	73/711711 4-7-3-11 PM	SI	TE INFO	RMATION		Plige 1 l						
		Report	Type: V	Vork Plan	2RP-5	5238						
General Site Inf	ormation:											
Site:		JR's Horz Fe	ederal #2									
Company:			COG Operating LLC									
	hip and Range	Unit D	Sec. 10	T 26S	R 29E							
County:		Eddy County	Eddy County									
GPS: Surface Owner.		Federal	32.0641			-103.9789						
Directions:		From the inter		/Y 285 and Lono t and go 1.20 m		ad east on Longhorn Rd and go 3.95 e on Location						
Release Data: Date Released:		2/04/2019										
Type Release:		Produced Wa	ater									
Source of Conta	mination:	Flowline										
Fluid Released:		37 bbl water										
Fluids Recovere		20 bbls water	r									
Official Commu	inication:											
Name:	Ike Tavarez				Mike Carı	mona						
Company:	COG Operating, LI	_C			Tetra Tec	h						
Address:	One Concho Cente	er			901 West	t Wall Street						
	600 W. Illinois Ave		Suite 100									
City:	Midland Texas, 79	701		Midland, Texas								
Phone number:	(432) 686-3023				(432) 687							
Fax:	(432) 684-7137				, , , , , ,							
Email:	itavarez@concho	o.com			Mike.car	mona@tetratech.com						

Site Characterization	
Depth to Groundwater:	78' bgs
Karst	Medium

Recommended Remedial Action Levels (RRALs)							
Benzene	Total BTEX	TPH (GRO+DRO+MRO)	Chlorides				
10 mg/kg	50 mg/kg	100 mg/kg	600				



April 3, 2020

Mr Mike Bratcher District Supervisor Oil Conservation Division, District 2 811 S. First Street Artesia, New Mexico 88210

Work Plan for the COG Operating, LLC, JR's Horz Federal #002, Unit D, Section Re: 10, Township 26 South, Range 29 East, Eddy County, New Mexico (2RP 5238).

Mr Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess a release that occurred at the JR's Horz Federal #002, Unit D, Section 04, Township 26 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.0641°, -103.9789°. The site location is shown on Figures 1 and 2.

### **BACKGROUND INFORMATION**

According to the State of New Mexico C-141 Initial Report, the release was discovered on February 04, 2019, and released approximately 37 barrels of produced water due to a pinhole leak on the flowline. A total of 20 barrels of produced water was recovered. The release occurred in the pasture and migrated into the wash/draw. The release in the pasture impacted an area measuring approximately 182' x 362'. The wash/draw area impacted areas measuring 470' x 60', 80' x 12', and 75 x 10'. The C-141 form is included in Appendix A.

### SITE CHARACTERIZATION

A Site characterization was performed for the site, and no lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances. However, the site is in a medium karst potential area and migrated into a draw. Also, a watercourse is located within 300' of the site, according to the USGS topographic map.

The nearest water well is listed on USGS database, approximately 1.60 miles southeast of the site, and has a reported depth to groundwater of 120'. However, there is a well in the New Mexico State Engineer's (NMOSE) database, approximately 2.05 miles west of the site, and has a reported depth to groundwater of 78' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is approximately 125' below surface. The site characterization 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, updated August 14, 2018. 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 on the site characterization, the proposed RRAL for TPH is 100 mg/kg (GRO + DRO + MRO). Additionally, based on the site characterization, the proposed RRAL for chlorides is 600 mg/kg.

### SOIL ASSESSMENT AND ANALYTICAL RESULTS

On May 2 through May 15, 2019, and June 16, 2019, Tetra Tech personnel were onsite to evaluate and sample the release area. To summarize the assessment activities, the areas of concern were divided into two (2) areas, which include the pasture area and the wash area. Samples collected selected were Selected soil samples were collected and submitted to the laboratory 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 results of the sampling are summarized in Table 1 and Table 2. The sample locations are shown on Figures 3 and Figure 3A.

### Pasture Area

In the pasture area, a total of seven (7) hand auger holes (AH-1 through AH-7) were installed to total depths ranging from surface to 4.5' below surface. Referring to Table 1, none of the samples analyzed showed benzene, TPH, or total BTEX concentrations above the laboratory reporting limits,

The area of AH-4 showed no chloride impact, with a concentration of 341 mg/kg. The area of AH-5 showed a chloride concentration of 3,820 mg/kg at surface to 1.0', then decreased with depth. The remaining auger holes (AH-1, AH-2, AH-3, AH-6, and AH-7) showed chloride concentrations of 919 mg/kg, 931 mg/kg, 1,470 mg/kg, 1,540 mg/kg, and 3,960 mg/kg respectively. Deeper samples were not collected due to the dense formation, and backhoe trenches were installed to defined extents.

### Trenches and Borehole Installation

Prior to trenching, the Kinder Morgan and Energy Transfer Pipelines lines were hydro-vacced to clear area and safety concerns. During the scheduling, there were issues with Kinder Morgan and Energy Transfer to have a company representative onsite during the assessment activities and caused delays to the sampling activities. As shown on Figure 3, the impacted area in the pasture are congested with underground pipelines operated by Kinder Morgan and Energy Transfer.

# TETRA TECH

On August 20, 2019, Tetra Tech personnel were onsite to evaluate and trench the areas of auger holes AH-1, AH-2, AH-3, AH-5, and AH-6 and define the spill extent vertically. Referring to Table 1, the areas of Trench-1, 3, 5, and 6 were all vertically define and showed concentrations ranging from 272 mg/kg to 5,920 mg/kg. The area of Trench-2 showed elevated chloride concentrations of 9,00 mg/kg at surface and 4,120 mg/kg at 12' below surface. Deeper samples were not collected due to the dense formation.

On October 17, 2019, one (1) borehole was installed in the area of AH-2 to define the extent vertically. Referring to Table 1, the chloride concentrions decreased with depth, showing a concentration of 35 mg/kg at 14'-15' below surface.

### Wash/Draw Area

Prior to evaluating the wash area, COG had removed some impacted soil from the area to a depth of 3.0' below surface. The impacted soil was accessible with a backhoe to remove majority of the impact from the area. Tetra Tech installed a total of nine (9) hand auger holes (AH-1 through AH-9) in the draw area to total depths ranging from surface to 4.0' below excavation bottom and collected a total of sixteen (16) sidewall samples.

Referring to Table 2, none of the samples analyzed showed benzene, TPH, or total BTEX concentrations above the laboratory reporting limits.

The area of AH-1 through AH-4 showed elevated chloride concentrations ranging from 1,250 mg/kg to 12,100 mg/kg deeper samples were not collected due to the dense formation. The remaining auger holes (AH-5 through AH-9) showed chloride concentrations below the RRALs, with concentrations ranging from 8.09 mg/kg to 504 mg/kg. The sidewall samples of (SSW-1, WSW-1, ESW-1, and WSW-2) showed high chloride concentrations ranging from 964 mg/kg to 1,780 mg/kg. The sidewall samples of (ESW-2, NSW-1, ESW-3, WSW-3, NSW-2,SSW-2,ESW-4,WSW-4, SSW-3 ESW-5, WSW-5, and NSW-3) all showed chloride concentrations below the RRALs.

On June 16, 2019, after a heavy rainfall event, Tetra Tech returned to site re-evaluate the areas that exceeded the threshold of 600 mg/kg. Referring to table 2, the areas of AH-1 through AH-4 were re-sampled and showed chloride concentrations ranging from 72.6 mg/kg to 11,300 mg/kg. The sidewall samples of (SSW-1, WSW-1, ESW-1, and WSW-2) also showed concentrations ranging from 230mg/kg to 4,210 mg/kg. Due to the limited access in the area, COG was not able to remediate the spill horizontally any further.

### Sloping of Wash/Draw Area

After the BLM reviewed the data and inspected the site, the BLM (James Amos) requested no additional excavation from the wash area, which may cause more damage to the surrounding areas and alter the course of the wash area. In addition, the BLM requested the area be sloped and to add erosional controls. On December 16, 2019, Tetra Tech personnel returned to the area to slope and install erosion controls every 50.0'. The area was sloped in the natural course of the draw and would help direct the flow of the water for any future rain events. The ersosion control placement is shown on Figures 3B.



### PROPOSED WORK PLAN

Based on the laboratory results and the chloride concentrations detected, COG proposes to excavate the areas as shown on Figure 4 and highlighted (green) on Table 1. Due to the proximity of the Kinder Morgan and Energy Transfer Pipelines, a company representative is required to be onsite during any activities at the site. The assessment or remediation activities will depend on the pipeline representative schedule, and they may also limit the excavation around their pipelines due to safety concerns.

- The area of AH-1 will be excavated to 3.0' below surface and backfilled with clean material to grade.
- The areas of AH-2, AH-3 and AH-6, will be excavated to a depth of 4.0' below surface and capped with a 20 mil liner and backfilled with clean material to grade.
- The area of AH-5 will be excavated to 1.0' below surface and backfilled with clean material to grade.
- The area of AH-7 will be re-evaluated to confirm and define extents. Based on the results, the area will be excavated to the appropriate depth. If deeper impact is encountered, the area will be excavated to a depth of 4.0' and capped with a 20 mil liner and backfilled with clean material to grade.

### Safety Concerns

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 safety concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

### **Liner Variance**

Per rule 19.15.29.14, COG requests a variance to install a 20-mil liner at 4.0' below surface in to prevent vertical migration of the deeper chloride concentrations detected. Prior to the liner installation, composite sidewall samples will be collected every 200 square feet and analyzed for chlorides by EPA method 300.0, to be representative of the release area, for documentation purposes.

Once the excavation is complete, the areas will be backfilled with clean material to surface grade and the remediation to be implemented 90 days after the work plan is approved.



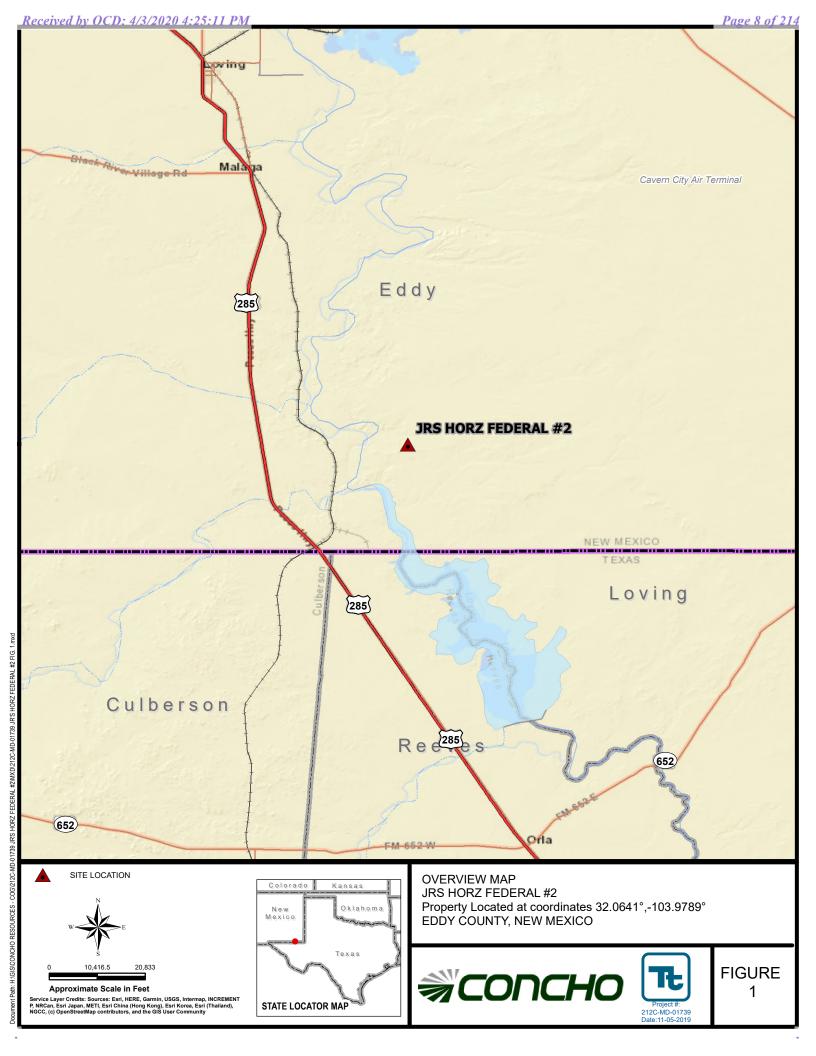
### Conclusion

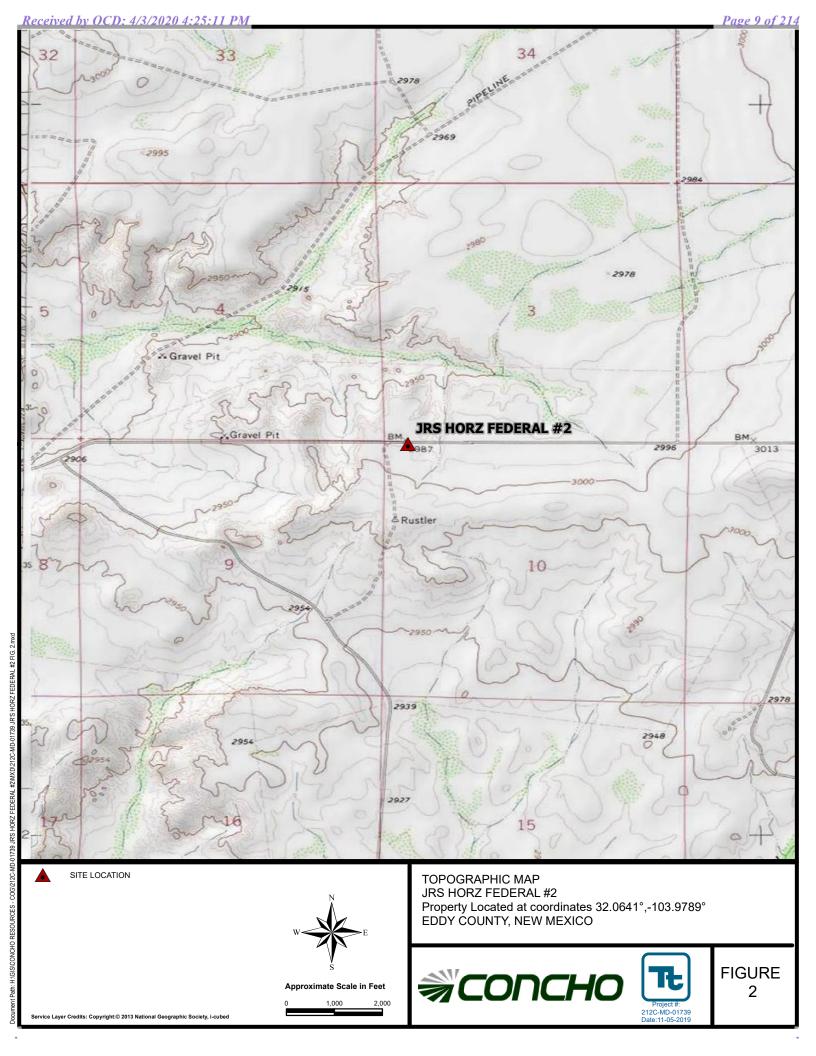
Once the remediation activities have been completed, a final report will be submitted. If you have any questions or comments concerning the assessment or remediation activities for this site, please call at (432) 682-4559.

