330	0.0456	0.00202				
Total BTEX						< 0.00330	0.00330	0.0456	0.00202				
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17 1	1:00
	Analyzed:	Nov-15-17	17:51	Nov-15-17	18:10	Nov-15-17	18:16	Nov-15-17	18:35	Nov-15-17	18:42	Nov-15-17 1	8:48
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		335	4.92	147	4.99	17.1	4.98	2630	24.9	2400	24.9	2120	24.9
TPH By SW8015 Mod	Extracted:					Nov-16-17	09:00	Nov-16-17	09:00	Nov-20-17	15:00	Nov-20-17 1	5:00
	Analyzed:					Nov-16-17	18:13	Nov-16-17	18:32	Nov-21-17	11:26	Nov-21-17 1	4:16
	Units/RL:					mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)						<14.9	14.9	133	74.7	38.5	15.0	<15.0	15.0
Diesel Range Organics (DRO)						<14.9	14.9	4480	74.7	595	15.0	<15.0	15.0
Oil Range Hydrocarbons (ORO)						<14.9	14.9	724	74.7	102	15.0	<15.0	15.0
Total TPH						<14.9	14.9	5340	74.7	736	15.0	<15.0	15.0

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Mike Kimmel Client Services Manager



Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	1												
	Lab Id:	568179-0)76	568179-0	077	568179-0	078	568179-0)79	568179-0	080	568179-0	081
Analysis Requested	Field Id:	BH #8 (6	-7')	BH #8 (9-	10')	BH #8 (14-	-15')	BH #8 (19	-20')	BH #8 (24	-25')	BH #8 (29	9-30')
Anulysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00	Nov-09-17	00:00
BTEX by EPA 8021B	Extracted:											Nov-15-17	11:00
	Analyzed:											Nov-16-17	20:13
	Units/RL:											mg/kg	RL
Benzene												< 0.00334	0.00334
Toluene												< 0.00334	0.00334
Ethylbenzene												< 0.00334	0.00334
m,p-Xylenes												< 0.00669	0.00669
o-Xylene												< 0.00334	0.00334
Total Xylenes												< 0.00334	0.00334
Total BTEX												< 0.00334	0.00334
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	11:00	Nov-15-17	16:00	Nov-15-17	16:00
	Analyzed:	Nov-15-17	18:54	Nov-15-17	19:01	Nov-15-17	19:07	Nov-15-17	19:14	Nov-15-17	17:30	Nov-15-17	17:56
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		824	4.99	519	4.98	227	4.98	141	4.92	87.0	4.91	38.4	4.99
TPH By SW8015 Mod	Extracted:											Nov-16-17	09:00
	Analyzed:											Nov-16-17	18:52
	Units/RL:											mg/kg	RL
Gasoline Range Hydrocarbons (GRO)												<15.0	15.0
Diesel Range Organics (DRO)												<15.0	15.0
Oil Range Hydrocarbons (ORO)												<15.0	15.0
Total TPH												<15.0	15.0

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Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-	082	568179-0	83	568179-0	84	568179-0	85	568179-0)86	568179-0)87
Anglusia Dogwootod	Field Id:	BH #9 (()-1')	BH #9 (2-	-3')	BH #9 (4-	-5')	BH #9 (6-	7')	BH #9 (9-	-10')	BH #9 (14-	-15')
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17 (00:00
BTEX by EPA 8021B	Extracted:	Nov-15-17	11:00										
	Analyzed:	Nov-16-17	20:32										
	Units/RL:	mg/kg	RL										
Benzene		0.00336	0.00202										
Toluene		0.0454	0.00202										
Ethylbenzene		0.0307	0.00202										
m,p-Xylenes		0.0978	0.00404										
o-Xylene		0.112	0.00202										
Total Xylenes		0.210	0.00202										
Total BTEX		0.289	0.00202										
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17	16:00	Nov-15-17	6:00	Nov-15-17 1	16:00	Nov-15-17 1	6:00	Nov-15-17	16:00	Nov-15-17	16:00
	Analyzed:	Nov-15-17	18:05	Nov-15-17	8:14	Nov-15-17 1	18:23	Nov-15-17 1	8:49	Nov-15-17	18:58	Nov-15-17	19:07
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4190	24.9	2590	24.6	994	4.99	1110	4.99	1220	4.93	843	4.98
TPH By SW8015 Mod	Extracted:	Nov-16-17	09:00	Nov-20-17	15:00	Nov-20-17 1	15:00	Nov-22-17 (08:00				
	Analyzed:	Nov-16-17	19:13	Nov-21-17	1:47	Nov-21-17 1	16:38	Nov-22-17 1	3:52				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		500	74.9	151	15.0	86.8	15.0	<15.0	15.0				
Diesel Range Organics (DRO)		6390	74.9	586	15.0	386	15.0	<15.0	15.0				
Oil Range Hydrocarbons (ORO)		759	74.9	62.9	15.0	37.4	15.0	<15.0	15.0				
Total TPH		7650	74.9	800	15.0	510	15.0	<15.0	15.0				

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Certificate of Analysis Summary 568179

Tetra Tech- Midland, Midland, TX Project Name: Marathon



Date Received in Lab:Mon Nov-13-17 11:10 amReport Date:03-DEC-17Project Manager:Kelsey Brooks

	Lab Id:	568179-0	088	568179-0	89	568179-0	90	568179-	091		
	Field Id:	BH #9 (19	-20')	BH #9 (24-	25')	BH #9 (29-	-30')	BH #9 (4	40')		
Analysis Requested	Depth:						,				
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Nov-09-17	00:00	Nov-09-17 (00:00	Nov-09-17	00:00	Nov-09-17	00:00		
BTEX by EPA 8021B	Extracted:							Nov-15-17	11:00		
	Analyzed:							Nov-16-17	20:51		
	Units/RL:							mg/kg	RL		
Benzene								< 0.00322	0.00322		
Toluene								< 0.00322	0.00322		
Ethylbenzene								< 0.00322	0.00322		
m,p-Xylenes								< 0.00643	0.00643		
o-Xylene								< 0.00322	0.00322		
Total Xylenes								< 0.00322	0.00322		
Total BTEX								< 0.00322	0.00322		
Inorganic Anions by EPA 300/300.1	Extracted:	Nov-15-17	16:00	Nov-15-17	6:00	Nov-15-17	16:00	Nov-15-17	16:00		
	Analyzed:	Nov-15-17	19:16	Nov-15-17	9:25	Nov-15-17	19:34	Nov-15-17	20:00		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		393	4.92	289	4.92	257	4.93	72.1	4.99		
TPH By SW8015 Mod	Extracted:				ĺ			Nov-16-17	09:00		
	Analyzed:							Nov-16-17	19:34		
	Units/RL:							mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)	·							<15.0	15.0		
Diesel Range Organics (DRO)								<15.0	15.0		
Oil Range Hydrocarbons (ORO)								<15.0	15.0		
Total TPH								<15.0	15.0		

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Flagging Criteria



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

MDL Method Detection Limit	SDL Sample Detection Limit	LOD Limit of Detection
PQL Practical Quantitation Limit	MQL Method Quantitation Limit	LOQ Limit of Quantitation

- **DL** Method Detection Limit
- NC Non-Calculable
- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(602) 437-0330	