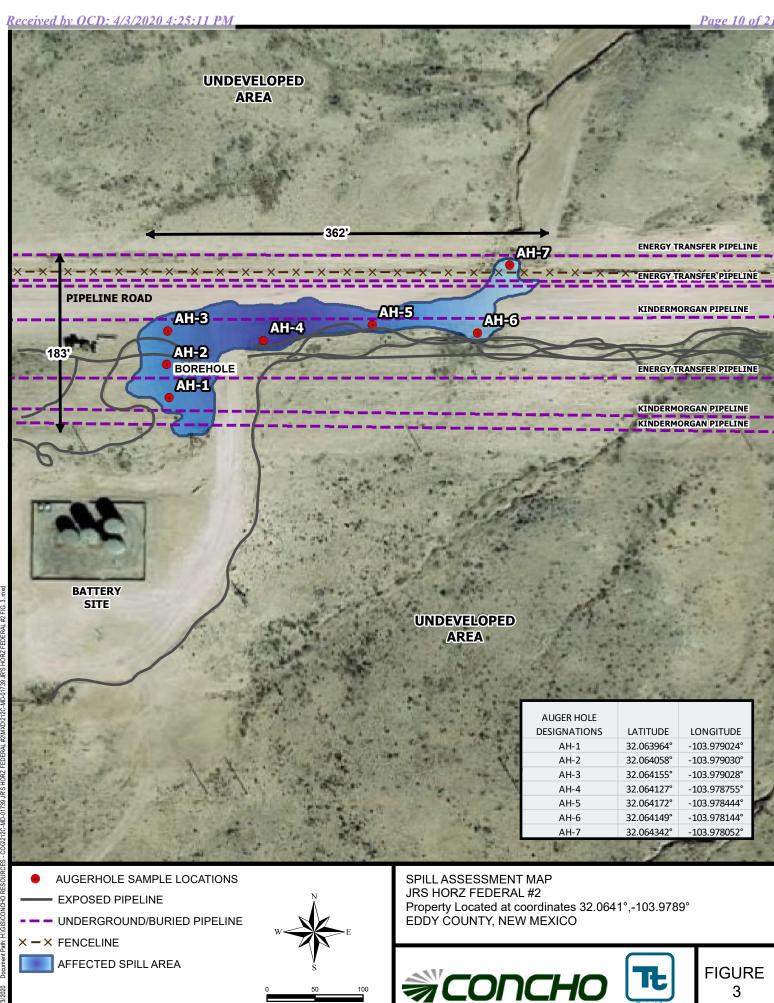
Respectfully submitted, TETRA TECH

Mike Carmona Geologist

# Figures

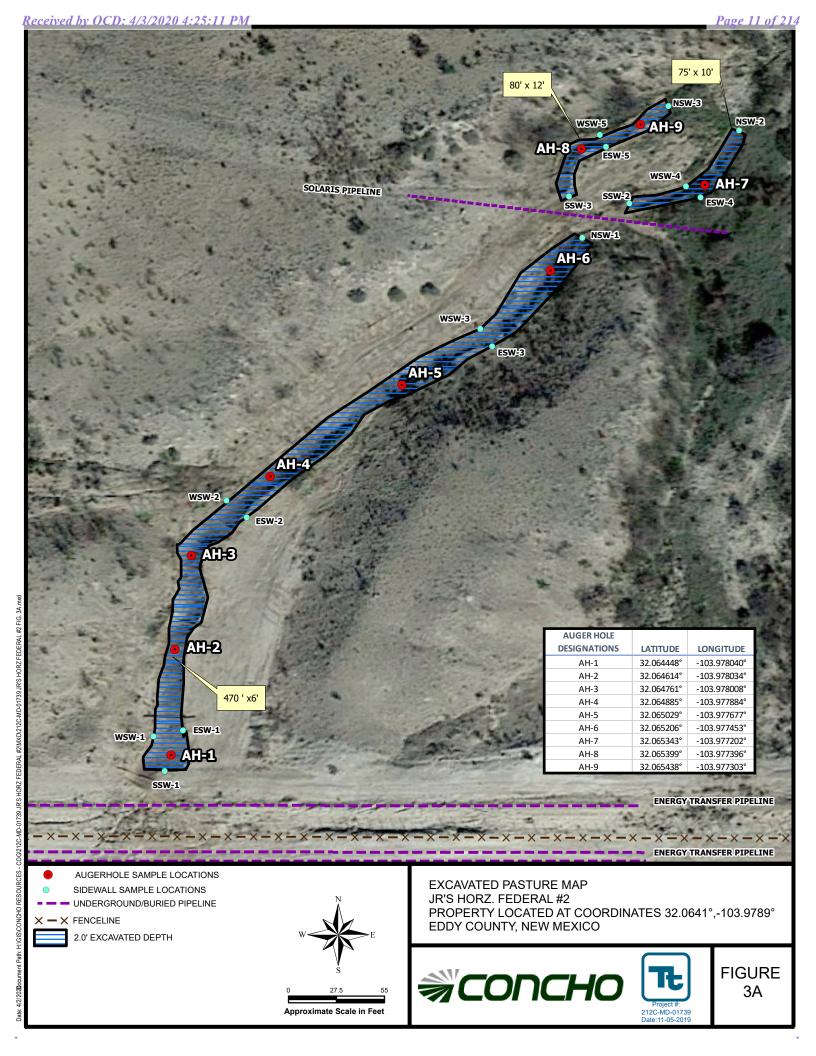






Approximate Scale in Feet

Octo, 4/9/2000



- UNDERGROUND/BURIED PIPELINE

× - FENCELINE

1.0' PROPOSED EXCAVATION DEPTH

3.0' PROPOSED EXCAVATION DEPTH

4.0' PROPOSED EXCAVATION DEPTH w/LINER

AFFECTED SPILL AREA



0 32.5 65

Approximate Scale in Feet

PROPOSED EXCAVATION AREA & DEPTH MAP JR'S HORZ. FEDERAL #2 PROPERTY LOCATED AT COORDINATES 32.0641°,-103.9789° EDDY COUNTY, NEW MEXICO





FIGURE 4

# **Tables**

Table 1 COG JR Horz Federal #2 Eddy County, NM

			BEB	Call (	Status		TDU /	'ma ar/lean\		_					
Sample ID	Sample Date	Sample Depth (ft)	Sample Depth (ft)		Removed	GRO	DRO	mg/kg) MRO	Total	Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			2 op ()	III Oitu	removed	Oito		re Area	Total						
	6/19/2019	0-1		Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	3,740
AH-1	"	1-1.5		Х		-	-	-		-	-	-	-	-	1,300
	"	2-2.5		Х		-	-	-	-	-	-	-	-	-	919
Trench-1	8/20/2019	2		Х		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	272
	"	3		Χ		-	-	-	-	-	-	-	-	-	208
	II .	4		Χ		-	-	-	-	-	-	-	-	-	336
	II .	6		Χ		-	-	-	-	-	-	-	-	-	480
	•		•												
AH-2	6/19/2019	0-1		X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	931
Trench-2	8/20/2019	1		Χ		<10.0	<10.0	<10.0	<10.0	<0.050	< 0.050	< 0.050	<0.150	<0.300	9,000
	"	2		Χ		-	-	-	-	-	-	-	-	-	14,800
	"	3		Χ		-	-	-	-	-	-	-	-	-	2,120
	"	4		Χ		-	-	-	-	-	-	-	-	-	3,720
	"	5		Х		-	1	-	-	-	-	-	-	-	2,280
	"	6		Х		-	-	-	-	-	-	-	-	-	3,600
	"	7		Х		-	-	-	-	-	-	-	-	-	5,600
	"	8		Х		-	-	-	-	-	-	-	-	-	4,640
	"	10		Х		-	-	-	-	-	-	-	-	-	1,730
	II	12		Х		-	-	-	-	-	-	-	-	-	4,120
Borehole-2	10/17/2019	0-1		Χ		<10.0	<10.0	<10.0	<10.0	<0.050	< 0.050	<0.050	<0.150	<0.300	1,600
	"	2-3		Χ		-	ı	-	-	-	-	-	-	-	3,490
	"	4-5		Χ		-	-	-	-	-	-	-	-	-	273
	II .	6-7		Х		-	-	-	-	-	-	-	-	-	147
	"	9-10		Χ		-	-	-	-	-	-	-	-	-	218
	"	14-15		Х		-	-	-	-	-	-	-	-	-	135
AH-3	5/15/2019	0-1		Х		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	3,020
	"	1-1.5		Х		-	-	-	-	-	-	-	-	-	1,310
	· ·	1.5-2		Х		-	-	-	-	-	-	-	-	-	1,470
Trench-3	8/20/2019	1		Х		<0.10	<0.10	<0.10	<0.10	<0.050	<0.050	<0.050	<0.150	<0.300	800
	"	2		Х		-	-	-	-	-	-	-	-	-	992
	"	3		Х		-	1	-	-	-	-	-	-	-	736
	"	4		Χ		-	-	-	-	-	-	=	-	-	1,180
	"	6		Х		-	1	-	-	-	-	-	-	-	992
	II	8		Х		-	-	-	-	-	-	-	-	-	432
	11	10		Х		-	-	-	-	-	-	-	-	-	432
	"	12		Х			-	-	-	-	-	-	-	-	272

Table 1 COG JR Horz Federal #2 Eddy County, NM

		Sample	BEB	Soil Status		TPH (mg/kg)			Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride	
Sample ID	Sample Date	Depth (ft)	Sample Depth (ft)	In-Situ	Removed	GRO	DRO	MRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-4	5/15/2019	0-1	-	Х		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	341
			l												
	5/15/2019	0-1		X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	3,820
		1-1.5		Х		-	-	-	-	-	-	-	-	-	281
AH-5	"	2-2.5		Х		-	-	-	-	-	-	-	-	-	26.1
	"	3-3.5		Х		-	-	-	-	-	-	-	-	-	68.0
	п	4-4.5		Х		-	-	-	-	-	-	-	-	-	58.3
	8/20/2019	1		Χ		<10.0	<10.0	<10.0	<10.0	<0.050	< 0.050	<0.050	<0.150	< 0.300	1940
Trench-5	"	2		Х		-	-	-	-	-	-	-	-	-	528.0
	II	3		Х		-		-	-	-	-	-	-	-	16.0
	5/15/2019	0-1		Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	8,160
	3/13/2019	1-1.5		X			- 15.0	-	< 15.0 -	-	-	-	-	-	6,080
AH-6	"	2-2.5		X			-	_	-	-	-	-	-	-	13,300
Airo	"	3-3.5		X					-	-	_	<u> </u>	_	_	7,950
	"	4-4.5		X		-	-	-	-	-	-	-	-	-	1,540
	8/20/2019	1		Х		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	2,200
	0/20/2019	2		X		-	- 10.0		-	-	-	-		-	4,480
	"	3		X			-		-	-	_		-	_	5,920
	"	4		X			_	-	-	-	-	-	-	-	1,920
Trench-6	"	5		X			_	_	_	_	_	-	-	_	160
	н	8		X		_	_	_	_	_	_		_	_	32.0
	ıı .	10		X			_	_	_	-	-	_	-	-	1,410
	"	12		X		-	-	-	-	-	-	-	-	-	144
	l .	l	<u>l</u>												
	6/19/2019	0-1		Χ		<15.0	26.2	<15.0	26.2	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	2,960
	11	1-1.5		Χ		-	1	-	•	-	-	-	-	-	5,190
	"	2-2.5		Χ		-	ı	-	•	-	-	-	-	-	12,200
	"	3-3.5		Χ		-	•	-	•	-	-	-	-	-	595
AH-7	8/22/2019	0-1		Χ		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	< 0.300	2,520
	"	1-1.5		Х		-	-	-	-	-	-	-	-	-	5,280
	"	2-2.5		Х		-	-	-	-	-	-	-	-	-	7,280
	II .	3-3.5	_	Х		•	-	-	-	-	-	-	-	-	5,760
	"	4-4.5		Х		-	-	-	-	-	-	-	-	-	3,960
Background 1	0/20/2040	1 1	1			-10.0	-10.0	-10.0	-10.0	-0.0E0	-0.0E0	40.0E0	-0.150	-0.200	16.0
Dackyrounu I	8/20/2019	2		X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	16.0 32.0
	11	3		X			-	-	-	-	-	-	-	-	16.0
	"	4		X		<u> </u>	-	-	-	-	-	-	-	-	176
		4		_ ^		-	-	-	-			- -		_	176

( - ) Not Analyzed

Proposed Excavation

Proposed Liner

Received by OCD: 4/3/2020 4:25:11 PM Page 17 of 214

Table 2 COG JR Horz Federal #2 Eddy County, NM

Sample ID	Sample	Sample	- I Samnia i	Soil	Status		TPH (	mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Date	Depth (ft)		In-Situ	Removed	GRO	DRO	MRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
							Wasl	h Area							
AH-1	5/15/2019	0-1	3	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	502
	"	2	"	Х		-	-	-	-	-	-	-	-	-	1,260
	"	3	"	Х		-	-	-	-	-	-	-	-	-	4,320
	11	4	"	Χ		-	-	_	-	-	-	-	-	-	3,240
Re-sampled	6/19/2019	0-1	II.	Х		-	-	-	-	-	-	-	-	-	72.6
	II .	2	II.	Х		-	-	-	-	-	-	-	-	-	177
	11	3	"	Х		-	-	-	-	-	-	-	-	-	403
	ıı .	4	"	Х		-	-	-	-	-	-	-	-	-	1,150
0011/4		<u> </u>	<u> </u>		<u> </u>	440	440	440	440	1 0 00000	0.0000	0.0000		0.0000	,
SSW-1	5/15/2019	-	-	Х		<14.9	<14.9	<14.9	<14.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	964
Re-sampled	6/19/2019					-	-	-	-	-	-	-	-	-	346
	= // = /22 / 2									2 22/22				2 22 4 2 2	
WSW-1	5/15/2019	-	-	Х		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	1,410
Re-sampled	6/19/2019					-	-	-	-	-	-	-	-	-	230
	F14=100:0					4= -	4= 5	4= 6	4= -	0.001.55	0.00155	0.0010-	0.001.55	0.00155	
ESW-1	5/15/2019	-	-	Х		<15.0	<15.0	<15.0	<15.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	1,160
Re-sampled	6/19/2019				<u> </u>	-	-	-	-	-	-	-	-	-	339
AH-2	5/2/2019	0-1	3	Χ		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	191
	11	2	"	Χ		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	1,250
	II .	3	"	Χ		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	6,110
	II .	4	"	Χ		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	159
Re-sampled	6/19/2019	0-1	3			-	-	-	-	-	-	-	-	-	58.6
	"	2	"			-	-	_	-	_	-	_	-	-	130
	"	3	ıı .			-	-	_	-	-	-	-	-	-	1,190
	"	4	ıı .			_	_	_	-	_	-	-	_	_	633
ALL 2					I	l	L			1			L		
AH-3	5/15/2019	0-1	3	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	9,050
	"	2	"	X		-	-	-	-	-	-	-	-	-	12,100
		3	"	Х		-	-	-	-	-	-	-	-	-	4,350
			_												
Re-sampled	6/19/2019	0-1	3	X		-	-	-	-	-	-	-	-	-	1,160
	"	2	"	X		-	-	-	-	-	-	-	-	-	11,300
	"	3	"	Х		-	-	-	-	-	-	-	-	-	10,600
ESW-2	5/15/2015	-	-	Х		-	-	-	-	-	-	-	-	-	236
WSW-2	5/15/2015	-	-	Х		-	-	-	-	-	-	-	-	-	1,780
Re-sampled	6/19/2019	-	-	Х		-	-	-	-	-	-	-	-	-	4,210
AH-4	5/2/2019	0-1	3	Х		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	4,960
, ui T	3/2/2019	2	ى "	X		<15.0	<15.0	<15.0	<15.0	<0.00199			<0.00199	<0.00199	2,950
	"	3	"	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	2,930
	"	4	"	X		<15.0	<15.0							<0.00201	
		"		^		<b>₹13.0</b>	~13.0	~13.0	<b>\13.0</b>	\0.00180	~0.00 130	\U.UU.130	\0.00190	\0.00130	10.2
Re-sampled	6/19/2019	0-1	3	X		_	_	_	_	_	-	_	-	_	94.9
ive-sampleu	0/13/2013	2	"	X		_	_	<u> </u>	-	_	-	-	-	_	1,450
		3	"	X	-	<u> </u>	_	<u> </u>	-	-				-	809
		<u> </u>		^		_			-		-	-	-		009
AH-5	5/15/2019	0-1	3	Χ		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	504
	II .	2	II .	Χ		-	-	-	-	-	-	-	-	-	409
	"	3	"	Χ		-	-	-	-	-	-	-	-	-	473

Received by OCD: 4/3/2020 4:25:11 PM Page 18 of 214

Table 2 COG JR Horz Federal #2 Eddy County, NM

NSW-1   5/15/20	2 19 0-1 2 19 -	Sample Depth (ft)  3  "  "	X X X X X X	Removed	<14.9	<b>DRO</b> <14.9	<b>MRO</b> <14.9 -	<b>Total</b> <14.9 -	(mg/kg) <0.00200 -	(mg/kg) <0.00200 -	(mg/kg) <0.00200 -	(mg/kg) <0.00200 -	**BTEX (mg/kg)	212 95.2
Re-sampled 6/19/20    NSW-1 5/15/20   ESW-3	2 19 0-1 2 19 -	" "	X X X			-	-	-	-	-				
Re-sampled 6/19/20  "  NSW-1 5/15/20  ESW-3 "  WSW-3 "  AH-7 5/15/20	9 0-1 2	" " " " " " " " " " " " " " " " " " "	X X			-	-		-	-	-	-	-	95.2
NSW-1 5/15/20 ESW-3 " WSW-3 " AH-7 5/15/20	2		X					-	_					
NSW-1 5/15/20 ESW-3 " WSW-3 " AH-7 5/15/20	2		X					-	_					
NSW-1 5/15/20 ESW-3 " WSW-3 " AH-7 5/15/20	19 -	-	Х			-				-	-	-	-	31.5
ESW-3 " WSW-3 " AH-7 5/15/20	-	-			-11 Q		-	-	-	-	-	-	-	55.9
WSW-3 "  AH-7 5/15/20	-		Х		<14.5	24.6	<14.9	24.6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	98.1
AH-7 5/15/20		-			-	-	-	-	-	-	-	-	-	352
5/ 15/25	19 0-1		Х		-	-	-	-	-	-	-	-	-	324
		3	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	13.5
] "	2	II .	Х		-	-	-	-	-	-	-	-	-	8.09
11	3	"	Х		-	-	-	-	-	-	-	-	-	12.4
NSW-2 "	-	-	Х		-	-	-	-	-	-	-	-	-	66.8
SSW-2 "	-	-	Х		-	-	-	-	-	-	-	-	-	102
ESW-4 "	-	-	Χ		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	29.4
WSW-4 "	-	-	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	136
<b>AH-8</b> 5/15/20	19 0-1	3-3.5	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	318
п	2	11	Х		-	-	-	-	-	-	-	-	-	175
"	3	11	Х		-	-	-	-	-	-	-	-	-	343
SSW-3 "	-	-	Х		<15.0	15.3	<15.0	15.3	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	261
ESW-5 "	-	-	Х		-	-	-	-	-	-	-	-	-	66.3
WSW-5 "	-	-	Х		-	-	-	-	-	-	-	-	-	261
<b>AH-9</b> 5/15/20	19 0-1	3-3.5	Х		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	137
ıı ı	2	"	Х		-	-	-	-	-	-	-	-	-	168
11	3	"	Х		-	-	-	-	-	-	-	-	-	425
NSW-3 "	-	-	Х		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	80.4

( - ) Not Analyzed

# **Photos**

# TETRA TECH



View East - Area of AH-1



View North - Area of AH-2





View East – Area of AH-3



View East- Area of AH-4 & AH-5

# TETRA TEC





View East - Area of AH-6



View North - Area of AH-7

# TETRAT

# COG JRs Horz Wash/Draw Eddy County, New Mexico



View South - Area of AH-1 and AH-2



View South – Area of AH-3 and AH-4

# COG JRs Horz Wash/Draw Eddy County, New Mexico





View South - Area of AH-4



View South – Area of AH-5 and AH-6

# COG JRs Horz Wash/Draw Eddy County, New Mexico





View South - Area of AH-7



View South - Area of AH-8 and AH-9

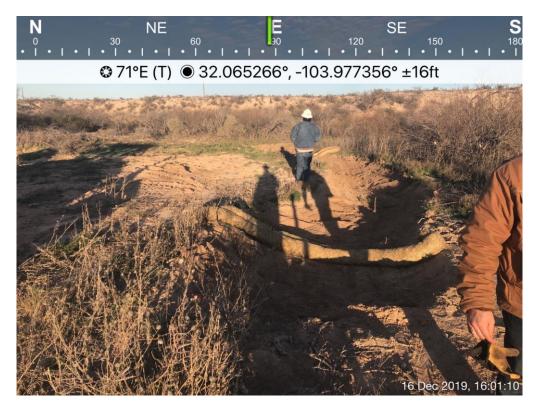


View North



View North

# The state of the sta



View North

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources Department

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

### **Release Notification**

### **Responsible Party**

Responsible	Party	COG Operatir	ıg, LLC	OGRID		229137				
Contact Nan	ne	Jennifer Kn	owlton	Contact Te	elephone	(575) 748-1	570			
Contact ema	il	JKnowlton (	@concho.com	Incident #	Incident # (assigned by OCD)					
Contact mail	ling address	600 West III	inois Avenue, M	lidland, Texas	79701					
			T	an i c						
			Location (	of Release So	ource					
Latitude	32.064	'89								
			(NAD 83 in decir	Longitude _ mal degrees to 5 decin	nal places)					
Site Name		JR's Horz Fed	eral #002	Site Type	Site Type Flowline					
Date Release	Discovered	February 4, 20	)19	API# (if app	olicable)					
				•		1				
Unit Letter	Section	Township	Range	Coun	nty	_				
D	10	26S	29E	Edo	dy					
Surface Owne	or: State	■ Federal □ Tri	ibal	ama:			,			
Surface Owne	1. State	redetat 11	ioai 🔲 i iivate (iva	ume			)			
			Nature and	Volume of l	Release					
	Motorio	ıl(s) Released (Select all	that apply and attach o	alculations or specific	justification for the	volumes provided b	nelow)			
Crude Oi		Volume Released		arculations of specific	Volume Reco		ciow)			
Produced	Water	Volume Released	d (bbls) 37		Volume Reco	vered (bbls)	20			
		Is the concentration produced water >	on of dissolved ch 10,000 mg/l?	loride in the	■ Yes □ N	0				
Condensa	ate	Volume Released								
Natural C	Natural Gas Volume Released (Mcf)				Volume Reco	vered (Mcf)				
Other (de	escribe)	Volume/Weight	Released (provide	units)	Volume/Weig	ht Recovered (p	provide units)			

### Cause of Release

The release was caused by a hole in the flowline. A fitting is being installed where the hole was.

The release was on the lease road and in the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

- 73			• ^		c -	-
P	aa	e :	.,,	0.1	, ,	11/
1	$u \simeq$		•	v	-	17
	- 0		_	/		

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major	If YES, for what reason(s) does the response	ble party consider this a major release?
release as defined by 19.15.29.7(A) NMAC?	The volume released was greater	than 25 barrels.
19.13.29.7(A) NWIAC:		
■ Yes □ No		
If YES, was immediate no	otice given to the OCD? By whom? To who	n? When and by what means (phone, email, etc)?
Immediate notice wa	as given by DeAnn Grant via e-ma	il February 4, 2019 at 3:37 pm to Mike Bratcher
and Jim Amos.		
	_	
	Initial Res	ponse
The responsible p	party must undertake the following actions immediately v	nless they could create a safety hazard that would result in injury
■ The source of the rele	ease has been stopped.	
	as been secured to protect human health and the	e environment.
	1	es, absorbent pads, or other containment devices.
	ecoverable materials have been removed and a	-
<u> </u>		0 11 1 •
if all the actions described	d above have <u>not</u> been undertaken, explain wh	y:
		nediation immediately after discovery of a release. If remediation
		forts have been successfully completed or if the release occurred ase attach all information needed for closure evaluation.
		st of my knowledge and understand that pursuant to OCD rules and ations and perform corrective actions for releases which may endanger
		D does not relieve the operator of liability should their operations have
		to groundwater, surface water, human health or the environment. In sponsibility for compliance with any other federal, state, or local laws
and/or regulations.	Ta C-141 report does not reneve the operator of re-	poinsionity for compitance with any other rederar, state, or local laws
Printed Name: DeAni	n Grant	Title: HSE Administrative Assistant
Signature:	Opeant	Date: 2/7/2019 Telephone: (432) 253-4513
email: agrant@co	ncho com	(432) 253-4513
email: agrain 300		Telephone: (102) 200 1010
OCD Only		
Received by:		Date:

Received by OCD: 4/3/2020 4:25:11 PM Form C-141 State of New Mexico
Page 3 Oil Conservation Division

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Incident ID	
District RP	
Facility ID	
Application ID	

## **Site Assessment/Characterization**

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	78' (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes 🗹 No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	✓ Yes ☐ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes 🗹 No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes 🗹 No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes 🗹 No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes 🗹 No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes 🗹 No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes 🗹 No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes 🗹 No
Are the lateral extents of the release overlying an unstable area such as karst geology?	✓ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes 🗹 No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	Yes No
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and ver contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.	tical extents of soil
Characterization Report Checklist: Each of the following items must be included in the report.	
Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring well Field data	ls.
Data table of soil contaminant concentration data	
Depth to water determination  Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release	
Boring or excavation logs	
Photographs including date and GIS information  Topographic/Aerial maps	
Laboratory data including chain of custody	

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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ncident ID	
District RP	
acility ID	

Application ID

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. Printed Name: Ike Tayarez Title: Senior HSE Supervisor Date: 4/03/2020 Signature: email: itavarez@concho.com Telephone: 432-701-8630 **OCD Only** Received by: Date:

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	Page 33	<u> </u>
nt ID		

Incident ID		
District RP		
Facility ID		
Application ID		

# **Remediation Plan**

Remediation Plan Checklist: Each of the following items must be	e included in the plan.
Detailed description of proposed remediation technique  Scaled sitemap with GPS coordinates showing delineation point  Estimated volume of material to be remediated  Closure criteria is to Table 1 specifications subject to 19.15.29.1  Proposed schedule for remediation (note if remediation plan times)	2(C)(4) NMAC
<u>Deferral Requests Only</u> : Each of the following items must be con	firmed as part of any request for deferral of remediation.
Contamination must be in areas immediately under or around predeconstruction.	roduction equipment where remediation could cause a major facility
Extents of contamination must be fully delineated.	
Contamination does not cause an imminent risk to human health	n, the environment, or groundwater.
I hereby certify that the information given above is true and comple	te to the best of my knowledge and understand that pursuant to OCD
	certain release notifications and perform corrective actions for releases nce of a C-141 report by the OCD does not relieve the operator of a and remediate contamination that pose a threat to groundwater, acceptance of a C-141 report does not relieve the operator of
Printed Name: Ike Tavarez	Title: Senior HSE Supervisor
Signature:	Date: 4/03/2020
email: itavarez@concho.com	Telephone: 432-701-8630
OCD Only	
Received by:	Date:
☐ Approved ☐ Approved with Attached Conditions of	Approval
Signature:	Date:

# Appendix B

# Water Well Data Average Depth to Groundwater (ft) COG - JR's Horz Federal #2 Eddy County, New Mexico

		South		B East	
6	<sup>5</sup> Mal 59	ja <mark>mar<sup>35</sup></mark>	3 32	2	1 Site
7	8	9	10	11	12
18	17	16	15 <b>48</b>	14	1/3
67			49		
19	20	21	22	23	24
	96				1/
30	29	28	27	26 <b>40</b>	25
	15	90			
31	32	33	34	35	36
					40

	25 South		South 29 East		
6	5	4	3	2	1
<b>40</b>	8	9	10	11	12
لے			40		
18	17	16	15	14	13
			60		
19	20	21	22	23	24
30	29	28	27	26	25
30					
31	32 115	33	34	35	36

	25 Sc	outh	30	East	
6	5	4	3	2 <b>295</b>	1
7 <b>26</b> 4	8	9 <b>295</b>	10	11	12 <b>390</b>
18	17	16	15	14	13
19	20	21 <b>265 268</b>	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	26 South			East	
6	5	4	3	2 <b>120</b>	1
				21	
7	8	9	10	11	12
					100
18	17	16	15	14	13
				120	56
19	20	21	22	23	24
			120		
30	29	28	27	26	25
31	32	33	34	35	36

	26 Sc	uth	29		
6	5 <b>78</b>	4	3	2	1
7	8	9	10	11	12
18	17	16 <b>120 125</b>	15	14	13
19	20	21	22 <b>57</b> <b>69</b>	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	26 South 30 East				
6	5 179 180	4	3	2	1
7	8 <b>172</b>	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 <b>180</b>
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

(R=POD has been replaced, O=orphaned,

C=the file is water right file.) closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

	POD Sub-		Q	QQ	)					Depth	Depth	Water
POD Number	Code basin	County	64	16 4	Sec	Tws	Rng	2	X Y	Well	Water	Column
C 01354 X-3	CUB	ED	2	1 3	23	26S	29E	598323	3543837	<b>)</b> 170		
C 02038	С	ED	3 2	2 4	26	26S	29E	599204	1 3541992* (	<b>)</b> 200		
C 03507 POD1	С	ED	1 :	3 3	05	26S	29E	593064	1 3548313 (	) 140	78	62
C 03508 POD1	С	ED	1 :	3 3	05	26S	29E	593063	3548361	140	75	65
C 03605 POD1	CUB	ED	4	2 3	27	26S	29E	596990	3541983 (	<b>)</b> 45	0	45

Average Depth to Water:

51 feet

Minimum Depth:

0 feet

Maximum Depth:

78 feet

**Record Count: 5** 

**PLSS Search:** 

Township: 26S Range: 29E



USGS Home Contact USGS Search USGS

### **National Water Information System: Web Interface**

**USGS Water Resources** 

Data Category:	Geographic Area:		
Groundwater	✓ United States	~	GO

#### Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

Groundwater levels for the Nation

#### Search Results -- 1 sites found

site\_no list =

• 320301103572201

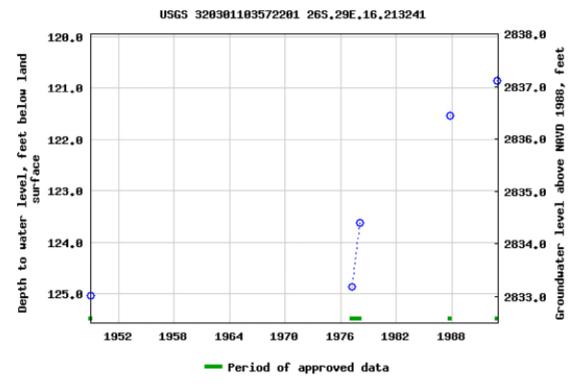
#### Minimum number of levels = 1

Save file of selected sites to local disk for future upload

## USGS 320301103572201 26S.29E.16.213241

Available data for this site	Groundwater:	Field measurements	; ×	GO	
Eddy County, New Mexico					
Hydrologic Unit Code 13070	001				
Latitude 32°03'01", Longitu	ide 103°57	'22" NAD27			
Land-surface elevation 2,958	8 feet abov	e NAVD88			
The depth of the well is 335	feet below	land surface.			
This well is completed in the	Rustler Fo	rmation (312R	SLR) I	ocal a	aquifer
·	Outpu	t formats	-		-

# Table of data Tab-separated data Graph of data Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.

Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

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Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for USA: Water Levels

URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: <u>USGS Water Data Support Team</u>

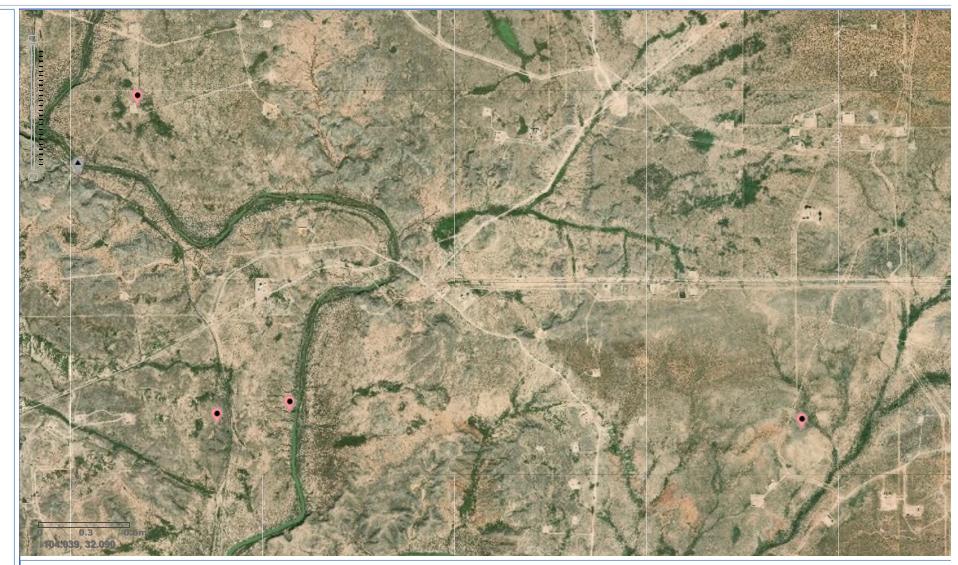
Page Last Modified: 2019-10-31 14:59:25 EDT

0.62 0.53 nadww01





**National Water Information System: Mapper** 



Site Information



Received by OCD: 4/3/2020 4:25:11 PM

# NFHL Web Mapping Application



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# Appendix C

# **Analytical Report 624554**

for Tetra Tech- Midland

Project Manager: Mike Carmona
JR's Horz Federal #2 Area 1 (2/4/19)
212C-MD-01739
20-MAY-19

Collected By: Client





#### 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)





20-MAY-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 624554

JR's Horz Federal #2 Area 1 (2/4/19) Project Address: Eddy County, NM

#### Mike Carmona:

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) 624554. 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. 624554 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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# **Sample Cross Reference 624554**



# Tetra Tech- Midland, Midland, TX

JR's Horz Federal #2 Area 1 (2/4/19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH-3 (0-1')	S	05-15-19 00:00		624554-001
AH-3 (1-1.5')	S	05-15-19 00:00		624554-002
AH-3 (1.5-2')	S	05-15-19 00:00		624554-003
AH-4 (0-1')	S	05-15-19 00:00		624554-004
AH-5 (0-1')	S	05-15-19 00:00		624554-005
AH-5 (1-1.5')	S	05-15-19 00:00		624554-006
AH-5 (2-2.5')	S	05-15-19 00:00		624554-007
AH-5 (3-3.5')	S	05-15-19 00:00		624554-008
AH-5 (4-4.5')	S	05-15-19 00:00		624554-009
AH-6 (0-1')	S	05-15-19 00:00		624554-010
AH-6 (1-1.5')	S	05-15-19 00:00		624554-011
AH-6 (2-2.5')	S	05-15-19 00:00		624554-012
AH-6 (3-3.5')	S	05-15-19 00:00		624554-013
AH-6 (4-4.5')	S	05-15-19 00:00		624554-014



#### **CASE NARRATIVE**

Client Name: Tetra Tech- Midland

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Project ID: 212C-MD-01739

20-MAY-19 Report Date: Date Received: 05/16/2019 Work Order Number(s): 624554

#### Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3089307 BTEX by EPA 8021B

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

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Samples affected are: 624554-005,624554-004.