Project Name: Marathon

mg/kg	Date Analyzed: 11/15/17 10:15	SU	RROGATE R	ECOVERY S	STUDY	
BTEX	L by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
enzene		0.0272	0.0300	91	80-120	
obenzene		0.0248	0.0300	83	80-120	
: 3033483	Sample: 568179-014 / SMP	Batcl	h: 1 Matrix	: Soil		
mg/kg	Date Analyzed: 11/16/17 00:52	SU	RROGATE R	ECOVERY S	STUDY	
		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	Anaryus	0.0315	0.0300		80.120	
	Sample: 568179-001 / SMP				00-120	
	-				STUDV	
00			1			
		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
		0.0287	0.0300	96	80-120	
		0.0270	0.0300	90	80-120	
	-	Batcl	h: 1 Matrix	: Soil		
mg/kg	Date Analyzed: 11/16/17 12:32	SU	RROGATE R	ECOVERY S	STUDY	
		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes					
ne						
. 2022014	Samples 569170 012 / SMD			-	70-135	
	-					
mg/Kg	Date Analyzeu: 11/10/17 12:32	SU	KKUGATE R	ECOVERY S	STUDY	
		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
ne	Anarytes	90.6	99.7	91	70-135	
				01	10125	
	BTEX benzene robenze	BTEX by EPA 8021B Analytes Penzene Tobenzene Time/kg Date Analyzed: 11/16/17 00:52 BTEX by EPA 8021B Analytes Penzene Tobenzene Tobenzen	BTEX by EPA 8021B Amount Found [A] Analytes 0.0272 obenzene 0.0272 obenzene 0.0248 : 3033483 Sample: 568179-014 / SMP Batcling mg/kg Date Analyzed: 11/16/17 00:52 SU BTEX by EPA 8021B Amount Found [A] Amount found [A] analytes 0.0315 wenzene 0.0315 obenzene 0.0249 : 3033483 Sample: 568179-001 / SMP Batcling mg/kg Date Analyzed: 11/16/17 01:11 SU BTEX by EPA 8021B Amount Found [A] Amount Found [A] mg/kg Date Analyzed: 11/16/17 01:11 SU BTEX by EPA 8021B Amount Found [A] SU mg/kg Date Analyzed: 11/16/17 12:32 SU robenzene 0.0287 0.0287 obenzene 0.0287 0.0270 : 3033814 Sample: 568179-001 / SMP Batcling mg/kg Date Analyzed: 11/16/17 12:32 SU TPH By SW8015 Mod Amount Found [A] Found [A] mg/kg Date Analyzed: 11/16/17 12:52 SU TPH By SW8015 Mod Amount Found [A] Amount Found [A] mg/kg Date Analyzed: 11/16/17 12:52 SU	BTEX by EPA 8021B Amount Found [A] True Amount [B] Analytes 0.0272 0.0300 obenzene 0.0248 0.0300 : 3033483 Sample: 568179-014 / SMP Batch: 1 mg/kg Date Analyzed: 11/16/17 00:52 SURROGATE R BTEX by EPA 8021B Amount Found [A] True Amount Found [A] True Amount Found [A] BTEX by EPA 8021B Amount Found [A] True Amount [A] True Amount [B] wares 0.0315 0.0300 : 3033483 Sample: 568179-001 / SMP mg/kg Batch: 1 BTEX by EPA 8021B Amount Found [A] True Amount [B] Sample: 568179-001 / SMP Batch: 1 Matrix mg/kg Date Analyzed: 11/16/17 12:32 TPH By SW8015 Mod Amount [A] True Amount [A] True Amount [B] i 3033814 Sample: 568179-013 / SMP Batch: 1 i 3033814 Sample: 568179-013 / SMP Batch: 1 i 3033814 Sample: 568179-013 / SMP Batch: 1 i 30338	BTEX by EPA 8021B Amount Found True Recovery %R Recovery %R analytes 0.0272 0.0300 91 obenzene 0.0272 0.0300 91 obenzene 0.0248 0.0300 83 i: 3033483 Sample: 568179-014 / SMP Batch: 1 Matrix: Soil mg/kg Date Analyzed: 11/16/17 00:52 SURROGATE RECOVERY S Recovery %R %R BTEX by EPA 8021B Amount [A] True Amount [B] Recovery %R %R obenzene 0.0315 0.0300 105 obenzene 0.0249 0.0300 83 : 3033483 Sample: 568179-001 / SMP Batch: 1 Matrix: Soil mg/kg Date Analyzed: 11/16/17 01:11 SURROGATE RECOVERY S BTEX by EPA 8021B Amount [B] True Analytes Recovery %R mg/kg Date Analyzed: 11/16/17 01:11 SURROGATE RECOVERY S S033814 Sample: 568179-001 / SMP Batch: 1 Matrix: Soil mg/kg Date Analyzed: 11/16/17 12:32 SURROGATE RECOVERY S TPH By SW8015 Mod Amount [A] True Amount [B] Recovery %R me 91.8 99.8 92 i: 3033814 Sample: 568179-013 / SMP Batch: <td>BTEX by EPA 8021B Amount Found (A) True Amount (A) True Amount (B) Recovery (B) Control Limits %R enzene 0.0272 0.0300 91 80-120 obenzene 0.0248 0.0300 83 80-120 grade 0.0248 0.0300 83 80-120 ways Date Analyzed: 11/16/17 00:52 SURROGATE RECOVERY STUDY BTEX by EPA 8021B Amount Found (A) True (B) Recovery %R Control Limits %R enzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 grade Date Analyzed: 11/16/17 01:11 SURROGATE RECOVERY STUDY BTEX by EPA 8021B Amount Found [A] True Amount [B] Recovery %R Control Limits %R obenzene 0.0227 0.0300 96 80-120 obenzene 0.0227 0.0300 96</td>	BTEX by EPA 8021B Amount Found (A) True Amount (A) True Amount (B) Recovery (B) Control Limits %R enzene 0.0272 0.0300 91 80-120 obenzene 0.0248 0.0300 83 80-120 grade 0.0248 0.0300 83 80-120 ways Date Analyzed: 11/16/17 00:52 SURROGATE RECOVERY STUDY BTEX by EPA 8021B Amount Found (A) True (B) Recovery %R Control Limits %R enzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 obenzene 0.0315 0.0300 105 80-120 grade Date Analyzed: 11/16/17 01:11 SURROGATE RECOVERY STUDY BTEX by EPA 8021B Amount Found [A] True Amount [B] Recovery %R Control Limits %R obenzene 0.0227 0.0300 96 80-120 obenzene 0.0227 0.0300 96

* 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



Project Name: Marathon

Units:	mg/kg	Date Analyzed: 11/16/17 13:52	0.5		ECOVEDY		
Units:	mg/kg	Date Analyzeu: 11/10/17 15.52	SU	RROGATE R	ECOVERYS	STUDY	
	TPH E	Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	,		90.8	99.7	91	70-135	
o-Terphenyl			47.4	49.9	95	70-135	
Lab Batch #:	3033814	Sample: 568179-023 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 14:12	SU	RROGATE R	ECOVERY S	STUDY	
		Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		Analytes	00.4	00.8		70-135	
o-Terphenyl	2		90.4	99.8	91 89	70-135	
Lab Batch #:	3033814	Sample: 568179-025 / SMP	Batcl			/0-155	
Lab Batch #: Units:		-					
Units:	mg/kg	Date Analyzed: 11/16/17 14:31	SU	RROGATE R	ECOVERY S	STUDY	
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	•		93.2	99.8	93	70-135	
o-Terphenyl			47.6	49.9	95	70-135	
Lab Batch #:	3033607	Sample: 568179-042 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 14:40	SU	RROGATE R	ECOVERY S	STUDY	
		by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobe			0.0288	0.0300	96	80-120	
4-Bromofluoro			0.0258	0.0300	86	80-120	
Lab Batch #:		Sample: 568179-033 / SMP	Batc				
Units:	mg/kg	Date Analyzed: 11/16/17 14:51	SU	RROGATE R	ECOVERY S	STUDY	
		Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
ſ		Analytes			[D]		
1-Chlorooctane	•		92.6	100	93	70-135	
o-Terphenyl			45.9	50.0	92	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



Project Name: Marathon

Lab Batch #:		Sample: 568179-036 / SMP	Batch	n: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 11/16/17 15:11	SURROGATE RECOVERY STUDY					
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooctane			90.3	99.8	90	70-135		
o-Terphenyl			44.6	49.9	89	70-135		
Lab Batch #:	3033607	Sample: 568179-025 / SMP	Batch	n: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 11/16/17 15:18	SU	RROGATE R	ECOVERY S	STUDY		
		by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluorobe		Anaryus	0.0282	0.0300	94	80-120		
4-Bromofluoro			0.0282	0.0300	82	80-120		
Lab Batch #:		Sample: 568179-042 / SMP	Batch		_	00-120		
Units:	mg/kg	Date Analyzed: 11/16/17 15:31		RROGATE R		TUDV		
C 111051			50	KROGATE N				
	TPH E	Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes				[D]			
1-Chlorooctane	;		89.1	99.6	89	70-135		
o-Terphenyl			44.4	49.8	89	70-135		
Lab Batch #:	3033607	Sample: 568179-033 / SMP	Batch	n: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 11/16/17 15:37	SU	RROGATE R	ECOVERY S	STUDY		
		by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1.4-Difluorobe			0.0277	0.0300	92	80-120		
4-Bromofluoro			0.0258	0.0300	86	80-120		
Lab Batch #:		Sample: 568179-043 / SMP	Batch			00 120		
Units:	mg/kg	Date Analyzed: 11/16/17 15:51		RROGATE R		STUDY		
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes	[4≖]	[U]	[D]	, JIX		
1-Chlorooctane	•		94.7	100	95	70-135		
o-Terphenyl			48.7	50.0	97	70-135		

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Marathon

Units:	malka	Date Analyzed: 11/16/17 15:56	~-		FOOTERT				
Units:	mg/kg	Date Analyzed: 11/10/17 15.50	SURROGATE RECOVERY STUDY						
	BTEX	by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluoro	benzene		0.0297	0.0300	99	80-120			
4-Bromoflue	orobenzene		0.0263	0.0300	88	80-120			
Lab Batch	#: 3033814	Sample: 568179-050 / SMP	P Batch: 1 Matrix: Soil						
Units:	mg/kg	Date Analyzed: 11/16/17 16:11	SU	RROGATE R	ECOVERY	STUDY			
		By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct		Anaryus	86.8	99.8	87	70-135			
o-Terphenyl			43.6	49.9	87	70-135			
	#: 3033607	Sample: 568179-043 / SMP	Batc			70-155			
Units:	mg/kg	Date Analyzed: 11/16/17 16:45		JRROGATE R		STUDV			
	00					1			
	BTEX	5 by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluoro	benzene		0.0290	0.0300	97	80-120			
4-Bromoflue			0.0286	0.0300	95	80-120			
Lab Batch	#: 3033607	Sample: 568179-050 / SMP	Batc	h: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 11/16/17 17:04	SU	JRROGATE R	ECOVERY S	STUDY			
		by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.4-Difluoro		Anaryus	0.0292	0.0300	97	80-120			
4-Bromoflue			0.0272	0.0300	91	80-120			
	#: 3033814	Sample: 568179-051 / SMP	Batc			00 120			
Units:	mg/kg	Date Analyzed: 11/16/17 17:11		JRROGATE R		STUDY			
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooct	ane		98.3	99.9	98	70-135			
o-Terphenyl	p-Terphenyl			50.0	92	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



Project Name: Marathon

Lab Batch #:	3033607	Sample: 568179-051 / SMP	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 17:24	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	t by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobe	nzene		0.0242	0.0300	81	80-120	
4-Bromofluoro	benzene		0.0305	0.0300	102	80-120	
Lab Batch #:	3033814	Sample: 568179-062 / SMP	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 17:31	SU	RROGATE R	ECOVERY	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		Analytes	01.5	00.0		70.125	
o-Terphenyl	5		91.5	99.9 50.0	92	70-135	
Lab Batch #:	2022814	Sample: 568179-063 / SMP	44.4 Batcl	50.0 h: 1 Matrix		70-135	
Lab batch #: Units:		-			-		
Units:	mg/kg	Date Analyzed: 11/16/17 17:52	SU	RROGATE R	ECOVERYS	STUDY	
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	2		96.1	99.7	96	70-135	
o-Terphenyl			47.6	49.9	95	70-135	
Lab Batch #:	3033814	Sample: 568179-072 / SMP	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 18:13	SU	RROGATE R	ECOVERY	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	e		87.5	99.6	88	70-135	
o-Terphenyl			42.6	49.8	86	70-135	
Lab Batch #:		Sample: 568179-073 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 18:32	SU	RROGATE R	ECOVERY	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctane	e		89.7	99.6	90	70-135	
o-Terphenyl			46.0	49.8	92	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



Project Name: Marathon

FT •4	a	Sample: 568179-081 / SMP		h: 1 Matrix			
Units:	mg/kg	Date Analyzed: 11/16/17 18:52	SU	RROGATE R	ECOVERY S	STUDY	
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	e		86.2	99.7	86	70-135	
o-Terphenyl			42.6	49.9	85	70-135	
Lab Batch #:	3033607	Sample: 568179-062 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 18:57	SU	RROGATE R	ECOVERY S	STUDY	
		A by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe			0.0302	0.0300	101	80-120	
4-Bromofluoro			0.0302	0.0300	88	80-120	
Lab Batch #:		Sample: 568179-082 / SMP	Batc			00 120	
Units:	mg/kg	Date Analyzed: 11/16/17 19:13	SURROGATE RECOVERY STUDY				
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes				[D]		
1-Chlorooctan	e		100	99.9	100	70-135	
o-Terphenyl			47.0	50.0	94	70-135	
Lab Batch #:	3033607	Sample: 568179-063 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 19:16	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluorobe		Anaryus	0.0255	0.0300	85	80-120	
4-Bromofluoro			0.0255	0.0300	117	80-120	
Lab Batch #:		Sample: 568179-091 / SMP	Batc			00 120	
Units:	mg/kg	Date Analyzed: 11/16/17 19:34		RROGATE R		STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctan	e		87.1	99.9	87	70-135	
o-Terphenyl			40.5	50.0	81	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



Project Name: Marathon

· T • 4	Л	Sample: 568179-072 / SMP	Batch				
Units:	mg/kg	Date Analyzed: 11/16/17 19:35	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1,4-Difluor	obenzene		0.0281	0.0300	94	80-120	
4-Bromoflu	orobenzene		0.0266	0.0300	89	80-120	
Lab Batch	#: 3033607	Sample: 568179-073 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 19:54	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor		Analytes	0.0303	0.0300	101	80-120	
4-Bromoflu			0.0303	0.0300	101	80-120	
	#: 3033607	Sample: 568179-081 / SMP	Batc			80-120	
Units:	mg/kg	Date Analyzed: 11/16/17 20:13					
omus.	iiig/ Kg		SU	RROGATE R		STUDY	
		X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flage
		Analytes					
1,4-Difluor			0.0292	0.0300	97	80-120	
4-Bromoflu		9	0.0255	0.0300	85	80-120	
	#: 3033607	Sample: 568179-082 / SMP	Batc				
Units:	mg/kg	Date Analyzed: 11/16/17 20:32	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flage
1.4-Difluor		Analytes	0.0242	0.0200		80.120	
4-Bromoflu			0.0242	0.0300	81	80-120 80-120	
	#: 3033607	Sample: 568179-091 / SMP	Batc		111 : Soil	00-120	
Units:	mg/kg	Date Analyzed: 11/16/17 20:51		RROGATE R		STUDV	
			30	ANDUALE K		1	
	BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flage
		Analytes					
1,4-Difluor	benzene		0.0263	0.0300	88	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



Project Name: Marathon

Lab Batch #:		Sample: 568179-023 / SMP	Batc	h: 1 Matrix	: 5011		
U nits:	mg/kg	Date Analyzed: 11/16/17 21:10	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobe	nzene		0.0287	0.0300	96	80-120	
4-Bromofluoro	benzene		0.0263	0.0300	88	80-120	
Lab Batch #:	3033962	Sample: 568179-002 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/21/17 09:43	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctan		Anarytes	100	100	100	70-135	
o-Terphenyl	-		51.8	50.0	100	70-135	
Lab Batch #:	3033962	Sample: 568179-052 / SMP	Batc		_	70-155	
Units:	mg/kg	Date Analyzed: 11/21/17 10:45		RROGATE R		STUDY	
	TPH E	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes		[D]	[D]	701	
1-Chlorooctan	e		89.9	100	90	70-135	
o-Terphenyl			43.4	50.0	87	70-135	
Lab Batch #:	3033962	Sample: 568179-064 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/21/17 11:06	SU	RROGATE R	ECOVERY S	STUDY	
		Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.011		Analytes		100		50.105	
1-Chlorooctan	•		91.7	100	92	70-135	
o-Terphenyl Lab Batch #:	3033062	Sample: 568179-074 / SMP	45.1 Bate	50.0 h: 1 Matrix	90	70-135	
		-					
Units:	mg/kg	Date Analyzed: 11/21/17 11:26	st	RROGATE R	ECOVERY	STUDY	
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	e		92.1	100	92	70-135	
o-Terphenyl			42.5	50.0	85	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



Project Name: Marathon

Units:	mg/kg	Date Analyzed: 11/21/17 11:47	0.		ECOVEDE:		
Units:	mg/kg	Date Analyzeu: 11/21/17 11.47	SU	RROGATE R	ECOVERY	STUDY	
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooctan	e		109	100	109	70-135	
o-Terphenyl			53.7	50.0	107	70-135	
Lab Batch #:	3033962	Sample: 568179-053 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/21/17 13:36	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctan		Analytes	05.7	100	96	70-135	
o-Terphenyl			95.7 38.0	50.0	96	70-135	
Lab Batch #:	3033962	Sample: 568179-065 / SMP	Batc			70-133	
Units:	mg/kg	Date Analyzed: 11/21/17 13:56					
emis.	ing ng		SL	RROGATE R	ECOVERY	STUDY	
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	e		92.4	100	92	70-135	
o-Terphenyl			47.4	50.0	95	70-135	
Lab Batch #:	3033962	Sample: 568179-075 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/21/17 14:16	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
r		Analytes			[D]		
1-Chlorooctan	e		102	100	102	70-135	
o-Terphenyl	20220.62		52.0	50.0	104	70-135	
Lab Batch #:		Sample: 568179-015 / SMP	Batc				
Units:	mg/kg	Date Analyzed: 11/21/17 14:53	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	e		96.2	100	96	70-135	
o-Terphenyl			51.0	50.0	102	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