# Certificate of Analysis Summary 624554

#### Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Date Received in Lab: Thu May-16-19 01:47 pm Report Date: 20-MAY-19

Project Manager: Jessica Kramer

**Project Id:** 212C-MD-01739 **Contact:** Mike Carmona **Project Location:** 

Eddy County, NM

	Lab Id:	624554-0	01	624554-0	02	624554-0	03	624554-	004	624554-	005	624554-0	006
Analysis Requested	Field Id:	AH-3 (0-	1')	AH-3 (1-1	.5')	AH-3 (1.5	-2')	AH-4 (0	-1')	AH-5 (0	)-1')	AH-5 (1-1	1.5')
Anaiysis Kequesiea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-15-19 (	00:00	May-15-19 (	00:00	May-15-19	00:00	May-15-19	00:00	May-15-19	00:00	May-15-19	00:00
BTEX by EPA 8021B	Extracted:	May-16-19	17:00					May-16-19	17:00	May-16-19	17:00		
	Analyzed:	May-17-19	02:54					May-17-19	03:13	May-17-19	03:32		
	Units/RL:	mg/kg	RL					mg/kg	RL	mg/kg	RL		
Benzene		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
Toluene		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
Ethylbenzene		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
m,p-Xylenes		< 0.00398	0.00398					< 0.00403	0.00403	< 0.00398	0.00398		
o-Xylene		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
Total Xylenes		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
Total BTEX		< 0.00199	0.00199					< 0.00202	0.00202	< 0.00199	0.00199		
Chloride by EPA 300	Extracted:	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30
	Analyzed:	May-17-19	23:00	May-17-19 2	23:07	May-17-19 2	23:15	May-17-19	23:22	May-17-19	23:29	May-17-19	23:58
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3020	25.1	1310	4.96	1470	5.01	341	5.01	3820	50.1	281	5.01
TPH by SW8015 Mod	Extracted:	May-17-19	14:00					May-17-19	14:00	May-17-19	14:00		
	Analyzed:	May-18-19	01:36					May-18-19	01:56	May-18-19	02:16		
	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					<15.0	15.0	<15.0	15.0		
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0					<15.0	15.0	<15.0	15.0		
Total TPH		<15.0	15.0					<15.0	15.0	<15.0	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.

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Jessica Vermer



# **Certificate of Analysis Summary 624554**

#### Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Date Received in Lab: Thu May-16-19 01:47 pm

**Report Date:** 20-MAY-19 **Project Manager:** Jessica Kramer

Project Id: 212C-MD-01739
Contact: Mike Carmona

**Project Location:** Eddy County, NM

	Lab Id:	624554-0	007	624554-0	08	624554-0	09	624554-(	010	624554-0	11	624554-0	12
	Field Id:	AH-5 (2-2	2.5')	AH-5 (3-3	3.5')	AH-5 (4-4	.5')	AH-6 (0-	-1')	AH-6 (1-1	.5')	AH-6 (2-2	.5')
Analysis Requested	Depth:		,	- (	,		,		,		,		,
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-15-19	00:00	May-15-19 (	00:00	May-15-19 (	00:00	May-15-19	00:00	May-15-19	00:00	May-15-19 (	00:00
BTEX by EPA 8021B	Extracted:			,				May-16-19		,			
	Analyzed:							May-17-19					
	Units/RL:							mg/kg	RL				
Benzene	Unus/KL:							<0.00200	0.00200				
Toluene								<0.00200	0.00200				
Ethylbenzene								< 0.00200	0.00200				
m,p-Xylenes								< 0.00401	0.00401				
o-Xylene								< 0.00200	0.00200				
Total Xylenes								< 0.00200	0.00200				
Total BTEX								< 0.00200	0.00200				
Chloride by EPA 300	Extracted:	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19	10:30	May-17-19 1	0:30
	Analyzed:	May-17-19	23:36	May-18-19 (	00:05	May-18-19 (	00:27	May-18-19	00:34	May-18-19	00:42	May-18-19 0	0:49
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride	·	26.1	4.99	68.0	50.2	58.3	5.03	8160	50.3	6080	49.7	13300	100
TPH by SW8015 Mod	Extracted:							May-17-19	14:00				
	Analyzed:							May-18-19	03:17				
	Units/RL:							mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)	,							<15.0	15.0				
Diesel Range Organics (DRO)		·		·				<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)								<15.0	15.0				
Total TPH								<15.0	15.0				

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Jessica Vramer

Jessica Kramer Project Assistant



# **Certificate of Analysis Summary 624554**

Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)



Project Id:

212C-MD-01739 Mike Carmona

Contact:
Project Location:

Eddy County, NM

**Date Received in Lab:** Thu May-16-19 01:47 pm

Report Date: 20-MAY-19

Project Manager: Jessica Kramer

	Lab Id:	624554-0	13	624554-0	)14			
Analysis Requested	Field Id:	AH-6 (3-3	.5')	AH-6 (4-4	1.5')			
Anaiysis Kequesiea	Depth:							
	Matrix:	SOIL		SOIL				
	Sampled:	May-15-19 (	00:00	May-15-19	00:00			
Chloride by EPA 300	Extracted:	May-17-19	10:30	May-17-19	10:30			
	Analyzed:	May-18-19	00:56	May-18-19	01:14			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		7950	49.7	1540	24.9			

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Jessica Vramer



# **Flagging Criteria**



- Page 50 of 214
- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- \*\* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Orders: 624554,

Lab Batch #: 3089307

Sample: 624554-001 / SMP

**Project ID:** 212C-MD-01739

Matrix: Soil Batch: 1

**Units:** Date Analyzed: 05/17/19 02:54 mg/kg SURROGATE RECOVERY STUDY True Amount Control BTEX by EPA 8021B Recovery **Found** Amount Limits Flags [A] [B] %R %R [D]**Analytes** 1,4-Difluorobenzene 70-130 0.0298 0.0300 99 4-Bromofluorobenzene 0.0377 0.0300 126 70-130

Lab Batch #: 3089307

Sample: 624554-004 / SMP

Batch: 1

Matrix: Soil

**Units:** 

mg/kg

**Date Analyzed:** 05/17/19 03:13

SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0288 0.0300 96 70-130 4-Bromofluorobenzene 0.0300 \*\* 0.0410 137 70-130

**Lab Batch #:** 3089307

Sample: 624554-005 / SMP

Batch:

Matrix: Soil

**Date Analyzed:** 05/17/19 03:32 **Units:** mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Limits Found Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1.4-Difluorobenzene 0.0276 0.0300 92 70-130

0.0438

4-Bromofluorobenzene Lab Batch #: 3089307

Sample: 624554-010 / SMP

Batch:

Matrix: Soil

146

70-130

\*\*

0.0300

**Units:** 

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 03:51	SU	RROGATE RE	ECOVERY S	STUDY	
	BTE	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0299	0.0300	100	70-130	
4-Bromoflu	orobenzene		0.0368	0.0300	123	70-130	

Lab Batch #: 3089544

Sample: 624554-001 / SMP

Batch:

Matrix: Soil

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

**Date Analyzed:** 05/18/19 01:36

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	100	99.8	100	70-135	
o-Terphenyl	49.8	49.9	100	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Orders: 624554,

**Lab Batch #:** 3089544

Sample: 624554-004 / SMP

**Project ID:** 212C-MD-01739

Matrix: Soil Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 01:56	SU	RROGATE RI	ECOVERY S	STUDY	
	TPH b	y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	tane		101	99.8	101	70-135	
o-Terpheny	1		50.0	49.9	100	70-135	

**Lab Batch #:** 3089544

Sample: 624554-005 / SMP

**Units:** 

mg/kg	<b>Date Analyzed:</b> 05/18/19 02:16	SU	RROGATE RI	ECOVERY S	STUDY	
ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
;	<del>-</del>	100	99.9	100	70-135	
		50.1	50.0	100	70-135	

Lab Batch #: 3089544

1-Chlorooctane o-Terphenyl

**Sample:** 624554-010 / SMP

Batch: 1

Matrix: Soil

Date Analyzed: 05/18/19 03:17

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 03:17	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorood	ctane		101	99.7	101	70-135	
o-Terphen	yl		50.3	49.9	101	70-135	

**Lab Batch #:** 3089307

Sample: 7678055-1-BLK / BLK

Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 00:41	SU	RROGATE R	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	robenzene		0.0308	0.0300	103	70-130	
4-Bromofly	uorobenzene		0.0317	0.0300	106	70-130	

Lab Batch #: 3089544

Sample: 7678170-1-BLK / BLK

Batch:

Matrix: Solid

I Inita.

ma/ka

Date Analyzed: 05/17/19 21:36

Units:	mg/kg	Date Analyzed: 03/17/19 21.30	SURROGATE RECOVERY STUDY										
	TPH I	oy 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-Terpheny	[		54.0	50.0	108	70-135							

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Orders: 624554,

**Sample:** 7678055-1-BKS / BKS

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

Matrix: Solid Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/16/19 23:08	SURROGATE RECOVERY STUDY									
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
		Analytes			[D]							
1,4-Difluoro	obenzene		0.0285	0.0300	95	70-130						
4-Bromofluorobenzene		0.0330	0.0300	110	70-130							

**Lab Batch #:** 3089544

**Sample:** 7678170-1-BKS / BKS

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 05/17/19 21:55

TPH by SW8015 Mod

SURROGATE RECOVERY STUDY **Amount** True Control Limits Found Amount Flags Recovery [B] %R %R [D]

[A] **Analytes** 1-Chlorooctane 129 100 129 70-135 o-Terphenyl 61.1 50.0 122 70-135

Lab Batch #: 3089307

Sample: 7678055-1-BSD / BSD

Batch:

1 Matrix: Solid

Units: mg/	ECOVERY S	OVERY STUDY					
	BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
1,4-Difluorobenzene	2	0.0283	0.0300	94	70-130		
4-Bromofluorobenze	ene	0.0326	0.0300	109	70-130		

**Lab Batch #:** 3089544

**Sample:** 7678170-1-BSD / BSD

Batch:

Matrix: Solid CLIDDOCATE DECOMEDA CELIDA

<b>Units:</b>	mg/kg	<b>Date Analyzed:</b> 05/17/19 22:15	SURROGATE RECOVERY STUDY										
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags						
1-Chlorooc	ctane		129	100	129	70-135							
o-Terphenyl			64.9	50.0	130	70-135							

Lab Batch #: 3089307

**Sample:** 624486-021 S / MS

Batch:

Matrix: Soil

Units:

**Date Analyzed:** 05/16/19 23:46

Units:	mg/kg	<b>Date Analyzed:</b> 05/16/19 23:46	SURROGATE RECOVERY STUDY										
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
		Analytes			[D]								
1,4-Difluor	robenzene		0.0283	0.0300	94	70-130							
4-Bromofluorobenzene		0.0346	0.0300	115	70-130								

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Orders: 624554,

**Sample:** 624551-001 S / MS

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 22:55	SURROGATE RECOVERY STUDY										
TPH by SW8015 Mod  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags							
1-Chloroocta	ane		128	99.7	128	70-135							
o-Terphenyl			58.5	49.9	117	70-135							

Lab Batch #: 3089307

**Sample:** 624486-021 SD / MSD

Batch: 1

Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 05/17/19 00:05

SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0287 0.0300 96 70-130 4-Bromofluorobenzene

0.0342

Lab Batch #: 3089544

**Sample:** 624551-001 SD / MSD

Batch:

Matrix: Soil

114

70-130

0.0300

**Date Analyzed:** 05/17/19 23:15

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 23:15	SURROGATE RECOVERY STUDY										
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags						
		Analytes			[15]								
1-Chlorood	ctane		125	99.9	125	70-135							
o-Terphen	yl		56.4	50.0	113	70-135							

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



Page 55 of 214

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Order #: 624554

**Project ID:** 212C-MD-01739

**Analyst:** 

SCM

**Date Prepared:** 05/16/2019

**Date Analyzed:** 05/16/2019

**Lab Batch ID:** 3089307

Sample: 7678055-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]				
Benzene	< 0.00201	0.100	0.100	100	0.0998	0.103	103	3	70-130	35	
Toluene	< 0.00201	0.100	0.0984	98	0.0998	0.0997	100	1	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.106	106	0.0998	0.107	107	1	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.224	111	0.200	0.225	113	0	70-130	35	
o-Xylene	< 0.00201	0.100	0.111	111	0.0998	0.112	112	1	70-130	35	

**Analyst:** 

SPC

**Lab Batch ID:** 3089480

**Sample:** 7678108-1-BKS

**Date Prepared:** 05/17/2019

**Batch #:** 1

**Date Analyzed:** 05/17/2019

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	< 5.00	250	260	104	250	261	104	0	90-110	20	

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



## **BS / BSD Recoveries**



Page 56 of 214

C<sub>A</sub>

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

**Work Order #:** 624554

**Project ID:** 212C-MD-01739

Analyst: ARM

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/17/2019

**Lab Batch ID:** 3089544

**Sample:** 7678170-1-BKS

**Batch #:** 1

Matrix: Solid

Units:

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1080	108	1000	1090	109	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1120	112	1000	1120	112	0	70-135	20	

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



#### Form 3 - MS / MSD Recoveries



Page 57 of 214

Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Order #:

624554

**Project ID:** 212C-MD-01739

Lab Batch ID:

3089307

**QC- Sample ID:** 624486-021 S

Batch #:

Matrix: Soil

Date Analyzed:

05/16/2019

**Date Prepared:** 05/16/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0847	84	0.0996	0.0951	95	12	70-130	35	
Toluene	< 0.00202	0.101	0.0868	86	0.0996	0.0940	94	8	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0942	93	0.0996	0.102	102	8	70-130	35	
m,p-Xylenes	< 0.00403	0.202	0.199	99	0.199	0.215	108	8	70-130	35	
o-Xylene	< 0.00202	0.101	0.0993	98	0.0996	0.106	106	7	70-130	35	

Lab Batch ID:

3089480

**QC- Sample ID:** 624551-017 S

-017 S

Batch #:

Matrix: Soil

Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

9 Analyst: SP

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added	Spiked Sample Result [C]	Sample %R	Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride	175	248	421	99	248	420	99	0	90-110	20	

Lab Batch ID:

3089480

**QC- Sample ID:** 624554-007 S

Batch #:

Matrix: Soil

Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	26.1	250	296	108	250	298	109	1	90-110	20	

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



## Form 3 - MS / MSD Recoveries



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Project Name: JR's Horz Federal #2 Area 1 (2/4/19)

Work Order #:

624554 3089544

**QC- Sample ID:** 624551-001 S

**Project ID:** 212C-MD-01739

Matrix: Soil

Lab Batch ID: Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Batch #:

ом

**Reporting Units:** 

mg/kg

19 Analyst: ARM

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY 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)	8.20	997	1130	113	999	1150	114	2	70-135	20	
Diesel Range Organics (DRO)	8.48	997	1090	108	999	1120	111	3	70-135	20	

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

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		Relinquished by:	Relinquished by:	Relinquished by:											( LAB USE )	LAB#		orina.		Receiving Laboratory:	invoice to:	Project Location:	Project Name:		Client Name:
	paie. Ilifle:	Date:	116/m	Date: Time:		AH-5 (4-4.5')	AH-5 (3-3.5')	AH-5 (2-2.5')	AH-5 (1-1.5')	AH-5 (0-1')	AH-4 (0-1')	AH-3 (1.5-2')	AH-3 (1-1.5')	AH-3 (0-1')		SAMPLE IDENTIFICATION		Run deeper samples if TPH (GRO + DRO + MRO) exceeds Total BTEX exceeds 50 mg/kg.	Xenco	COG Ike Tavarez	eddy County, NM	(county,	JRs Horz Federal #2 Area 1 (2/4/19)	COG	Tetra Tech, Inc.
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	Date:	Date:	Slikali	Date:			× >							×	WATER SOIL HCL HNO <sub>3</sub>		MATRIX PRES	DRO + MRO) exceeds 1,000 mg/gk. Run deeper samples if benzene excee	Mike Carmona	,	212C-MD-01739			Mike Carmona	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 862-4559 Fax (432) 682-3946
	Time:	Time:	中华一中	Time:	2	<b>.</b>	<b>.</b>	\		\		<u> </u>			ICE # CONTAI		$\dashv$	exceeds 10 mg/kg or	ā		739				ireet, Sie s 79705 559
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		•	4		West Committee of the C	-			z	Z 	ı Z			# CONTA			mg/kg o						
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Final 1.000



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 05/16/2019 01:47:00 PM

Checklist reviewed by:

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

Work Order #: 624554

Temperature Measuring device used: R8

WOIR Older #. 024354	·	_
	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		1
#2 *Shipping container in good condition	?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shipping con	ntainer/ cooler?	N/A
#5 Custody Seals intact on sample bottle	es?	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 relinque	uished/ received?	Yes
#10 Chain of Custody agrees with samp	le 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 indicat	ed test(s)?	Yes
#16 All samples received within hold tim	e?	Yes
#17 Subcontract of sample(s)?		No
#18 Water VOC samples have zero head	dspace?	N/A
* Must be completed for after-hours de	elivery of samples prior to placing in	n the refrigerator
Analyst:	PH Device/Lot#:	
Checklist completed by:		Date: <u>05/16/2019</u>
	0	

Date: 05/17/2019

# **Analytical Report 624555**

# for Tetra Tech- Midland

Project Manager: Mike Carmona

JRs Horz Federal #2 Washout Area (2/4/19)

212C-MD-01739

20-MAY-19

Collected By: Client





#### 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)





20-MAY-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 624555

JRs Horz Federal #2 Washout Area (2/4/19)

Project Address: Eddy County, NM

#### Mike Carmona:

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) 624555. 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. 624555 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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 624555**



# Tetra Tech- Midland, Midland, TX

JRs Horz Federal #2 Washout Area (2/4/19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
NSW-1	S	05-15-19 00:00		624555-001
NSW-2	S	05-15-19 00:00		624555-002
NSW-3	S	05-15-19 00:00		624555-003
SSW-1	S	05-15-19 00:00		624555-004
SSW-2	S	05-15-19 00:00		624555-005
SSW-3	S	05-15-19 00:00		624555-006
ESW-1	S	05-15-19 00:00		624555-007
ESW-2	S	05-15-19 00:00		624555-008
ESW-3	S	05-15-19 00:00		624555-009
ESW-4	S	05-15-19 00:00		624555-010
ESW-5	S	05-15-19 00:00		624555-011
WSW-1	S	05-15-19 00:00		624555-012
WSW-2	S	05-15-19 00:00		624555-013
WSW-3	S	05-15-19 00:00		624555-014
WSW-4	S	05-15-19 00:00		624555-015
WSW-5	S	05-15-19 00:00		624555-016

20-MAY-19

# Received by OCD: 4/3/2020 4:25:11 PM

#### **CASE NARRATIVE**

Client Name: Tetra Tech- Midland

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Project ID: 212C-MD-01739

Report Date: Date Received: 05/16/2019 Work Order Number(s): 624555

#### Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3089307 BTEX by EPA 8021B

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

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Samples affected are: 624555-001.