Project Name: Marathon

I Initas	ma/lea	Data Analyzadi 11/01/17 16-10						
Units:	mg/kg	Date Analyzed: 11/21/17 16:18	SURROGATE RECOVERY STUDY					
	TPH B	Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooctane	;		90.4	100	90	70-135		
o-Terphenyl			42.9	50.0	86	70-135		
Lab Batch #:	3033962	Sample: 568179-084 / SMP	Batc	h: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 11/21/17 16:38	st	RROGATE R	ECOVERY S	STUDY		
		Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooctane		Analytes	93.9	100	94	70-135		
o-Terphenyl	, 		44.9	50.0	90	70-135		
Lab Batch #:	3033962	Sample: 568179-055 / SMP	Batc			70 155		
Units:	mg/kg	Date Analyzed: 11/21/17 16:59						
	TPH B	Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes	[]	[2]	[D]	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
1-Chlorooctane	;		112	100	112	70-135		
o-Terphenyl			43.6	50.0	87	70-135		
Lab Batch #:	3034077	Sample: 568179-056 / SMP	Batc	h: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 11/22/17 12:09	SU	JRROGATE R	ECOVERY S	STUDY		
		Sy SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooctane			92.7	99.8	93	70-135		
o-Terphenyl			44.4	49.9	89	70-135		
Lab Batch #:	3034077	Sample: 568179-057 / SMP	Batc					
Units:	mg/kg	Date Analyzed: 11/22/17 12:31	st	JRROGATE R	ECOVERY S	STUDY		
	TPH B	Sy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage	
		Analytes			[D]			
1-Chlorooctane	;		93.9	99.7	94	70-135		
o-Terphenyl			40.0	49.9	80	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



Project Name: Marathon

Lab Batch	#: 3034077	Sample: 568179-058 / SM	P Bate	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/22/17 13:32	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
		Analytes			[D]		
1-Chlorooct	ane		103	99.6	103	70-135	
o-Terphenyl			54.1	49.8	109	70-135	
Lab Batch	#: 3034077	Sample: 568179-085 / SM	P Bate	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/22/17 13:52	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.011		Analytes				F 0 105	
1-Chlorooct			92.2	99.8	92	70-135	
o-Terphenyl			48.8	49.9	98	70-135	
	#: 3033435	Sample: 7634470-1-BLK			: Solid		
Units:	mg/kg	Date Analyzed: 11/15/17 03:16	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	benzene		0.0295	0.0300	98	80-120	
4-Bromoflue	orobenzene		0.0274	0.0300	91	80-120	
Lab Batch	#: 3033483	Sample: 7634508-1-BLK	BLK Bate	h: 1 Matrix	: Solid	1	1
Units:	mg/kg	Date Analyzed: 11/15/17 17:38	SU	RROGATE R	ECOVERY	STUDY	
		K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro			0.0323	0.0300	108	80-120	
4-Bromoflue			0.0323	0.0300	96	80-120	
	#: 3033814	Sample: 7634594-1-BLK			: Solid	00 120	
Units:	mg/kg	Date Analyzed: 11/16/17 11:33		RROGATE R		STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage
		Analytes			[D]		
1-Chlorooct	ane		92.9	100	93	70-135	
o-Terphenyl			48.3	50.0	97	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B



Project Name: Marathon

Units:	mg/kg	Date Analyzed: 11/16/17 14:20	OT		ECOVEDY		
omes.	mg/kg	Date Analyzed. 11/10/17 14.20	SU	RROGATE R	ECOVERYS	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorob	enzene		0.0305	0.0300	102	80-120	
4-Bromofluor	obenzene		0.0246	0.0300	82	80-120	
Lab Batch #	: 3033962	Sample: 7634803-1-BLK /	BLK Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/21/17 04:53	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta		Analytes	06.2	100		70.125	
	ne		96.2	100	96	70-135	
o-Terphenyl Lab Batch #	. 2024077	Sample: 7634875-1-BLK /	49.3 BLK Batc	50.0 h: 1 Matrix	99	70-135	
		-					
Units:	mg/kg	Date Analyzed: 11/22/17 11:07	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctar	ne		85.9	99.9	86	70-135	
o-Terphenyl			45.7	50.0	91	70-135	
Lab Batch #	: 3033435	Sample: 7634470-1-BKS /	BKS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/15/17 01:24	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorob		Anarytes	0.0311	0.0300	104	80-120	
4-Bromofluor			0.0282	0.0300	94	80-120	
Lab Batch #		Sample: 7634508-1-BKS /			-	00 120	
Units:	mg/kg	Date Analyzed: 11/15/17 14:11		RROGATE R		STUDV	
		-		1		1	
		K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorob	enzene		0.0264	0.0300	88	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



Project Name: Marathon

Units:	mg/kg	Date Analyzed: 11/16/17 11:53	SI	RROGATE R	ECOVERY	STUDY	
		By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits %R	Flags
		Analytes	[A]	[B]	%R [D]	%K	
1-Chlorooct	ane		101	100	101	70-135	
o-Terphenyl			57.1	50.0	114	70-135	
Lab Batch	#: 3033607	Sample: 7634550-1-BKS / 1	BKS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/16/17 12:27	SU	JRROGATE R	ECOVERY	STUDY	
		A by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro		Anarytes	0.0295	0.0300	98	80-120	
4-Bromoflue			0.0293	0.0300	98	80-120	
	#: 3033962	Sample: 7634803-1-BKS / 1				80-120	
Units:	mg/kg	Date Analyzed: 11/21/17 05:15		JRROGATE R			
onits.	mg/ Kg		50	KROGATE R		STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		107	100	107	70-135	
o-Terphenyl			59.0	50.0	118	70-135	
Lab Batch	#: 3034077	Sample: 7634875-1-BKS / I	BKS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/22/17 11:27	su	JRROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		89.2	100	89	70-135	
o-Terphenyl			57.1	50.0	114	70-135	
Lab Batch	#: 3033435	Sample: 7634470-1-BSD / 1	BSD Batc	h: 1 Matrix	: Solid	ı	
Units:	mg/kg	Date Analyzed: 11/15/17 01:43	SU	JRROGATE R	ECOVERY	STUDY	
		K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	benzene		0.0286	0.0300	95	80-120	
4 D	orobenzene		0.0316	0.0300	105	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



Project Name: Marathon

Units:	mg/kg	Date Analyzed: 11/15/17 14:30	CT		ECOVEDV		
cints.	mg/kg	Date Analyzed: 11/15/17 14.50	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobe	nzene		0.0251	0.0300	84	80-120	
4-Bromofluoro	benzene		0.0243	0.0300	81	80-120	
Lab Batch #:	3033814	Sample: 7634594-1-BSD /	BSD Bate	h: 1 Matrix	: Solid	11	
Units:	mg/kg	Date Analyzed: 11/16/17 12:12	SU	RROGATE R	ECOVERY	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 Chilense ster		Analytes	100	100		70.105	
1-Chlorooctan			100	100	100	70-135	
o-Terphenyl Lab Batch #:	2022607	Sample: 7634550-1-BSD /	BSD Bate	50.0 h: 1 Matrix	110	70-135	
		-					
Units:	mg/kg	Date Analyzed: 11/16/17 12:46	st	RROGATE R	ECOVERY S	STUDY	
	ВТЕХ	by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorobe	nzene		0.0296	0.0300	99	80-120	
4-Bromofluoro	benzene		0.0269	0.0300	90	80-120	
Lab Batch #:	3033962	Sample: 7634803-1-BSD /	BSD Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/21/17 05:35	SU	RROGATE R	ECOVERY	STUDY	
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	e		109	100	109	70-135	
o-Terphenyl			50.8	50.0	102	70-135	
Lab Batch #:	3034077	Sample: 7634875-1-BSD /	BSD Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 11/22/17 11:47	SU	RROGATE R	ECOVERY S	STUDY	
	TPH F	By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
		Analytes	[A]	[B]	%R [D]	%R	
1-Chlorooctan		J	99.1	99.9	99	70-135	
4				1			

* 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



Project Name: Marathon

Lab Batch #:	ers: 568179 3033435	Sample: 568179-013 S / MS	Batcl	-	Warren Stat Soil		
Units:	mg/kg	Date Analyzed: 11/15/17 02:02	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	STUDY Control Limits %R 80-120 STUDY Control Limits %R 80-120 80-120 80-120 80-120 STUDY Control Limits %R 80-120 80-120 STUDY Control Limits %R 70-135 70-135 70-135 STUDY Control Limits %R	Flage
		Analytes			[D]		
1,4-Difluorobe	enzene		0.0325	0.0300	108	80-120	
4-Bromofluor	obenzene		0.0295	0.0300	98	80-120	
Lab Batch #:	3033483	Sample: 568429-011 S / MS	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/15/17 16:04	SU	RROGATE R	ECOVERY S	STUDY	
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
1,4-Difluorobe		Anaryus	0.0291	0.0300	97	80.120	
4-Bromofluoro			0.0291	0.0300	88		
Lab Batch #:		Sample: 568179-042 S / MS	Batcl			80-120	
Units:	mg/kg	Date Analyzed: 11/16/17 13:06		RROGATE R	-		
emis.	ing ng		50	RROGATE R	ECOVERYS	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags
		Analytes			[D]		
1,4-Difluorobe	enzene		0.0313	0.0300	104	80-120	
4-Bromofluor	obenzene		0.0305	0.0300	102	80-120	
Lab Batch #:	3033814	Sample: 568179-013 S / MS	Batcl	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 13:12	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Limits	Flags
		Analytes					
1-Chlorooctan	e		104	99.9	104		
o-Terphenyl	2022072		56.4	50.0	113	70-135	
Lab Batch #:		Sample: 568955-001 S / MS	Batcl				
Units:	mg/kg	Date Analyzed: 11/21/17 06:17	SU	RROGATE R	ECOVERY S	STUDY	
		By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Limits	Flags
		Analytes			[D]		
1-Chlorooctan	e		107	100	107	70-135	
o-Terphenyl			51.4	50.0	103	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



Project Name: Marathon

	#: 3034077	Sample: 568179-057 S / MS	B Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/22/17 12:52	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	tane		104	99.8	104	70-135	
o-Terpheny	1		50.8	49.9	102	70-135	
Lab Batch	#: 3033435	Sample: 568179-013 SD / N	ASD Bate	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 11/15/17 02:21	SU	RROGATE R	ECOVERY S	STUDY	
		K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor		Anarytes	0.0312	0.0300	104	80-120	
· ·	orobenzene		0.0312	0.0300	119	80-120	
	#: 3033483	Sample: 568429-011 SD / N				80-120	
Units:	mg/kg	Date Analyzed: 11/15/17 16:21			-		
Units.	iiig/ kg	Date Analyzeu. 11/15/17 10.21	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes	[*=]	[2]	[D]	/011	
1,4-Difluor	obenzene		0.0302	0.0300	101	80-120	
4-Bromoflu	orobenzene		0.0305	0.0300	102	80-120	
Lab Batch	#: 3033607	Sample: 568179-042 SD / N	ISD Bate	h: 1 Matrix	Soil		
Units:	mg/kg	Date Analyzed: 11/16/17 13:23	SU	RROGATE R	ECOVERY S	STUDY	
		K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor		•	0.0260	0.0300	87	80-120	
4-Bromoflu			0.0244	0.0300	81	80-120	
	#: 3033814	Sample: 568179-013 SD / N					
Units:	mg/kg	Date Analyzed: 11/16/17 13:32	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	tane		106	99.9	106	70-135	
o-Terpheny	1		46.5	50.0	93	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



Project Name: Marathon

	rders : 56817 #: 3033962	9, Sample: 568955-001 SD / M	MSD Batcl	-	Warren Stat Soil	e #1	
Units:	mg/kg	Date Analyzed: 11/21/17 06:39	SU	RROGATE RI	ECOVERY S	STUDY	
	TPH]	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane	Analytes	99.6	100	100	70-135	
o-Terpheny	1		49.6	50.0	99	70-135	
Lab Batch	#: 3034077	Sample: 568179-057 SD / M	ASD Batel	h: 1 Matrix:	Soil	11	
Units:	mg/kg	Date Analyzed: 11/22/17 13:12	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane	ranary ws	111	99.9	111	70-135	
o-Terpheny	1		53.3	50.0	107	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





Project Name: Marathon

						Pro	ject ID:	Warren Sta	te #1	
D	ate Prepar	ed: 11/14/20	17			Date A	nalyzed:	11/15/2017		
-BKS	Batcl	n #: 1					Matrix:	Solid		
	BLAN	K /BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
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
<0.00201							2	70.120	25	
						-	5	70-135		
<0.00201	0.101	0.0883	87	0.101	0.0889	88	1	71-133	35	
D	ate Prepar	ed: 11/15/20	17		I	Date A	nalvzed:	11/15/2017		
-BKS	-						·			
	BLAN	K/BLANK	SPIKE /]	BLANKS	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
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
<0.00200	0.0008	0.124	124	0.100	0.125	125	1	70-130	35	
						_	_			
	-BKS Blank Sample Result [A] <0.00201 <0.00201 <0.00201 <0.00201 <0.00201 <0.00201 <0.00201 Blank 	-BKS Blank Sample Result [A] [B] Spike Added [A] 81ank Sample Result [A] Spike Added [B] <0.00201	-BKS Batch #: 1 BLANK /BLANK Blank Sample Result [A] Spike Added Spike Result [B] [C] <	Blank Spike Blank Blank Blank Blank Spike Blank Spike Blank Spike Blank Spike Spike <th< td=""><td>-BKS Batch #: 1 BLANK /BLANK SPIKE / BLANK S Blank Sample Result [A] Spike Added Spike Result [A] [B] [C] 9% [D] [E] <pre></pre> <pre></pre> <pre></pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> [D] [E] Since Blank Spike Added Spike %R (D)</td><td>Bark Spike Bark Blank Spike Blank Spike Blank Spike Blank Spike Blank Spike Spike Blank Spike S</td><td>Date Prepared: 11/14/2017 Date A BKS Batch #: 1 BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE Blank Spike Added Blank Spike Result [C] Blank Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Result [C] B</td><td>Date Preparet: $1/14/2017$ Date Analyzet: BKS Batch #: 1 Matrix: BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVER Blank sample Result [A] Spike Added Blank Spike Result [B] Spike Result [C] Spike No Blank Spike No Spike No Blank Spike No Spike No Blank No Spike No Blank No Spike No Blank No Spik</td><td>Date Prepared: 11/14/2017 Date Analyzed: 11/14/2017 BKS Batch #: I Matrix: Solid BLANK /BLANK SPIKE / BLANK SPIKE DUPL/CATE RECOVERY STUD Blank Spike Result [A] Blank Spike Result [B] Blank Spike Result [C] Spike NPR (D] Blank Spike Result [E] <</td><td>-BKS Batch #: 1 Matrix: Solid Blank Sample Result [A] Spike Added [B] Blank Spike [C] Blank Spike [C] Spike (D] Blank Spike (D] Spike (D] Blank Spike (D] Blank Spike (D] Blank Spike (D] Blank Spike (D] Spike CO Blank Spike (D] Blank Spike Spike (D] Blank Spike Spike (D] Blank Spike Spike (D] Blank Spike Spike Spike Blank Spike</td></th<>	-BKS Batch #: 1 BLANK /BLANK SPIKE / BLANK S Blank Sample Result [A] Spike Added Spike Result [A] [B] [C] 9% [D] [E] <pre></pre> <pre></pre> <pre></pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> <pre>[D]</pre> <pre>%R</pre> [D] [E] Since Blank Spike Added Spike %R (D)	Bark Spike Bark Blank Spike Blank Spike Blank Spike Blank Spike Blank Spike Spike Blank Spike S	Date Prepared: 11/14/2017 Date A BKS Batch #: 1 BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE Blank Spike Added Blank Spike Result [C] Blank Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Spike Spike Result [C] Blank Spike Spike Spike Result [C] B	Date Preparet: $1/14/2017$ Date Analyzet: BKS Batch #: 1 Matrix: BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVER Blank sample Result [A] Spike Added Blank Spike Result [B] Spike Result [C] Spike No Blank Spike No Spike No Blank Spike No Spike No Blank No Spike No Blank No Spike No Blank No Spik	Date Prepared: 11/14/2017 Date Analyzed: 11/14/2017 BKS Batch #: I Matrix: Solid BLANK /BLANK SPIKE / BLANK SPIKE DUPL/CATE RECOVERY STUD Blank Spike Result [A] Blank Spike Result [B] Blank Spike Result [C] Spike NPR (D] Blank Spike Result [E] <	-BKS Batch #: 1 Matrix: Solid Blank Sample Result [A] Spike Added [B] Blank Spike [C] Blank Spike [C] Spike (D] Blank Spike (D] Spike (D] Blank Spike (D] Blank Spike (D] Blank Spike (D] Blank Spike (D] Spike CO Blank Spike (D] Blank Spike Spike (D] Blank Spike Spike (D] Blank Spike Spike (D] Blank Spike Spike Spike Blank Spike