Mike Carmona

Eddy County, NM

**Contact:** 

Total TPH

**Project Location:** 

Certificate of Analysis Summary 624555

Tetra Tech- Midland, Midland, TX

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Date Received in Lab: Thu May-16-19 01:47 pm

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**Report Date:** 20-MAY-19 **Project Manager:** Jessica Kramer

Project Id: 212C-MD-01739

Lab Id: 624555-001 624555-002 624555-003 624555-004 624555-005 624555-006 Field Id: NSW-1 NSW-2 NSW-3 SSW-1 SSW-2 SSW-3 Analysis Requested Depth: Matrix: SOIL SOIL SOIL SOIL SOIL SOIL May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 Sampled: BTEX by EPA 8021B May-16-19 17:00 May-16-19 17:00 May-16-19 17:00 Extracted: May-16-19 17:00 May-17-19 05:24 Analyzed: May-17-19 05:05 May-17-19 05:43 May-17-19 06:02 RL RL RL RLUnits/RL: mg/kg mg/kg mg/kg mg/kg < 0.00200 0.00200 < 0.00201 0.00201 < 0.00202 0.00202 < 0.00199 0.00199 Benzene Toluene < 0.00200 0.00200 < 0.00201 0.00201 < 0.00202 0.00202 < 0.00199 0.00199 < 0.00200 0.00200 < 0.00201 0.00201 < 0.00202 0.00202 < 0.00199 0.00199 Ethylbenzene < 0.00404 < 0.00398 0.00398 0.00400 < 0.00402 0.00402 0.00404 m,p-Xylenes < 0.00400 o-Xylene < 0.00200 0.00200 < 0.00201 0.00201 < 0.00202 0.00202 < 0.00199 0.00199 < 0.00202 < 0.00200 0.00200 < 0.00201 0.00201 0.00202 0.00199 Total Xylenes < 0.00199 Total BTEX < 0.00200 0.00200 < 0.00201 0.00201 < 0.00202 0.00202 < 0.00199 0.00199 Chloride by EPA 300 Extracted: May-17-19 10:30 May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 Analyzed: May-18-19 01:21 May-18-19 04:21 May-18-19 04:43 May-18-19 04:50 May-18-19 04:58 May-18-19 05:05 Units/RL. mg/kg RL mg/kg RL mg/kg RL mg/kg RLmg/kg RL mg/kg RLChloride 98.1 4.97 66.8 5.00 80.4 4.98 964 5.00 102 5.02 261 4.98 TPH by SW8015 Mod May-17-19 14:00 Extracted: May-17-19 14:00 May-17-19 14:00 May-17-19 14:00 Analyzed: May-18-19 03:37 May-18-19 03:58 May-18-19 04:18 May-18-19 04:38 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RLGasoline Range Hydrocarbons (GRO) <14.9 14.9 <15.0 15.0 <14.9 14.9 <15.0 15.0 14.9 15.0 14.9 Diesel Range Organics (DRO) 24.6 <15.0 <14.9 15.3 15.0 Motor Oil Range Hydrocarbons (MRO) 14.9 <15.0 <14.9 <14.9 15.0 14.9 <15.0 15.0

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

24.6

14.9

Jessica Weamer

15.3

15.0

<14.9

14.9

<15.0

15.0



Mike Carmona

Eddy County, NM

**Contact:** 

Total TPH

**Project Location:** 

**Certificate of Analysis Summary 624555** 

Tetra Tech- Midland, Midland, TX

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Date Received in Lab: Thu May-16-19 01:47 pm

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**Report Date:** 20-MAY-19 **Project Manager:** Jessica Kramer

Project Id: 212C-MD-01739

Lab Id: 624555-007 624555-008 624555-009 624555-010 624555-011 624555-012 Field Id: ESW-1 ESW-2 ESW-3 ESW-4 ESW-5 WSW-1 Analysis Requested Depth: Matrix: SOIL SOIL SOIL SOIL SOIL SOIL May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 Sampled: May-15-19 00:00 May-15-19 00:00 BTEX by EPA 8021B May-16-19 17:00 May-16-19 17:00 Extracted: May-16-19 17:00 Analyzed: May-17-19 06:21 May-17-19 06:40 May-17-19 06:59 RL RL RLUnits/RL: mg/kg mg/kg mg/kg < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 Benzene Toluene < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 Ethylbenzene 0.00397 0.00398 < 0.00397 < 0.00402 0.00402 < 0.00398 m,p-Xylenes o-Xylene < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 Total Xylenes Total BTEX < 0.00198 0.00198 < 0.00201 0.00201 < 0.00199 0.00199 Chloride by EPA 300 May-17-19 16:15 Extracted: May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 May-17-19 16:15 Analyzed: May-18-19 05:27 May-18-19 05:34 May-18-19 05:41 May-18-19 05:48 May-18-19 06:03 May-18-19 05:56 Units/RL. mg/kg RL mg/kg RL mg/kg RL mg/kg RLmg/kg RL mg/kg RLChloride 1160 5.03 236 5.03 352 5.05 29.4 4.98 66.3 4.99 1410 4.98 TPH by SW8015 Mod Extracted: May-17-19 14:00 May-17-19 14:00 May-17-19 14:00 Analyzed: May-18-19 04:59 May-18-19 05:19 May-18-19 05:39 Units/RL: mg/kg RL mg/kg RL mg/kg RLGasoline Range Hydrocarbons (GRO) <15.0 15.0 <15.0 15.0 <15.0 15.0 15.0 15.0 Diesel Range Organics (DRO) <15.0 <15.0 15.0 <15.0 Motor Oil Range Hydrocarbons (MRO) 15.0 <15.0 15.0 <15.0 15.0 <15.0

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

<15.0

15.0

Jessica Weamer

<15.0

15.0

Jessica Kramer Project Assistant

<15.0

15.0



**Project Id:** 

**Contact:** 

**Certificate of Analysis Summary 624555** 

Tetra Tech- Midland, Midland, TX

Date Received in Lab: Thu May-16-19 01:47 pm

**Report Date:** 20-MAY-19 **Project Manager:** Jessica Kramer

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

**Project Location:** Eddy County, NM

212C-MD-01739

Mike Carmona

	Lab Id:	624555-0	112	624555-0	1.4	624555-0	1.5	624555-0	11.6		
Analysis Requested	Field Id:	WSW-2	2	WSW-3	3	WSW-	4	WSW-	5		
Thursday Requested	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	May-15-19	00:00	May-15-19 (	00:00	May-15-19	00:00	May-15-19	00:00		
BTEX by EPA 8021B	Extracted:					May-16-19	17:00				
	Analyzed:					May-17-19	07:18				
	Units/RL:					mg/kg	RL				
Benzene						< 0.00200	0.00200				
Toluene						< 0.00200	0.00200				
Ethylbenzene						< 0.00200	0.00200				
m,p-Xylenes						< 0.00400	0.00400				
o-Xylene						< 0.00200	0.00200				
Total Xylenes							0.00200				
Total BTEX						< 0.00200	0.00200				
Chloride by EPA 300	Extracted:	May-17-19	16:15	May-17-19	16:15	May-17-19	16:15	May-17-19	16:15		
	Analyzed:	May-18-19	06:25	May-18-19 (	06:32	May-18-19	06:54	May-18-19	07:01		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		1780	25.1	324	5.03	136	4.99	261	4.96		
TPH by SW8015 Mod	Extracted:					May-17-19	14:00				
	Analyzed:					May-18-19	05:59				
	Units/RL:					mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)						<15.0	15.0				
Diesel Range Organics (DRO)						<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)						<15.0	15.0				
Total TPH				· ·		<15.0	15.0	· ·			

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Jessica Vramer



# **Flagging Criteria**



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- 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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

Sample: 624555-001 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

Matrix: Soil Batch:

Units: m	g/kg	<b>Date Analyzed:</b> 05/17/19 05:05	SU	RROGATE RI	ECOVERY S	STUDY	
		oy EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	A	nalytes			[D]		
1,4-Difluorobenze	ne		0.0268	0.0300	89	70-130	
4-Bromofluoroben	izene		0.0400	0.0300	133	70-130	**

**Lab Batch #:** 3089307

Sample: 624555-003 / SMP

Batch: 1

Matrix: Soil

**Units:** 

Units: mg/kg Date Analyzed: 05/17/19 0:	5:24 <b>SU</b>	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0298	0.0300	99	70-130	
4-Bromofluorobenzene	0.0383	0.0300	128	70-130	

Lab Batch #: 3089307

Sample: 624555-004 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 05:43	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0300	0.0300	100	70-130	
4-Bromoflu	orobenzene		0.0368	0.0300	123	70-130	

**Lab Batch #:** 3089307

Sample: 624555-006 / SMP

Batch:

**Units:** 

mg/kg

/kg	<b>Date Analyzed:</b> 05/17/19 06:02	SU	RROGATE RI	ECOVERY S	STUDY	
BTE	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
e		0.0301	0.0300	100	70-130	
ene		0.0359	0.0300	120	70-130	

4-Bromofluorobenzene Lab Batch #: 3089307

1,4-Difluorobenzene

Sample: 624555-007 / SMP

Batch:

Matrix: Soil

**Date Analyzed:** 05/17/19 06:21

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 06:21	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	robenzene		0.0302	0.0300	101	70-130	
4-Bromoflu	uorobenzene		0.0375	0.0300	125	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

**Sample:** 624555-010 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 06:40	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]			
1,4-Difluorobenzene		0.0305	0.0300	102	70-130			
4-Bromofluorobenzene			0.0360	0.0300	120	70-130		

Lab Batch #: 3089307

Sample: 624555-012 / SMP

Batch: 1

Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 05/17/19 06:59

SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0302 0.0300 101 70-130 4-Bromofluorobenzene 0.0370 0.0300 123 70-130

Lab Batch #: 3089307

Sample: 624555-015 / SMP

Batch:

Matrix: Soil

Units: mg/kg Date Analyz	s: mg/kg Date Analyzed: 05/17/19 07:18 SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes				[D]			
1,4-Difluorobenzene		0.0300	0.0300	100	70-130		
4-Bromofluorobenzene		0.0366	0.0300	122	70-130		

**Lab Batch #:** 3089544

mg/kg

Sample: 624555-001 / SMP

Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 03:37	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooct	ane		98.1	99.6	98	70-135		
o-Terphenyl			49.6	49.8	100	70-135		

Lab Batch #: 3089544

Sample: 624555-003 / SMP

Batch:

Matrix: Soil

CUDDOCATE DECOVEDY CTUDY

Ilnite.

ma/ka

Date Analyzed: 05/18/19 03:58

Omits: mg/kg Date Analyzett: 05/16/19 05.36	SU	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
1-Chlorooctane	102	99.8	102	70-135			
o-Terphenyl	50.6	49.9	101	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

Sample: 624555-004 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 04:18	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes						
1-Chlorooct	ane		101	99.6	101	70-135		
o-Terphenyl			50.1	49.8	101	70-135		

**Lab Batch #:** 3089544

Sample: 624555-006 / SMP

Batch: 1 Matrix: Soil

**Units:** 

mg/kg

**Date Analyzed:** 05/18/19 04:38

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	103	99.9	103	70-135	
o-Terphenyl	51.2	50.0	102	70-135	

**Lab Batch #:** 3089544

Sample: 624555-007 / SMP

Batch:

Matrix: Soil

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

Date Analyzed: 05/18/19 04:59

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	101	99.8	101	70-135	
o-Terphenyl	50.3	49.9	101	70-135	

Lab Batch #: 3089544

**Sample:** 624555-010 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 05:19	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	etane		101	100	101	70-135			
o-Terpheny	/l		50.7	50.0	101	70-135			

Lab Batch #: 3089544

**Sample:** 624555-012 / SMP

Batch:

Matrix: Soil

**Units:** 

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 05:39	URROGATE RECOVERY STUDY				
TPH by SW8015 Mod		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]		
1-Chlorooc	ctane		101	100	101	70-135	
o-Terpheny	yl		50.1	50.0	100	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution

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# Form 2 - Surrogate Recoveries

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

Sample: 624555-015 / SMP

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 05:59	SURROGATE RECOVERY STUDY									
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
		Analytes			[D]							
1-Chlorooct	ane		99.5	99.9	100	70-135						
o-Terphenyl			49.3	50.0	99	70-135						

**Lab Batch #:** 3089307

Sample: 7678055-1-BLK / BLK

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 05/17/19 00:41

SURROGATE RECOVERY STUDY **Amount** True Control Limits Found Flags Amount Recovery [B] %R %R [D]

[A] **Analytes** 1,4-Difluorobenzene 0.0308 0.0300 103 70-130 4-Bromofluorobenzene 0.0317 0.0300 106 70-130

Lab Batch #: 3089544

BTEX by EPA 8021B

Sample: 7678170-1-BLK / BLK

Batch:

Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 21:36	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	ctane		107	100	107	70-135	
o-Terpheny	yl		54.0	50.0	108	70-135	

**Lab Batch #:** 3089307

**Sample:** 7678055-1-BKS / BKS

Batch:

Matrix: Solid

Units: mg/kg	<b>Date Analyzed:</b> 05/16/19 23:08	SU	RROGATE RI	ECOVERY	STUDY	
B'	ΓEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
	Analytes			[D]		
1.4-Difluorobenzene		0.0285	0.0300	95	70-130	

4-Bromofluorobenzene Lab Batch #: 3089544

**Sample:** 7678170-1-BKS / BKS

Batch:

0.0330

61.1

Matrix: Solid

0.0300

50.0

1

**Units:** 

1-Chlorooctane o-Terphenyl

mg/kg

Date Analyzed: 05/17/19 21:55

SU	RROGATE R	ECOVERY :	STUDY	
Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
129	100	129	70-135	

122

110

70-130

70-135

TPH by SW8015 Mod

**Analytes** 

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

**Sample:** 7678055-1-BSD / BSD

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

Matrix: Solid Batch: 1

Units: mg	g/kg	<b>Date Analyzed:</b> 05/16/19 23:27	SURROGATE RECOVERY STUDY									
		oy EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
	A	nalytes			[D]							
1,4-Difluorobenzer	ne		0.0283	0.0300	94	70-130						
4-Bromofluorobenz	zene		0.0326	0.0300	109	70-130						

Lab Batch #: 3089544

**Sample:** 7678170-1-BSD / BSD

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 05/17/19 22:15

SURROGATE RECOVERY STUDY

·		MOONIE M	BCO (ERT)	JICDI	
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	129	100	129	70-135	
o-Terphenyl	64.9	50.0	130	70-135	

**Lab Batch #:** 3089307

**Sample:** 624486-021 S / MS

Batch:

Matrix: Soil

**Units:** 

mg/kg

**Date Analyzed:** 05/16/19 23:46

SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Limits Found Amount Recovery Flags %R %R [A] [B] [D] **Analytes** 0.0283 0.0300 94 70-130

4-Bromofluorobenzene **Lab Batch #:** 3089544

1,4-Difluorobenzene

**Sample:** 624551-001 S / MS

Batch:

0.0346

Matrix: Soil

115

70-130

0.0300

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 22:55	SURROGATE RECOVERY STUDY									
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooct	ane		128	99.7	128	70-135						
o-Terpheny	1		58.5	49.9	117	70-135						

Lab Batch #: 3089307

Sample: 624486-021 SD / MSD

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 00:05	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluo	robenzene		0.0287	0.0300	96	70-130	
4-Bromofl	uorobenzene		0.0342	0.0300	114	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624555,

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

**Sample:** 624551-001 SD / MSD

Batch: 1 Matrix: Soil

Units:	TPH by SW8015 Mod  Analytes  Chlorooctane		SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chloroocta	nne		125	99.9	125	70-135			
o-Terphenyl			56.4	50.0	113	70-135			

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



Page 76 of 214

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Order #: 624555

**Project ID:** 212C-MD-01739

**Analyst:** 

SCM

**Date Prepared:** 05/16/2019

**Date Analyzed:** 05/16/2019

**Lab Batch ID:** 3089307

Sample: 7678055-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]				
Benzene	< 0.00201	0.100	0.100	100	0.0998	0.103	103	3	70-130	35	
Toluene	< 0.00201	0.100	0.0984	98	0.0998	0.0997	100	1	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.106	106	0.0998	0.107	107	1	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.224	111	0.200	0.225	113	0	70-130	35	
o-Xylene	< 0.00201	0.100	0.111	111	0.0998	0.112	112	1	70-130	35	

**Analyst:** 

SPC

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/17/2019

0

**Lab Batch ID:** 3089480

**Analytes** Chloride

**Sample:** 7678108-1-BKS

**Batch #:** 1

[C]

260

[D]

104

[E]

250

[B]

250

< 5.00

Matrix: Solid

90-110

20

**Units:** 

mg/kg

Chloride by EPA 300

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Blank Spike Blank Blank Spike Blank Blk. Spk Control Control RPD Added Spike Flag Sample Result Spike Spike Dup. Limits Limits Added [A] Result %R **Duplicate** %R % %R %RPD

Result [F]

261

[G]

104

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



## **BS / BSD Recoveries**



Page 77 of 214

Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Order #: 624555

**Project ID:** 212C-MD-01739

**Analyst:** 

CHE

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/18/2019

**Lab Batch ID:** 3089461

**Sample:** 7678111-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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]				
Chloride	2.82	250	254	102	250	254	102	0	90-110	20	

**Analyst:** 

ARM

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/17/2019

**Lab Batch ID:** 3089544

**Sample:** 7678170-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1080	108	1000	1090	109	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1120	112	1000	1120	112	0	70-135	20	

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





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Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Order #:

624555 3089307

**QC- Sample ID:** 624486-021 S

Batch #:

**Project ID:** 212C-MD-01739 Matrix: Soil

Lab Batch ID: Date Analyzed:

05/16/2019

**Date Prepared:** 05/16/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00202	0.101	0.0847	84	0.0996	0.0951	95	12	70-130	35	
Toluene	< 0.00202	0.101	0.0868	86	0.0996	0.0940	94	8	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0942	93	0.0996	0.102	102	8	70-130	35	
m,p-Xylenes	< 0.00403	0.202	0.199	99	0.199	0.215	108	8	70-130	35	
o-Xylene	< 0.00202	0.101	0.0993	98	0.0996	0.106	106	7	70-130	35	

Lab Batch ID:

3089461

**QC- Sample ID:** 624555-002 S

Batch #:

Matrix: Soil

Date Analyzed:

05/18/2019

**Date Prepared:** 05/17/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	66.8	250	327	104	250	321	102	2	90-110	20	

Lab Batch ID:

3089461

**QC- Sample ID:** 624555-011 S

Batch #:

Matrix: Soil

Date Analyzed:

05/18/2019

**Date Prepared:** 05/17/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	66.3	250	328	105	250	325	103	1	90-110	20	

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





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Project Name: JRs Horz Federal #2 Washout Area (2/4/19)

Work Order #:

624555

**Project ID:** 212C-MD-01739

Lab Batch ID:

3089480

**QC- Sample ID:** 624551-017 S

Batch #:

Matrix: Soil

Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	175	248	421	99	248	420	99	0	90-110	20	

Lab Batch ID:

3089480

**QC- Sample ID:** 624554-007 S

Batch #:

Matrix: Soil

**Date Analyzed:** 

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

**Reporting Units:** mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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]	[0]	[D]	[E]	2000000 [2]	[G]	, •	, , ,	, , , , ,	
Chloride	26.1	250	296	108	250	298	109	1	90-110	20	

Lab Batch ID:

3089544

**QC- Sample ID:** 624551-001 S

Batch #:

Matrix: Soil

**Date Analyzed:** 

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: ARM

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

1

TPH by SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	8.20	997	1130	113	999	1150	114	2	70-135	20	
Diesel Range Organics (DRO)	8.48	997	1090	108	999	1120	111	3	70-135	20	

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Date: Time:	⊒	Shop 13:47	alesander (alesander)			SSW-3	SSW-2	SSW-1	NSW-3	NSW-2	NSW-1		SAMPLE IDENTIFICATION			Xenco	COG Ike Tavarez	(county, Eddy County, NM	JRs Horz Federal #2 Washout Area (2/4/19)	COG	Tetra Tech, Inc.	Analysis Request of Chain of Custody Record
Received by:	Received by	Received by:		GEO-COMMUNICATION CONTRACTOR CONT		5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	DATE TIME	YEAR:	SAMPLING		Sampler Signature:		Project #:	9)	Site Manager:		
Da	Date	Date A				×	×	×	×	×	×	WATER SOIL HCL		MATRIX		Mike Carmona		212C-MD-01739		Mike Carmona	4000 N. Big Sj 401 Midland Tel (432) Fax (432)	
Date: Time:	ate: Time:	ate: Time:				×	×	×	×	×	×	HNO₃ ICE		PRESERVATIVE METHOD		rmona		D-01739		ona	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946	
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100-01 I	Sample Temperature	ONLY LAB USE				×		×	×			TPH TX10 TPH 8015 PAH 8270 Total Meta	005 ( M ( 0	Ext to	C35) DRO - Of				_ <u></u> <u></u>			
, [	<u> П</u>	REMARKS:										TCLP Meta TCLP Vola TCLP Sem RCI	als A itiles ni Vol	g As B latiles	a Cd Cr F					SKTKNV		
acial Report Limits o	RUSH: Same Day 24 I	<b>:</b>										GC/MS Vo GC/MS Se PCB's 808 NORM PLM (Asbe	mi. \ 32 / 6	/ol. 82 608						SIS REQUEST	245	Pa
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		Date: Time:		Date: Time:	5/16/PA 13:47	Date: Time:		N-4	W-3	W-2	W-1	V-5	V-4	V-3	V-2	V-1		SAMPLE IDENTIFICATION			Xenco	COG lke Tavarez		(county, Eddy County, NM	JRs Horz Federal #2 Washout Area (2/4/19)	COG	Tetra Tech, Inc.	Analysis Request of Chain of Custody Record
ORIGINAL COPY		Received by:	,	Receiped by:	P	Received by	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	DATE TIME	YEAR:	SAMPLING		Sampler Signature:			Project #:	19)	Site Manager:		
•		Date: Time:		Date: Time:		Pate: Time:	×	×	×	×	×	×	×	×	×	X	WATER SOIL HCL HNO <sub>3</sub> ICE		MATRIX PRESERVATIVE		Mike Carmona			212C-MD-01739		Mike Carmona	4000 N, Big Spring Street, Ste 401 Midland, Texas 79705 Tel (432) 682-4559 Fax (432) 682-946	
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(Circle) HAND DELIVERED	ゆう	下こう		7	ONLY	TAD I GA		×			×		×			×	BTEX 802 TPH TX10 TPH 8015 PAH 8270 Total Meta TCLP Meta	005 ( 6M ( 0 0C ls Ag	Ext to C: GRO - D	RO - OR	Se H	9						
FEDEX UPS .	Special Report L	Rush Charges Authorized		RUSH: Same Day		REMARKS:											TCLP Vola TCLP Sem RCI GC/MS Vo GC/MS Se PCB's 808 NORM	itiles ni Vol I. 82 mi. V	atiles 60B / 62 ol. 8270	24					Circle or Specify Method No.	ANALYSIS REQUEST	(020	
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				72 hr												F	lold								_		of 2	



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 05/16/2019 01:47:00 PM

Checklist completed by:

Checklist reviewed by:

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

Date: 05/16/2019

Date: 05/17/2019

Work Order #: 624555

Temperature Measuring device used: R8

Sample Receipt Ch	ecklist Comments
#1 *Temperature of cooler(s)?	1
#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#:	

Katie Lowe

# **Analytical Report 624551**

for Tetra Tech- Midland

Project Manager: Mike Carmona
JR's Horz Federal #2 Washout Area (2/4/19)
212C-MD-01739
20-MAY-19

Collected By: Client





## 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429), North Carolina (483)

Page 1 of 24





20-MAY-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 624551

JR's Horz Federal #2 Washout Area (2/4/19)

Project Address: Eddy County, NM

#### Mike Carmona:

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) 624551. 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. 624551 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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 624551**



## Tetra Tech- Midland, Midland, TX

JR's Horz Federal #2 Washout Area (2/4/19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH-1 (0-1')	S	05-15-19 00:00		624551-001
AH-1 (2')	S	05-15-19 00:00		624551-002
AH-1 (3')	S	05-15-19 00:00		624551-003
AH-1 (4')	S	05-15-19 00:00		624551-004
AH-3 (0-1')	S	05-15-19 00:00		624551-005
AH-3 (2')	S	05-15-19 00:00		624551-006
AH-3 (3')	S	05-15-19 00:00		624551-007
AH-5 (0-1')	S	05-15-19 00:00		624551-008
AH-5 (2')	S	05-15-19 00:00		624551-009
AH-5 (3')	S	05-15-19 00:00		624551-010
AH-6 (0-1')	S	05-15-19 00:00		624551-011
AH-6 (2')	S	05-15-19 00:00		624551-012
AH-7 (0-1')	S	05-15-19 00:00		624551-013
AH-7 (2')	S	05-15-19 00:00		624551-014
AH-7 (3')	S	05-15-19 00:00		624551-015
AH-8 (0-1')	S	05-15-19 00:00		624551-016
AH-8 (2')	S	05-15-19 00:00		624551-017
AH-8 (3')	S	05-15-19 00:00		624551-018
AH-9 (0-1')	S	05-15-19 00:00		624551-019
AH-9 (2')	S	05-15-19 00:00		624551-020
AH-9 (3')	S	05-15-19 00:00		624551-021

20-MAY-19



### CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Project ID: 212C-MD-01739

Report Date: Work Order Number(s): 624551 Date Received: 05/16/2019

## Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3089300 BTEX by EPA 8021B

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

Batch: LBA-3089307 BTEX by EPA 8021B

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

Batch: LBA-3089463 Inorganic Anions by EPA 300

Lab Sample ID 624551-011 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: 624551-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016.

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



Eddy County, NM

**Project Id: Contact:** 

**Project Location:** 

## Certificate of Analysis Summary 624551

## Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Date Received in Lab:** Thu May-16-19 01:47 pm

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Report Date: 20-MAY-19 Project Manager: Jessica Kramer

212C-MD-01739 Mike Carmona

<15.0

15.0

Lab Id: 624551-001 624551-002 624551-003 624551-004 624551-005 624551-006 Field Id: AH-1 (0-1') AH-1 (2') AH-1 (3') AH-1 (4') AH-3 (0-1') AH-3 (2') Analysis Requested Depth: Matrix: SOIL SOIL SOIL SOIL SOIL SOIL May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 Sampled: May-15-19 00:00 May-15-19 00:00 BTEX by EPA 8021B May-16-19 15:00 May-16-19 15:00 Extracted: Analyzed: May-17-19 07:30 May-17-19 07:49 RL RL Units/RL: mg/kg mg/kg < 0.00200 0.00200 < 0.00200 0.00200 Benzene Toluene < 0.00200 0.00200 < 0.00200 0.00200 < 0.00200 0.00200 < 0.00200 0.00200 Ethylbenzene 0.00399 < 0.00401 0.00401 m,p-Xylenes < 0.00399 o-Xylene < 0.00200 0.00200 < 0.00200 0.00200 < 0.00200 0.00200 < 0.00200 0.00200 Total Xylenes Total BTEX < 0.00200 0.00200 < 0.00200 0.00200 Chloride by EPA 300 May-16-19 16:30 Extracted: May-16-19 16:30 May-16-19 16:30 May-16-19 16:30 May-16-19 16:30 May-16-19 16:30 Analyzed: May-17-19 17:55 May-17-19 18:17 May-17-19 18:24 May-17-19 18:32 May-17-19 18:39 May-17-19 19:01 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RLmg/kg RL mg/kg RLChloride 502 5.01 1260 25.0 4320 25.1 3240 25.0 9050 49.9 12100 100 TPH by SW8015 Mod Extracted: May-17-19 14:00 May-17-19 14:00 Analyzed: May-17-19 22:35 May-17-19 23:35 Units/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 Motor Oil Range Hydrocarbons (MRO) 15.0 <15.0 <15.0 15.0 Total TPH

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Jessica Weamer

15.0

<15.0

Jessica Kramer Project Assistant



**Contact:** 

# **Certificate of Analysis Summary 624551**

## Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Date Received in Lab: Thu May-16-19 01:47 pm

**Report Date:** 20-MAY-19 **Project Manager:** Jessica Kramer

**Project Id:** 212C-MD-01739

Mike Carmona

**Project Location:** Eddy County, NM

	7 7 7 7 7	60.4551.6	07	624551.0	00	624551.0	00	624551.0	10	624551.0	\1.1	624551.0	110
	Lab Id:	624551-0		624551-0		624551-0		624551-0		624551-0		624551-0	
Analysis Requested	Field Id:	AH-3 (3	3')	AH-5 (0-	1')	AH-5 (2	(')	AH-5 (3	')	AH-6 (0-	·1')	AH-6 (2	2')
Timuty sis Tie que sieu	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-15-19	00:00	May-15-19 (	00:00	May-15-19 (	00:00	May-15-19	00:00	May-15-19	00:00	May-15-19	00:00
BTEX by EPA 8021B	Extracted:			May-16-19	15:00					May-16-19	17:00		
	Analyzed:			May-17-19 (	08:08					May-17-19	01:38		
	Units/RL:			mg/kg	RL					mg/kg	RL		
Benzene				< 0.00199	0.00199					< 0.00200	0.00200		
Toluene				< 0.00199	0.00199					< 0.00200	0.00200		
Ethylbenzene					0.00199					< 0.00200	0.00200		
m,p-Xylenes					0.00398					< 0.00399	0.00399		
o-Xylene				< 0.00199	0.00199					< 0.00200	0.00200		
Total Xylenes				< 0.00199	0.00199					< 0.00200	0.00200		
Total BTEX				< 0.00199	0.00199					< 0.00200	0.00200		
Chloride by EPA 300	Extracted:	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30
	Analyzed:	May-17-19	19:08	May-17-19	19:15	May-17-19	19:22	May-17-19	19:30	May-17-19	19:37	May-17-19	19:59
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		4350	25.2	504	5.04	409	5.00	473	5.03	212	5.02	95.2	5.04
TPH by SW8015 Mod	Extracted:			May-17-19	14:00					May-17-19	14:00		
	Analyzed:			May-17-19 2	23:55					May-18-19	00:16		
	Units/RL:			mg/kg	RL					mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)				<15.0	15.0					<14.9	14.9		
Diesel Range Organics (DRO)				<15.0	15.0					<14.9	14.9		
Motor Oil Range Hydrocarbons (MRO)				<15.0	15.0					<14.9	14.9		
Total TPH				<15.0	15.0					<14.9	14.9		

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Jessica Vramer

Jessica Kramer Project Assistant



212C-MD-01739

**Project Id:** 

Certificate of Analysis Summary 624551

Tetra Tech- Midland, Midland, TX

Date Received in Lab: Thu May-16-19 01:47 pm

Report Date: 20-MAY-19 Project Manager: Jessica Kramer

Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Contact:** Mike Carmona Eddy County, NM **Project Location:** 