Project Name: Marathon

Work Order	r #: 568179							Pro	ject ID:	Warren Sta	te #1	
Analyst:	ALJ	D	ate Prepar	red: 11/15/20	17			Date A	nalyzed:	1/16/2017		
Lab Batch ID	Sample: 7634550)-1-BKS	Bate	h #: 1					Matrix: S	Solid		
Units:	mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
	BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analy	ytes		[Б]	[C]		[E]	Kesuit [F]	[6]				
Benzene		< 0.00200	0.100	0.109	109	0.101	0.117	116	7	70-130	35	
Toluene		< 0.00200	0.100	0.101	101	0.101	0.110	109	9	70-130	35	
Ethylbenz	zene	< 0.00200	0.100	0.104	104	0.101	0.108	107	4	71-129	35	
m,p-Xyler	nes	< 0.00401	0.200	0.204	102	0.202	0.209	103	2	70-135	35	
o-Xylene		<0.00200	0.100	0.100	100	0.101	0.103	102	3	71-133	35	
Analyst:	MNV	D	ate Prepar	red: 11/14/20	17	•		Date A	nalyzed:	1/14/2017	•	
Lab Batch ID	Sample: 7634369	9-1-BKS	Batc	h #: 1					Matrix: S	Solid		
Units:	mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorg	anic Anions by EPA 300/300.1 ytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		<5.00	250	248	99	250	247	99	0	90-110	20	





Project Name: Marathon

Work Order #: 568179							Proj	ject ID:	Warren Stat	te #1	
Analyst: MNV	D	ate Prepar	red: 11/14/20	17			Date A	nalyzed:	1/14/2017		
Lab Batch ID: 3033394 Sample: 7634383-1	-BKS	Bate	h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUD	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	235	94	250	236	94	0	90-110	20	
Analyst: MNV	D	ate Prepar	red: 11/14/20	17			Date A	nalyzed:	1/14/2017	1	
Lab Batch ID: 3033399 Sample: 7634386-1	-BKS	Batc	h #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUE	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Sample Result	Added	Spike Result	Spike %R	Added	Spike Duplicate	Dup. %R		Limits	Limits	Flag
Analytes	Sample Result [A] <5.00	Added [B] 250	Spike Result [C]	Spike % R [D] 98	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 95	% 3	Limits %R	Limits %RPD	Flag
Analytes Chloride	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar	Spike Result [C] 244	Spike % R [D] 98	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 95 Date A	% 3	Limits %R 90-110 1/15/2017	Limits %RPD	Flag
Analytes Chloride Analyst: MNV	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar Bate	Spike Result [C] 244 red: 11/15/202	Spike %R %D 98 17 98	Added [E] 250	Spike Duplicate Result [F] 237	Dup. %R [G] 95 Date A	% 3 nalyzed: Matrix:	Limits %R 90-110 11/15/2017 Solid	Limits %RPD 20	Flag
Analytes Chloride Analyst: MNV Lab Batch ID: 3033470 Sample: 7634447-1	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar Bate	Spike Result [C] 244 red: 11/15/202 h #: 1	Spike %R %D 98 17 98	Added [E] 250	Spike Duplicate Result [F] 237	Dup. %R [G] 95 Date A	% 3 nalyzed: Matrix:	Limits %R 90-110 11/15/2017 Solid	Limits %RPD 20	Flag





Project Name: Marathon

Work Order #: 568179							Pro	ject ID:	Warren Sta	te #1	
Analyst: MNV	D	ate Prepar	red: 11/15/202	17			Date A	nalyzed:	11/15/2017		
Lab Batch ID: 3033476 Sample: 7634450-1	-BKS	Batc	h #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE /	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	249	100	250	250	100	0	90-110	20	
Analyst: MNV	D	ate Prepar	red: 11/15/202	17	·		Date A	nalyzed:	11/15/2017		
Lab Batch ID: 3033477 Sample: 7634451-1	-BKS	Bate	h #: 1					Matrix:	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE /	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Inorganic Anions by EPA 300/300.1 Analytes Chloride	Sample Result	Added	Spike Result	Spike %R	Added	Spike Duplicate	Dup. %R		Limits	Limits	Flag
Analytes	Sample Result [A] <5.00	Added [B] 250	Spike Result [C]	Spike %R [D] 100	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 100	% 0	Limits %R	Limits %RPD	Flag
Analytes Chloride	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar	Spike Result [C] 250	Spike %R [D] 100	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 100	% 0	Limits %R 90-110 11/15/2017	Limits %RPD	Flag
Analytes Chloride Analyst: MNV	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar Bate	Spike Result [C] 250 red: 11/15/202	Spike %R [D] 100 17 100	Added [E] 250	Spike Duplicate Result [F] 250	Dup. %R [G] 100 Date A	0 nalyzed: Matrix:	Limits %R 90-110 11/15/2017 Solid	Limits %RPD 20	Flag
Analytes Chloride Analyst: MNV Lab Batch ID: 3033484 Sample: 7634475-1	Sample Result [A] <5.00 D	Added [B] 250 ate Prepar Bate	Spike Result [C] 250 red: 11/15/202 h #: 1	Spike %R [D] 100 17 100	Added [E] 250	Spike Duplicate Result [F] 250	Dup. %R [G] 100 Date A	0 nalyzed: Matrix:	Limits %R 90-110 11/15/2017 Solid	Limits %RPD 20	Flag





Project Name: Marathon

Work Order #: 568179							Proj	ject ID: \	Warren Sta	te #1	
Analyst: ARM	D	ate Prepa	red: 11/16/201	7			Date A	nalyzed:	1/16/2017		
Lab Batch ID: 3033814 Sample: 7634594-1-	BKS	Bate	2 h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	NK /BLANK S	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	ЭY	
TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	972	97	1000	954	95	2	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1020	102	1000	1010	101	1	70-135	35	
Analyst: JUM	D	ate Prepa	red: 11/20/201	.7			Date A	nalyzed:	1/21/2017		· · · · ·
Lab Batch ID: 3033962 Sample: 7634803-1-	BKS	Bate	2 h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	NK /BLANK S	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	DY	
TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	998	100	1000	1030	103	3	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1070	107	1000	1140	114	6	70-135	35	
Analyst: ALJ	D	ate Prepa	red: 11/22/201	7			Date A	nalyzed:	1/22/2017		
Lab Batch ID: 3034077 Sample: 7634875-1-	BKS	Bate	2 h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	NK /BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUI	DY	
TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	999	100	999	979	98	2	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	1030	103	999	1010	101	2	70-135	35	



Form 3 - MS / MSD Recoveries

Project Name: Marathon



Work Order # : 568179						Project II): Warren	n State #1			
Lab Batch ID: 3033435	QC- Sample ID:	568179-013 S	5	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed: 11/15/2017	Date Prepared:	11/14/2017		An	alyst: A	ALJ					
Reporting Units: mg/kg		MATR	IX SPIKE	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
BTEX by EPA 8021B	Parent Sample Result	Spike R	ed Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Benzene	<0.00201	0.100 0.	.0833	83	0.0996	0.0802	81	4	70-130	35	
Toluene	<0.00201	0.100 0.	.0828	83	0.0996	0.0789	79	5	70-130	35	
Ethylbenzene	<0.00201	0.100 0.	.0876	88	0.0996	0.0856	86	2	71-129	35	ĺ
m,p-Xylenes	< 0.00402	0.201 0).167	83	0.199	0.163	82	2	70-135	35	
o-Xylene	< 0.00201	0.100 0.	.0822	82	0.0996	0.0871	87	6	71-133	35	
Lab Batch ID: 3033483	QC- Sample ID:	568429-011 S	5	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed: 11/15/2017	Date Prepared:	11/15/2017		An	alyst: A	ALJ					
Reporting Units: mg/kg		MATR	IX SPIKE	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
BTEX by EPA 8021B	Parent Sample Result	Spike R	ed Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Benzene	<0.00199	0.0996 0	0.101	101	0.100	0.116	116	14	70-130	35	
Toluene	<0.00199	0.0996 0.	.0790	79	0.100	0.0884	88	11	70-130	35	
Ethylbenzene	<0.00199	0.0996 0.	.0602	60	0.100	0.0657	66	9	71-129	35	X
m,p-Xylenes	<0.00398	0.199 0).111	56	0.200	0.110	55	1	70-135	35	X
o-Xylene	<0.00199	0.0996 0.	.0601	60	0.100	0.0690	69	14	71-133	35	X

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

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



Form 3 - MS / MSD Recoveries

Project Name: Marathon



Work Order # :	568179						Project II): Warren	n State #1				
Lab Batch ID:	3033607	QC- Sample ID:	568179	-042 S	Ba	tch #:	1 Matrix	: Soil					
Date Analyzed:	11/16/2017	Date Prepared:	11/15/2	017	An	alyst: A	ALJ						
Reporting Units:	mg/kg		ATRIX SPIK	TRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY									
	BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Analytes	[A]	[B]		[D]	[E]		[G]					
Benzene		<0.00201	0.100	0.106	106	0.101	0.100	99	6	70-130	35		
Toluene		<0.00201	0.100	0.0991	99	0.101	0.0928	92	7	70-130	35		
Ethylbenzene		<0.00201	0.100	0.0988	99	0.101	0.0916	91	8	71-129	35		
m,p-Xylenes		<0.00402	0.201	0.193	96	0.202	0.180	89	7	70-135	35		
o-Xylene		<0.00201	0.100	0.0945	95	0.101	0.0887	88	6	71-133	35		
Lab Batch ID:	3033393	QC- Sample ID: 568179-009 S Batch #: 1 Matrix: Soil											
Date Analyzed:	11/14/2017	Date Prepared:11/14/2017Analyst:MNV											
Reporting Units:	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Inorganic Anions by EPA 300/300.1		Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag	
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD		
Chloride		979	247	1170	77	247	1160	73	1	90-110	20	X	
Lab Batch ID:	3033393	QC- Sample ID:	568179	-011 S	Ba	tch #:	1 Matrix	: Soil					
Date Analyzed:	11/14/2017	Date Prepared:11/14/2017Analyst:MNV											
Reporting Units:	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Inorganic Anions by EPA 300/300.1		Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Analytes	[A]	[B]		[D]	[E]		[G]					
Chloride													

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.


Project Name: Marathon



Lab Batch ID: Date Analyzed: Reporting Units: Inorgan	3033399 11/14/2017 mg/kg nic Anions by EPA 300/300.1 Analytes	QC- Sample ID: Date Prepared: Parent Sample Result	11/14/20 M	017	An E / MAT			k: Soil TE REC Spiked Dup. %R	OVERY S	STUDY Control Limits %R	Control Limits %RPD	Flag
Date Analyzed:	11/14/2017	- I	11/14/20	017	An	alyst: N	ANV		OVERY	STUDY		
		- I						c: Soil				
Lab Batch ID:	3033399	QC- Sample ID:	568179-	036 S	Ba	tch #:	1 Matrix	c: Soil				
Chloride		9.56	250	252	97	250	254	98	1	90-110	20	
Inorga	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Reporting Units:	mg/kg		М	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERYS	STUDY		
Date Analyzed:	11/14/2017	Date Prepared:	11/14/20	017	An	alyst: N	/INV					
Lab Batch ID:	3033394	QC- Sample ID:	568321-	001 S	Ba	tch #:	1 Matrix	: Soil				
Chloride		855	250	1040	74	250	1030	70	1	90-110	20	Х
Inorga	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
Date Analyzed:	11/15/2017	Date Prepared:	11/14/20	017	An	alyst: N	/INV					
Lab Batch ID:	3033394	QC- Sample ID:	568179-	026 S	Ba	tch #:	1 Matrix	: Soil				

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



Project Name: Marathon



Work Order # :	568179						Project II): Warren	n State #1			
Lab Batch ID:	3033399	QC- Sample ID:	568179	-046 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/14/2017	Date Prepared:	11/14/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		739	249	994	102	249	994	102	0	90-110	20	
Lab Batch ID:	3033470	QC- Sample ID:	568121	-001 S	Ba	tch #:	1 Matrix	k: Soil	•			
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		354	247	582	92	247	582	92	0	90-110	20	
Lab Batch ID:	3033470	QC- Sample ID:	568121	-011 S	Ba	tch #:	1 Matrix	k: Soil	1	1	1	
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		31.6	250	296	106	250	306	110	3	90-110	20	

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



Project Name: Marathon



Work Order # :	568179						Project II): Warren	n State #1			
Lab Batch ID:	3033476	QC- Sample ID:	568179	-060 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		1120	250	1270	60	250	1270	60	0	90-110	20	X
Lab Batch ID:	3033476	QC- Sample ID:	568179	-070 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		335	246	564	93	246	557	90	1	90-110	20	
Lab Batch ID:	3033477	QC- Sample ID:	568380	-001 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		5.24	247	260	103	247	256	102	2	90-110	20	

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



Project Name: Marathon



Work Order # :	568179						Project II): Warren	n State #1			
Lab Batch ID:	3033477	QC- Sample ID:	568429	-004 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgar	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		435	246	654	89	246	649	87	1	90-110	20	Х
Lab Batch ID:	3033484	QC- Sample ID:	568179	-080 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgar	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride		87.0	246	313	92	246	314	92	0	90-110	20	
Lab Batch ID:	3033484	QC- Sample ID:	568179	-090 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed:	11/15/2017	Date Prepared:	11/15/2	017	An	alyst: N	MNV					
Reporting Units:	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgar	nic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride		257	247	508	102	247	510	102	0	90-110	20	

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



Project Name: Marathon



Work Order # : 568179						Project II): Warren	n State #1			
Lab Batch ID: 3033814	QC- Sample ID:	568179	-013 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed: 11/16/2017	Date Prepared:	11/16/2	017	An	alyst: A	ARM					
Reporting Units: mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
TPH By SW8015 Mod	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Gasoline Range Hydrocarbons (GRO)	<15.0	999	962	96	999	972	97	1	70-135	35	
Diesel Range Organics (DRO)	<15.0	999	1050	105	999	1060	106	1	70-135	35	
Lab Batch ID: 3033962	QC- Sample ID:	568955	-001 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed: 11/21/2017	Date Prepared:	11/20/2	017	An	alyst: J	UM					
Reporting Units: mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
TPH By SW8015 Mod	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	900	90	1000	838	84	7	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	944	94	1000	904	90	4	70-135	35	
Lab Batch ID: 3034077	QC- Sample ID:	568179	-057 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed: 11/22/2017	Date Prepared:	11/22/2	017	An	alyst: A	ALJ					
Reporting Units: mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	235	998	949	72	999	1030	80	8	70-135	35	
Diesel Range Organics (DRO)	1440	998	1860	42	999	2000	56	7	70-135	35	X

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

	Helinquisned by:		Relinquished by:	Relinquished by:										(LAB USE ONLY	LAB #			Comments:	Beceiving Labo	Project Location: state)	Fluject Name:		Client Name:
	y: Date: Time:	Date: Time:	(~ tro-17		ВН #1 (29-30) 2'ВЕВ ВН #1 (34-35') 2'ВЕВ	BH #1 (24-25) 2'BEB	BH #1 (19-20') 2'BEB	BH #1 (14-15') 2'BEB	BH #1 (9-10') 2'BEB	BH #1 (6-7') 2'BEB	BH #1 (4-5') 2'BEB	BH #1 (2-3') 2'BEB	DH #1 (U-1) 2'BEB		SAMPLE IDENTIFICATION	SAMPLING MATRIX PRESERVATI	If TPH exceeds 100 mg/kg. Benzene exceeds 10 mg/kg	Xenco Midland Tx	Teha Tech	on: (county, Lea County, New Mexico		Marathon	
ORIGINAL COPY	Received by:	Received by:	Onn	11/7/2017 Received by:	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	DATE	YEAR: 2017	SAMPLING	or Total BTEV avaaad	Sampler Signature:		Project #:		Site Manager:	
Ten CF:	D	Da	the	X	• ×	×	×	×	×	×	×	×	×	TIME WATEF SOIL	3	MATRIX		Mike (Pending		Ike Tavarez	4000 N.E 401 M Tel Fax
-	Date: Time:	Date: (Jime:		Date: Time:	×	×	×	×	×	×	×	×	×	HCL HNO ₃ ICE None		eper samples PRESERVATIVE METHOD		Mike Carmona		Bu		rez	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946
IR ID:R-8		0	13	1 N	1 N	-1 Z	1 . Z	1 I	1 N	1 /	1 N		-	# CONT	D (Y	(/N)							
D DELIVERED		Sample Temperature	LAB USE ONLY										×	BTEX 80 TPH TX1 TPH 801 PAH 827 Total Meta	005 5M (0C als A	(Ext to C3 GRO - DI g As Ba C	35) RO - C Cd Cr I	DRO - M Pb Se H	g		(Circle		
RED FEDEX UPS	Special F	RUSH: Same Day	TANDARD											TCLP Met TCLP Voli TCLP Sen RCI GC/MS Vo	ni Vo	alatiles 260B / 62	4		łg		cle or Specify	ANALYSIS REQUEST	5681
S Tracking #:	Hush Charges Authorized Special Report Limits or TRRP Report	Same Day 24 hr	NDARD		×	× >	< >	< >	< >	< >	< >	< >		GC/MS Se PCB's 800 NORM PLM (Asbe Chloride	82/6	508 :)					d.	REQUEST	79
	RP Report	r 48 hr 72 hr											0	Chloride General V Anion/Cat	/ater	Chemis	DS try (se	ee attac	hed lis	t)	No.)		-
			4			-			-	-			-	lold							-		

		Relinquished by:	Relinquished by:	S	Relinquisped by:				-						LAB USE)	LAB #			Comments:	Receiving Laboratory:	state) Invoice to:	Project Location:		Client Name:
		Date: Time:	Date: Time:	2	BH #2 (19-20') Date: Time:	BH #2 (14-15)	BH #2 (9-10')	BH #2 (6-7')	BH #2 (4-5')	BH #2 (2-3')	BH #2 (0-1')	BH #1 (50') 2'BEB	BH #1 (44-45') 2'BEB	BH #1 (39-40') 2'BEB		SAMPLE IDENTIFICATION		If TPH exceeds 100 mg/kg, Benzene exceeds 10 mg/kg, or Total BTEX exceeds 50 mg/kg run deeper samples	Xenco Midland Tx	Teha Tech	Lea County, New Mexico	Warren State #1	Marathon	Tetra Tech, Inc.
ORIGINAL Ct.	neceived by:	Dooping	Received by:	harden ny:	11/7/2017 Becaused hus	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	11/7/2017	DATE	YEAR: 2017	SAMPLING	otal BTEX exceeds		2	Project #:		Site Manager:	
Temp: () CF:(0-6: -0.2°C) (6-23: +0.2°C)	Date:		Dayler T	House		×	×		×		×	x	× ×	× ×	WATER SOIL HCL HNO ₃		MATRIX PRESE	50 mg/kg run deeper sam	Mike Carmona		Pending		Ike Tavarez	4000 NL Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946
IR ID:R-8	Time:		Time:	11/12 11/10	1 N	1	_	_	_	_	_	_	1	1 1	ICE None # CONTA		RS	nples	U.					reel, Ste 79705 59
IO) HAND DELIVERED)		Sample Temperature	LAB USE ONLY								×			BTEX 802 TPH TX11 TPH 8015 PAH 8270 Total Meta	005 (5M (0 DC IIS Ag	(Ext to GRO	DRO -	ORO - Pb Se	Hg		(Circle		
ED FEDEX UPS Tracking #:	Special Report Limits or TRRP Report	Rush Charges Authorized	RUSH: Same Day	REMARKS:											TCLP Vola TCLP Serr RCI GC/MS Vo GC/MS Se PCB's 808 NORM	ni Vol I. 82 mi. V 82 / 6	latiles 260B / /ol. 8: 508		25			e or Specify Method	R	568179
±.	its or TRRP Report		/ 24 hr 48 hr 72 hr		×	×	× >	× >	< >	× >	< >	× :	× ;		PLM (Asbe Chloride Chloride General W Anion/Cati	Sul /ater	lfate Cher		see atta	iched li	ist)	10d No.)	ST	
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	THE PERFORMANCE AND A CONTRACT OF THE PE	Image: Constraint of the sector of the se	Image: Constraint of the sector of the se	ANALYSIS RECUEST Cle or Specify Method No.) ANALYSIS RECUEST Cle or Specify Method No.) TCLP Volatiles TCLP Volatiles TCLP Semi Volatiles RCI GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 STANDARD RUSH: Same Day 24 hr 48 hr 721 Special Report Limits or TRRP Report Tracking #: Chloride Sulfate TDS General Water Chemistry (see attached list) Anion/Cation Balance	

Ch, Inc. and King Spray Strate, Strate Market Years, Strate Strate Strate Market Years, Strate	Tetra Tech, Inc. watch on recent the Goundy, New Motico watch Big Services The County of the Services and the Attention of the Services and the Attention of the Services and the Attention of the Services and the Service of the Services and the Service of the Service of the Service of the Service of the Service and the Service of the Service of the Service of the Service of the Service and the Service of the Ser
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	FEDEX UPS TCLP Semi Volatiles FEDEX UPS TCLP Semi Volatiles TCLP Semi Volatiles FCI TCLP Semi Volatiles FCI RCI GC/MS Vol. 8260B / 624 GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 STANDARD GC/MS Semi. Vol. 8270C/625 NORM PCB's 8082 / 608 NORM PCB's 8082 / 608 NORM PLM (Asbestos) X X X X X X X X Chloride X VPS Tracking #:
Same Day 24 h	ng a a PLM (Asbestos) inits a a b inits a a chloride Ser a a a Ser a a a Ser a a a
	N 0

		Relinquished by:	ionidation of	Relinquished by:	Relinquished by:		B	B	В	B	в	в	B	B			(LAB USE)	LAB #			Comments:	Receiving Laboratory:	state)	Project Location:	Project Name:	Client Name:	ħ	
		Date: Time:		12	Date: Time:	野#6 (50')	BH #6 (40')	BH #6 (29-30')	BH #6 (24-25')	BH #6 (19-20')	BH #6 (14-15')	BH #6 (9-10')	BH #6 (6-7')	BH #6 (4-5')	BH #6 (2-3')	BH #6 (0-1')		SAMPLE IDENTIFICATION		If TPH exceeds 100 mg/kg, Benzene exceeds 10 mg/kg, or Total BTEX exceeds 50 mg/kg run deeper samples	Xenco Midland Tx	Tohn Tech	Lea County, New Mexico	Warren State #1 (county.		Marathon	Tetra Tech, Inc.	and the second second second
Temp: .9 CF:(0-6: -0.2°C) (6-23: +0.2°C)		Received by:	Received by:	m	Received by:	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	DATE	YEAR: 2017	SAMPLING	otal BTEX exceeds (sampler signature:	2	Project #:	D 55555 *		Site Manager:		
IR ID:R-8 2°C) 100: - 7		Date: Time:	Date: Time!	M	Da(te:	_			×	×		_		×	x	X X	WATEF SOIL HCL HNO ₃ ICE None	2	MATRIX PRESERVATIVE METHOD	50 mg/kg run deeper samples	Mike Carmona		Pending			Ike Tavarez	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946	
(Circle)			Sample	3 112/0 LAB		1	Z	N	-1 Z	1 Z	-1 Z	1 Z	1 Z	1 Z	1 N	1 N X	# CONTA FILTERE BTEX 80 TPH TX1	D (Y 21B	RS (/N) BT	EX 8260	в					_		
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General Water Chemistry (see attached list)

Big Spring Street Ster If (IZ2) BSC-3458 Carmona Carmona Carmona PRESERVATIVE PRESERVATIVE PRESERVATIVE PRESERVATIVE Circle of Automatical stress state Preservation Oate: Time: Circle of Automatical stress state Preservation Date: Time: Circle of Automatical stress state Part stress state Date: Time: Automatical stress state Part stress state Circle of Circle of Automatical stress state Date: Time: Automatical stress state Circle of Circle of Circle of Automatical stress state Date: Time: Circle of Automatical stress state Date: Time: Circle of Automatical stress state Date: Time: Automatical stress state State Date: Time: Automatical stress state Automatical stress state Date: Time: Automatical stress state Stress state Date: <th>Origination: Origination: <th colspan<="" th=""></th></th>	Origination: Origination: <th colspan<="" th=""></th>	
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Te CF		7. Date: Time:	Date: Time:	L C Trisin	Date: Time:	BH #9 (40')	BH #9 (29-30')	BH #9 (24-25')	BH #9 (19-20')	BH #9 (14-15')	BH #9 (9-10')	BH #9 (6-7')	BH #9 (4-5')	BH #9 (2-3')	ВН #9 (0-1')	2.0	SAMPLE IDENTIFICATION			Xenco Midland Tx	Type Jack	r: (county, Lea County, New Mexico		Marathon	Tetra Tech, Inc.
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	Report		48 hr 72 hr		×										4	Anion/Catio	-			ee alla		31)			



XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 11/13/2017 11:10:00 AM Temperature Measuring device used : R8 Work Order #: 568179 Comments Sample Receipt Checklist .7 #1 *Temperature of cooler(s)? #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:

Date: 11/13/2017

Checklist reviewed by: Jak Denman

Date: 11/15/2017