	Lab Id:	624551-0	)13	624551-0	14	624551-0	15	624551-	016	624551-0	)17	624551-0	18
Analusia Daguastad	Field Id:	AH-7 (0-	-1')	AH-7 (2	·)	AH-7 (3	')	AH-8 (0	-1')	AH-8 (2	2')	AH-8 (3	')
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-15-19	00:00	May-15-19	00:00	May-15-19 (	00:00	May-15-19	00:00	May-15-19	00:00	May-15-19	00:00
BTEX by EPA 8021B	Extracted:	May-16-19	17:00					May-16-19	17:00				
	Analyzed:	May-17-19	01:57					May-17-19	02:16				
	Units/RL:	mg/kg	RL					mg/kg	RL				
Benzene		< 0.00200	0.00200					< 0.00200	0.00200				
Toluene		< 0.00200	0.00200					< 0.00200	0.00200				
Ethylbenzene		< 0.00200	0.00200					< 0.00200	0.00200				
m,p-Xylenes		< 0.00399	0.00399					< 0.00400	0.00400				
o-Xylene		< 0.00200	0.00200					< 0.00200	0.00200				
Total Xylenes		< 0.00200	0.00200					< 0.00200	0.00200				
Total BTEX		< 0.00200	0.00200					< 0.00200	0.00200				
Chloride by EPA 300	Extracted:	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30	May-16-19	16:30	May-17-19	10:30	May-17-19	10:30
	Analyzed:	May-17-19	20:06	May-17-19	20:28	May-17-19 2	20:35	May-17-19	20:42	May-17-19	21:55	May-17-19 2	22:17
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		13.5	5.02	8.09	4.98	12.4	5.00	318	5.04	175	4.96	343	4.95
TPH by SW8015 Mod	Extracted:	May-17-19	14:00					May-17-19	14:00				
	Analyzed:	May-18-19	00:36					May-18-19	00:56				
	Units/RL:	mg/kg	RL					mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)	·	<15.0	15.0					<15.0	15.0				
Diesel Range Organics (DRO)		<15.0	15.0					<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0					<15.0	15.0				
Total TPH		<15.0	15.0					<15.0	15.0				

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Jessica Vermer



**Project Id: Contact:** 

**Project Location:** 

212C-MD-01739

Eddy County, NM

Mike Carmona

## Certificate of Analysis Summary 624551

### Tetra Tech- Midland, Midland, TX

Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Date Received in Lab:** Thu May-16-19 01:47 pm

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Report Date: 20-MAY-19 Project Manager: Jessica Kramer

Lab Id: 624551-019 624551-020 624551-021 Field Id: AH-9 (0-1') AH-9 (2') AH-9 (3') Analysis Requested Depth: Matrix: SOIL SOIL SOIL May-15-19 00:00 May-15-19 00:00 May-15-19 00:00 Sampled: BTEX by EPA 8021B May-16-19 17:00 Extracted: Analyzed: May-17-19 02:35 RL Units/RL: mg/kg < 0.00200 0.00200 Benzene Toluene < 0.00200 0.00200 < 0.00200 0.00200 Ethylbenzene 0.00401 < 0.00401 m,p-Xylenes o-Xylene < 0.00200 0.00200 < 0.00200 0.00200 Total Xylenes Total BTEX < 0.00200 0.00200 Chloride by EPA 300 Extracted: May-17-19 10:30 May-17-19 10:30 May-17-19 10:30 Analyzed: May-17-19 22:24 May-17-19 22:31 May-17-19 22:38 Units/RL: mg/kg RL mg/kg RL mg/kg RL Chloride 137 5.03 168 5.02 425 5.02 TPH by SW8015 Mod May-17-19 14:00 Extracted: Analyzed: May-18-19 01:16 Units/RL: mg/kg RL Gasoline Range Hydrocarbons (GRO) <15.0 15.0 Diesel Range Organics (DRO) 15.0 <15.0 Motor Oil Range Hydrocarbons (MRO) 15.0 <15.0 Total TPH <15.0 15.0

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Jessica Vramer

Jessica Kramer Project Assistant



# **Flagging Criteria**



- Page 91 of 214
- 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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Work Orders** : 624551,

Sample: 624551-011 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

**Date Analyzed:** 05/17/19 01:38

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 01:38	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			[-]			
1,4-Difluorobenzene		0.0302	0.0300	101	70-130			
4-Bromofluorobenzene			0.0366	0.0300	122	70-130		

Lab Batch #: 3089307

Sample: 624551-013 / SMP

Batch: 1

Matrix: Soil

Units: mg/kg Date Analyzed: 05/17/19 01	:57 <b>SU</b>	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0301	0.0300	100	70-130				
4-Bromofluorobenzene	0.0375	0.0300	125	70-130				

Lab Batch #: 3089307

mø/kø

**Sample:** 624551-016 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 02:16	SURROGATE RECOVERY STUDY							
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluor	1,4-Difluorobenzene		0.0301	0.0300	100	70-130				
4-Bromofly	uorobenzene		0.0370	0.0300	123	70-130				

Lab Batch #: 3089307

Sample: 624551-019 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 02:35	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	1,4-Difluorobenzene			0.0300	100	70-130			
4-Bromofluorobenzene			0.0369	0.0300	123	70-130			

Lab Batch #: 3089300

Sample: 624551-001 / SMP

Batch:

Matrix: Soil

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

**Date Analyzed:** 05/17/19 07:30

	SCHROGITZ RECOVERT STOET				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0308	0.0300	103	70-130	
4-Bromofluorobenzene	0.0323	0.0300	108	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Work Orders** : 624551,

Sample: 624551-005 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089300

Matrix: Soil Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 07:49	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]			
1,4-Difluorol	benzene		0.0305	0.0300	102	70-130		
4-Bromofluorobenzene			0.0310	0.0300	103	70-130		

**Lab Batch #:** 3089300

Sample: 624551-008 / SMP

Batch: 1

Matrix: Soil

**Units:** 

Units: mg/kg Date Analyzed: 0.	5/17/19 08:08 SU	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0306	0.0300	102	70-130				
4-Bromofluorobenzene	0.0313	0.0300	104	70-130				

Lab Batch #: 3089544

Sample: 624551-001 / SMP

Batch:

Matrix: Soil

Date Analyzed: 05/17/19 22:35

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 22:35	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooc	ctane		100	99.7	100	70-135			
o-Terpheny	yl		50.0	49.9	100	70-135			

**Lab Batch #:** 3089544

**Sample:** 624551-005 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 23:35	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorood	ctane		102	99.8	102	70-135			
o-Terpheny	yl		51.0	49.9	102	70-135			

Lab Batch #: 3089544

Sample: 624551-008 / SMP

Batch:

Matrix: Soil

mg/kg

**Date Analyzed:** 05/17/19 23:55

<b>Units:</b>	mg/kg	<b>Date Analyzed:</b> 05/17/19 23:55	55 SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorood	ctane		101	99.9	101	70-135			
o-Terphen	yl		50.7	50.0	101	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624551,

Sample: 624551-011 / SMP

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

Matrix: Soil Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/18/19 00:16	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooct	ane		103	99.6	103	70-135		
o-Terphenyl			51.9	49.8	104	70-135		

**Lab Batch #:** 3089544

Sample: 624551-013 / SMP

Batch: Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 05/18/19 00:36

TPH by SW8015 Mod

SURROGATE RECOVERY STUDY **Amount** True Control Found Limits Amount Recovery Flags [B] %R %R

[A] [D] **Analytes** 1-Chlorooctane 102 99.7 102 70-135 o-Terphenyl 51.2 49.9 103 70-135

Lab Batch #: 3089544

Sample: 624551-016 / SMP

Batch:

Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 05/18/19 00:56

SURROGATE RECOVERY STUDY Amount True Control TPH by SW8015 Mod Found Limits Flags Amount Recovery %R %R [A] [B] [D] **Analytes** 1-Chlorooctane 101 99.9 101 70-135 o-Terphenyl 50.3 50.0 101 70-135

Lab Batch #: 3089544

--- - /1--

Sample: 624551-019 / SMP

Batch:

Matrix: Soil

Units: mg/kg Date Analyzed: 05/18/19 01:16 SURROGATE RECOVERY STUDY									
	TPH I	oy SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooctan	e		102	100	102	70-135			
o-Terphenyl			50.9	50.0	102	70-135			

Lab Batch #: 3089307

1,4-Difluorobenzene 4-Bromofluorobenzene Sample: 7678055-1-BLK / BLK

Batch:

Matrix: Solid

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

Date Analyzed: 05/17/19 00:41

•	SCHMOGHIE REGGYERI STOET						
BTEX by EPA 8021B	Amount True Found Amount [A] [B]		Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
e	0.0308	0.0300	103	70-130			

0.0300

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

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

0.0317

106

70-130

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Work Orders** : 624551,

**Sample:** 7678051-1-BLK / BLK

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089300

ma/lea

Matrix: Solid Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 00:53	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
		Analytes			[D]				
1,4-Difluoro	obenzene		0.0274	0.0300	91	70-130			
4-Bromoflu	orobenzene		0.0240	0.0300	80	70-130			

**Lab Batch #:** 3089544

**Sample:** 7678170-1-BLK / BLK

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 05/17/19 21:36

SURROGATE RECOVERY STUDY

	SURROGATE RECOVERT STUDI					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	107	100	107	70-135		
o-Terphenyl	54.0	50.0	108	70-135		

**Lab Batch #:** 3089307

Sample: 7678055-1-BKS / BKS

Batch:

Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 05/16/19 23:08

BTEX by EPA 8021B

SURROGATE RECOVERY STUDY Amount True Control Limits Found Amount Recovery Flags %R %R [B] [D]

[A] **Analytes** 1,4-Difluorobenzene 0.0285 0.0300 95 70-130 4-Bromofluorobenzene 0.0330 0.0300 110 70-130

**Lab Batch #:** 3089300

mo/ko

**Sample:** 7678051-1-BKS / BKS

Batch:

Matrix: Solid CLIDDOCATE DECOMEDA CELIDA

Units:	mg/kg	<b>Date Analyzed:</b> 05/16/19 23:20	SURROGATE RECOVERY STUDY						
	BTE	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	robenzene	<del>_</del>	0.0302	0.0300	101	70-130			
4-Bromoflu	uorobenzene		0.0289	0.0300	96	70-130			

Lab Batch #: 3089544

Sample: 7678170-1-BKS / BKS

Batch:

Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 05/17/19 21:55

SURROGATE RECOVERY STUDY

	SURROGATE RECOVERT STUDI					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	129	100	129	70-135		
o-Terphenyl	61.1	50.0	122	70-135		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

**Work Orders** : 624551,

**Sample:** 7678055-1-BSD / BSD

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089307

Matrix: Solid Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/16/19 23:27	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[2]			
1,4-Difluorobenzene		0.0283	0.0300	94	70-130			
4-Bromofluorobenzene			0.0326	0.0300	109	70-130		

**Lab Batch #:** 3089300

Sample: 7678051-1-BSD / BSD

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 05/16/19 23:39

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1,4-Difluorobenzene	0.0310	0.0300	103	70-130		
4-Bromofluorobenzene	0.0307	0.0300	102	70-130		

**Lab Batch #:** 3089544

**Sample:** 7678170-1-BSD / BSD

Batch:

Matrix: Solid

Units: mg/kg Date Analyzed: 05/17/19 22:15 SURROGATE RECOVERY STUDY							
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorood	ctane		129	100	129	70-135	
o-Terphen	vl		64.9	50.0	130	70-135	

Lab Batch #: 3089307

**Sample:** 624486-021 S / MS

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/16/19 23:46	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene		0.0283	0.0300	94	70-130			
4-Bromofluo	orobenzene		0.0346	0.0300	115	70-130			

Lab Batch #: 3089300

**Sample:** 624489-011 S / MS

Batch:

Matrix: Soil

CUDDOCATE DECOVEDY CTUDY

Units:

ma/ka

**Date Analyzed:** 05/16/19 23:58

Units. Hig/kg Date Analyzeu. 05/10/17 25.56	SURROGATE RECOVERY STUDY					
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1,4-Difluorobenzene	0.0311	0.0300	104	70-130		
4-Bromofluorobenzene	0.0299	0.0300	100	70-130		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Orders: 624551,

**Sample:** 624551-001 S / MS

**Project ID:** 212C-MD-01739

**Lab Batch #:** 3089544

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 22:55	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Allarytes						
1-Chlorooct	ane		128	99.7	128	70-135		
o-Terphenyl			58.5	49.9	117	70-135		

**Lab Batch #:** 3089307

**Sample:** 624486-021 SD / MSD

Batch: Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 05/17/19 00:05

SURROGATE RECOVERY STUDY **Amount** True Control Found Limits Amount Recovery Flags [B] %R %R [D]

[A] **Analytes** 1,4-Difluorobenzene 0.0287 0.0300 96 70-130 4-Bromofluorobenzene 0.0342 0.0300 114 70-130

Lab Batch #: 3089300

BTEX by EPA 8021B

Sample: 624489-011 SD / MSD

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 00:17	SURROGATE RECOVERY STUDY					
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluor	robenzene		0.0313	0.0300	104	70-130		
4-Bromoflu	uorobenzene		0.0312	0.0300	104	70-130		

**Lab Batch #:** 3089544

Sample: 624551-001 SD / MSD

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/17/19 23:15	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorood	ctane	11mi y ees	125	99.9	125	70-135	
o-Terpheny	yl		56.4	50.0	113	70-135	

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



## **BS / BSD Recoveries**



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Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Order #: 624551

**Project ID:** 212C-MD-01739

**Analyst:** 

SCM

**Date Prepared:** 05/16/2019

**Date Analyzed:** 05/16/2019

**Lab Batch ID:** 3089300

**Sample:** 7678051-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result	Spike Added	Blank Spike	Blank Spike	Spike Added	Blank Spike	Blk. Spk Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	[B]	Result [C]	%R [D]	[E]	Duplicate Result [F]	%R [G]	%	%R	%RPD	
Benzene	< 0.000386	0.100	0.105	105	0.0998	0.112	112	6	70-130	35	
Toluene	< 0.000457	0.100	0.0978	98	0.0998	0.103	103	5	70-130	35	
Ethylbenzene	< 0.000567	0.100	0.0998	100	0.0998	0.106	106	6	70-130	35	
m,p-Xylenes	< 0.00102	0.201	0.206	102	0.200	0.219	110	6	70-130	35	
o-Xylene	< 0.000346	0.100	0.105	105	0.0998	0.110	110	5	70-130	35	

**Analyst:** 

SCM

**Date Prepared:** 05/16/2019

**Date Analyzed:** 05/16/2019

**Lab Batch ID:** 3089307

**Sample:** 7678055-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00201	0.100	0.100	100	0.0998	0.103	103	3	70-130	35	
Toluene	< 0.00201	0.100	0.0984	98	0.0998	0.0997	100	1	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.106	106	0.0998	0.107	107	1	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.224	111	0.200	0.225	113	0	70-130	35	
o-Xylene	< 0.00201	0.100	0.111	111	0.0998	0.112	112	1	70-130	35	

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

## **BS / BSD Recoveries**



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Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Order #: 624551

**Project ID:** 212C-MD-01739

**Analyst:** 

CHE

**Date Prepared:** 05/16/2019

**Date Analyzed:** 05/17/2019

**Lab Batch ID:** 3089463

Sample: 7678026-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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]				
Chloride	< 5.00	250	254	102	250	254	102	0	90-110	20	

**Analyst:** 

SPC

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/17/2019

**Lab Batch ID:** 3089480

**Sample:** 7678108-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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]						
Chloride	<5.00	250	260	104	250	261	104	0	90-110	20			

**Analyst:** 

**ARM** 

**Date Prepared:** 05/17/2019

**Date Analyzed:** 05/17/2019

**Lab Batch ID:** 3089544

Sample: 7678170-1-BKS

**Batch #:** 1

Matrix: Solid

Units:

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1080	108	1000	1090	109	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1120	112	1000	1120	112	0	70-135	20	

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





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Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Order #:

624551

**Project ID:** 212C-MD-01739

Lab Batch ID:

3089300

**QC- Sample ID:** 624489-011 S

Batch #:

Matrix: Soil

Date Analyzed:

05/16/2019

**Date Prepared:** 05/16/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

#### Cuiltad Cample Cuiltad Parent Dunlicate Spiked Cantual Contuct

BTEX by EPA 8021B	Sample	Spike	Result	Sample		Spiked Sample		RPD	Limits	Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	0.000403	0.101	0.0950	94	0.0992	0.0955	96	1	70-130	35	
Toluene	0.000494	0.101	0.0840	83	0.0992	0.0847	85	1	70-130	35	
Ethylbenzene	< 0.000568	0.101	0.0739	73	0.0992	0.0745	75	1	70-130	35	
m,p-Xylenes	< 0.00102	0.201	0.141	70	0.198	0.140	71	1	70-130	35	
o-Xylene	< 0.000346	0.101	0.0731	72	0.0992	0.0740	74	1	70-130	35	

Lab Batch ID:

3089307

**QC- Sample ID:** 624486-021 S

Batch #:

Matrix: Soil

Date Analyzed:

05/16/2019

**Date Prepared:** 05/16/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]	[0]	[D]	[E]	Kesuit [F]	[G]	70	/0K	/0KI D	
Benzene	< 0.00202	0.101	0.0847	84	0.0996	0.0951	95	12	70-130	35	
Toluene	< 0.00202	0.101	0.0868	86	0.0996	0.0940	94	8	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0942	93	0.0996	0.102	102	8	70-130	35	
m,p-Xylenes	< 0.00403	0.202	0.199	99	0.199	0.215	108	8	70-130	35	
o-Xylene	< 0.00202	0.101	0.0993	98	0.0996	0.106	106	7	70-130	35	





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Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Order #:

624551

**QC- Sample ID:** 624551-001 S

Batch #:

Matrix: Soil

**Project ID:** 212C-MD-01739

Lab Batch ID: Date Analyzed: 3089463 05/18/2019

**Date Prepared:** 05/16/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

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#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	502	251	719	86	251	720	87	0	90-110	20	X

Lab Batch ID:

3089463

**QC- Sample ID:** 624551-011 S

Batch #:

Matrix: Soil

Date Analyzed:

05/17/2019

**Date Prepared:** 05/16/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chlorido	212	251	474	104	251	169	102	1	90-110	20	
Chloride	212	251	474	104	251	468	102	1	90-110	20	1

Lab Batch ID:

3089480

**QC- Sample ID:** 624551-017 S

Batch #:

Matrix: Soil

Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

1

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	175	248	421	99	248	420	99	0	90-110	20	

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





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Project Name: JR's Horz Federal #2 Washout Area (2/4/19)

Work Order #:

624551 3089480

**QC- Sample ID:** 624554-007 S

Batch #:

Matrix: Soil

**Project ID:** 212C-MD-01739

Lab Batch ID: Date Analyzed:

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Chloride	26.1	250	296	108	250	298	109	1	90-110	20		1

Lab Batch ID: Date Analyzed: 3089544

**QC- Sample ID:** 624551-001 S

Batch #:

Matrix: Soil

05/17/2019

**Date Prepared:** 05/17/2019

Analyst: ARM

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	8.20	997	1130	113	999	1150	114	2	70-135	20	
Diesel Range Organics (DRO)	8.48	997	1090	108	999	1120	111	3	70-135	20	

Analysis Request of Chain of Custody Record Relinquished by Relinquished by roject Location Client Name: Relinquished by: roject Name: leceiving Laboratory: LAB USE LAB# đ AH-3 (2") AH-1 (2') AH-3 (3') AH-1 (4") AH-5 (3') AH-5 (0-1') AH-1 (3') AH-1 (0-1') Run deeper samples if TPH (GRO + DRO + MRO) exceeds 1,000 mg/gk. Run deeper samples if benzene exceeds 10 mg/kg Total BTEX exceeds 50 mg/kg. AH-5 (2") AH-3 (0-1") Xenco COG Eddy County, NM COG lke Tavarez JRs Horz Federal #2 Washout Area (2/4/19) Tetra Tech, Inc. SAMPLE IDENTIFICATION Date: Date: Time: イケバクレ Site Manager ORIGINAL COPY Received by: 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 5/15/2019 DATE SAMPLING TIME WATER Mike Carmona MATRIX 4000 N. Big Spring Street, Ste 401 Midland, Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946 SOIL × × × × ×  $\times$ X × Mike Carmona 212C-MD-01739 Date: HCL PRESERVATIVE METHOD HNO₃ × × × × × × ICE  $\times$ # CONTAINERS z FILTERED (Y/N) z z z z z z Z Z Z BTEX 8260B BTEX 8021B  $\times$ × Sample Temperature (Circle) HAND DELIVERED ONLY CAR TPH TX1005 (Ext to C35) TPH 8015M (GRO - DRO - ORO - MRO) PAH 8270C (Circle or Specify Method No. Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg **ANALYSIS REQUEST** TCLP Volatiles REMARKS TCLP Semi Volatiles RUSH: Same Day 24 hr FEDEX Special Report Limits or TRRP Report ■Rush Charges Authorized RCI GC/MS Vol. 8260B / 624 UPS GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM Page PLM (Asbestos) × × ×  $\times$ ×  $\times$ Chloride Sulfate **TDS** Chloride General Water Chemistry (see attached list) Anion/Cation Balance 72 hr 잋 Hold

	/3/202				171	T	1	T	1	т	<u> </u>	1	T				C		ग	5	ğ. Δ	יסי	C	Pa
(elinquished by		Relinguished by	celinquished by											( LAB USE )	LAB#		omments:	ú	eceiving Labora	tvoice to:	roject Location: tate)	roject Name:	lient Name:	a
	, and the second	5/16/19 ·	Date:			AH-8 (3')	AH-8 (2')	AH-8 (0-1')	AH-7 (3')	AH-7 (2')	AH-7 (0-1')	AH-6 (2')	AH-6 (0-1')		SAMPLE IDENTIFICATION		Run deeper samples if TPH (GRO + DRO + MRO) e Total BTEX exceeds 50 mg/kg.	Xenco		COG Iko Tavaroz	n: (county, Eddy County, NM	JRs Horz Federal #2 Washout Area	COG	Tetra Tech, Inc.
Received by:	Nerce New A		Received by:	N.		5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	DATE	YEAR:	SAMPLING	xceeds 1,000 mg/gk. Run deepe	oambiei oigiraidie.	Sampler Signature:		Project #:	(2/4/19)	Site Manager:	
Date: Time:	_	13	Date: Time:			×	×	X	X	×	×	×	×	WATER SOIL HCL HNO <sub>3</sub> ICE		MATRIX PRESERVATIVE METHOD	r samples if benzene exceed	Mike Carmona	Þ		212C-MD-01739		Mike Carmona	4000 N. Big Spring Street. Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946
R8-	Sample Ten	) ON	LAB LAB			z	z	1 X X	Z	Z	1 N X	1 N	×	FILTERE BTEX 802 TPH TX10	D (Y 21B 005 (	RS /N) BTEX	8260B C35)	RO - M	MRG	0)				
Special Report		]	USE REMARKS:											Total Meta TCLP Met TCLP Sen RCI GC/MS Vc GC/MS Se PCB's 800	als Ag als A atiles ni Vo ol. 82 emi. \	g As Balatiles 260B / 6	a Cd Cr F					Circle or Specify Me	ANALYSIS REQU	(0)_4
Limits or TRRP Report	17 48 N					×	×	×	×	×	×	×	×	PLM (Asbe Chloride Chloride General V	Su Vate	lfate Chem		e atta	ache	ed list	)	— finod No.)	EST	155
	Date: Time: Received by: Date: Time: Received by:	Date: Time: Received by: Date: Time: Sample Temperature Received by: Date: Time: Sample Temperature Received by: Date: Time: Received by: Date: Date: Date: Date: Date: Dat	Date: Time: Received by: Date: Time: Sample Temperature  Date: Time: Received by: Date: Time:   Date: Time: Received by: Date: Time:	Date: Time: Received by Chate: Time: Sample Temperature Charges Authorized Date: Time: Date: Time: Sample Temperature Charges Authorized Charges Cha	Date: Time:  S/16/19 13:47  Date: Time:  Dat	Date: Time:    Date: Time:   Date: Time:   Date: Time:   Date: Time:   Date: Time:   Sample Temperature   Date: Time:   Date: Time:   Sample Temperature   Rush Charges Authorized   Date: Time:   Colored by:   Col	AH-8 (3')  Date: Time:  Date: Time:  Pate: Time:  Date: T	AH-8 (2')  AH-8 (2')  Date: Time:  Sample Temperature  Received by:  Date: Time:  D	AH-8 (2')  AH-8 (AH-8 (AH-8))  AH-8 (AH-8 (AH-	AH-7 (3)  AH-8 (0-1)  AH-8 (0-1)  AH-8 (2)  AH-8 (3)  Date: Time:  Date: Time:  Received by:  Date: Time:  Sample Temperature  Sample Temperature  AH-8 (3)  CONLY  Rush Charges Authorized  Rush charges Authorized  Special Report Limits or TRRP Report	AH-7 (2)	AH-7 (2)	AH-6 (2')  AH-7 (0-1')  AH-7 (0-1')  AH-7 (0-1')  AH-7 (2')  AH-7 (2')  AH-7 (2')  AH-8 (0-1')  AH-8 (0-1')	AH-6 (0-1)  AH-6 (0-1)  AH-7 (0-1)  AH-8 (0-1)  AH-8 (0-1)  Bales: Time:  Baccived by:  Date: Time:  Received by:  Date: Time:  Baccived b	AH-6 (2-1)  AH-6 (2-1)  AH-6 (2-1)  AH-7 (2-1)  AH-8 (2-1)  AH-9 (	SAMPLE IDENTIFICATION	SAMPLE IDENTIFICATION	Total BTEX exceeds 50 mg/kg.   Sample per samples if TPH (GRO + DRO + MRO) exceeds 1 000 mg/kg. Run deeper samples if Denzene exceeds 10 mg/kg.	Mike Cammona	Sample Signature   Milke Cammona   Milke Cam	COOG   Management   Cook   Commons   Cook   Commons   Cook   Commons   Cook   Commons   Cook   Commons   Cook   Commons   Cook   Cook	COOR	Sample   S	Analysis   Color   Color   Analysis   Color   Color   Analysis   Color   Co

Project Location: state) Relinquished by: Relinquished by Relinquished by: Analysis Request of Chain of Custody Record Receiving Laboratory: roject Name: nvoice to: lient Name: LAB USE LAB# 7 AH-9 (3') AH-9 (2') AH-9 (0-1') Run deeper samples if TPH (GRO + DRO + MRO) exceeds 1,000 mg/gk. Run deeper samples if benzene exceeds 10 mg/kg

<u>Total BTEX exceeds 50 mg/kg.</u> (county, Xenco Eddy County, NM COG Ike Tavarez COG JRs Horz Federal #2 Washout Area (2/4/19) Tetra Tech, Inc. SAMPLE IDENTIFICATION Date: Time: ノダング ORIGINAL COPY Received by 5/15/2019 5/15/2019 5/15/2019 DATE SAMPLING TIME WATER Mike Carmona MATRIX 4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946 ×  $\times$  $\times$ SOIL Mike Carmona 212C-MD-01739 Date: HCL PRESERVATIVE METHOD HNO₃ ICE ×  $\times$ × # CONTAINERS Z Z Z FILTERED (Y/N) BTEX 8260B BTEX 8021B Circle) HAND DELIVERED ONLY TPH TX1005 (Ext to C35) TPH 8015M ( GRO - DRO - ORO - MRO) PAH 8270C (Circle or Specify Method No. Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg **ANALYSIS REQUEST** TCLP Volatiles REMARKS TCLP Semi Volatiles RUSH: Same Day 24 hr FEDEX UPS Rush Charges Authorized Special Report Limits or TRRP Report RCI GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM Page PLM (Asbestos)  $\times$ ×  $\times$ Chloride Sulfate TDS 48 h General Water Chemistry (see attached list) Anion/Cation Balance 72 hr 앜 Hold



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 05/16/2019 01:47:00 PM

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

Work Order #: 624551

Temperature Measuring device used: R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1	
#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 de Analyst:	PH Device/Lot#:	cing in the refrigerator
Checklist completed by:	Little Lowe	Date: <u>05/16/2019</u>
Checklist reviewed by:	Jessica Kramer	Date: <u>05/17/2019</u>

# **Analytical Report 623130**

for Tetra Tech- Midland

Project Manager: Mike Carmona JRs Horz Federal #2 (4-4-19) 212CMD-01739 08-MAY-19

Collected By: Client





## 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)





08-MAY-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): **623130** 

**JRs Horz Federal #2 (4-4-19)** 

Project Address: Eddy County, New Mexico

#### Mike Carmona:

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) 623130. 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. 623130 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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

Certified and approved by numerous States and Agencies.

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# **Sample Cross Reference 623130**



## Tetra Tech- Midland, Midland, TX

JRs Horz Federal #2 (4-4-19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH-2 (0-1') 3'BEB	S	05-02-19 00:00		623130-001
AH-2 (2') 3'BEB	S	05-02-19 00:00		623130-002
AH-2 (3') 3'BEB	S	05-02-19 00:00		623130-003
AH-2 (4') 3'BEB	S	05-02-19 00:00		623130-004
AH-4 (0-1') 3'BEB	S	05-02-19 00:00		623130-005
AH-4 (2') 3'BEB	S	05-02-19 00:00		623130-006
AH-4 (3') 3'BEB	S	05-02-19 00:00		623130-007
AH-4 (4') 3'BEB	S	05-02-19 00:00		623130-008

08-MAY-19

# Received by OCD: 4/3/2020 4:25:11 PM

#### CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: JRs Horz Federal #2 (4-4-19)

Project ID: 212CMD-01739

Report Date: Work Order Number(s): 623130 Date Received: 05/03/2019

#### Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3088027 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Samples affected are: 623130-004.

Batch: LBA-3088033 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Samples affected are: 623130-008.



# **Certificate of Analysis Summary 623130**

#### Tetra Tech- Midland, Midland, TX

**Project Name: JRs Horz Federal #2 (4-4-19)** 



Project Id:

**Contact:** 

212CMD-01739 Mike Carmona

**Project Location:** 

Eddy County, New Mexico

**Date Received in Lab:** Fri May-03-19 09:45 am

Report Date: 08-MAY-19

Project Manager: Jessica Kramer

		622120	001	622120	202	(22120.4	202	(22120	00.4	622120	005	622120	006
	Lab Id:	623130-0		623130-	002	623130-0	)03	623130-	004	623130-		623130-0	006
Analysis Requested	Field Id:	AH-2 (0-1')	3'BEB	AH-2 (2') 3	'BEB	AH-2 (3') 3	'BEB	AH-2 (4') 3	B'BEB	AH-4 (0-1')	3'BEB	AH-4 (2') 3	3'BEB
Analysis Requesica	Depth:												
	Matrix:	SOIL		SOIL	,	SOIL		SOIL		SOIL		SOIL	
	Sampled:	May-02-19	00:00										
BTEX by EPA 8021B	Extracted:	May-03-19	11:30	May-03-19	13:00								
	Analyzed:	May-03-19	19:27	May-03-19	19:46	May-03-19	20:05	May-03-19	20:24	May-03-19	20:43	May-03-19	23:31
	Units/RL:	mg/kg	RL										
Benzene	·	< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
Toluene		< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
Ethylbenzene		< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
m,p-Xylenes		< 0.00398	0.00398	< 0.00402	0.00402	< 0.00399	0.00399	< 0.00403	0.00403	< 0.00398	0.00398	< 0.00399	0.00399
o-Xylene		< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
Total Xylenes		< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
Total BTEX		< 0.00199	0.00199	< 0.00201	0.00201	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00199	0.00199	< 0.00200	0.00200
Chloride by EPA 300	Extracted:	May-03-19	17:00										
	Analyzed:	May-03-19	19:30	May-03-19	19:35	May-03-19	19:53	May-03-19	19:58	May-03-19	20:04	May-03-19	20:10
	Units/RL:	mg/kg	RL										
Chloride		191	5.02	1250	25.1	6110	49.5	159	4.95	4960	24.8	2950	24.8
TPH by SW8015 Mod	Extracted:	May-04-19	10:00										
	Analyzed:	May-05-19	02:07	May-05-19	02:27	May-05-19	02:48	May-05-19	03:50	May-05-19	04:10	May-05-19	04:30
	Units/RL:	mg/kg	RL										
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	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.

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Jessica Vramer



# **Certificate of Analysis Summary 623130**

#### Tetra Tech- Midland, Midland, TX

Project Name: JRs Horz Federal #2 (4-4-19)



Project Id:

**Contact:** 

212CMD-01739 Mike Carmona

**Project Location:** 

Eddy County, New Mexico

Date Received in Lab: Fri May-03-19 09:45 am

Report Date: 08-MAY-19

Project Manager: Jessica Kramer

	Lab Id:	623130-0	007	623130-0	800			
Analysis Requested	Field Id:	AH-4 (3') 3	'BEB	AH-4 (4') 3	'BEB			
Anaiysis Kequesieu	Depth:							
	Matrix:	SOIL		SOIL				
	Sampled:	May-02-19	00:00	May-02-19	00:00			
BTEX by EPA 8021B	Extracted:	May-03-19	13:00	May-03-19	13:00			
	Analyzed:	May-03-19	23:50	May-04-19	00:10			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Benzene		< 0.00201	0.00201	< 0.00198	0.00198			
Toluene		< 0.00201	0.00201	< 0.00198	0.00198			
Ethylbenzene		< 0.00201	0.00201	< 0.00198	0.00198			
m,p-Xylenes		< 0.00402	0.00402	< 0.00397	0.00397			
o-Xylene		< 0.00201	0.00201	< 0.00198	0.00198			
Total Xylenes		< 0.00201	0.00201	< 0.00198	0.00198			
Total BTEX		< 0.00201	0.00201	< 0.00198	0.00198			
Chloride by EPA 300	Extracted:	May-03-19	17:00	May-03-19	17:00			
	Analyzed:	May-03-19	20:16	May-03-19	20:21			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		286	5.00	10.2	5.03			
TPH by SW8015 Mod	Extracted:	May-04-19	10:00	May-04-19	10:00			
	Analyzed:	May-05-19	04:50	May-05-19	05:11			
	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			
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0			
Total TPH		<15.0	15.0	<15.0	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.

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Jessica Weamer



# Flagging Criteria



Page 113 of 214

- 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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Sample:** 623130-001 / SMP

**Project ID:** 212CMD-01739

**Lab Batch #:** 3088027

Matrix: Soil Batch: 1 **Date Analyzed:** 05/03/19 19:27

Units: mg/	kg	<b>Date Analyzed:</b> 05/03/19 19:27	SU	SURROGATE RECOVERY STUDY						
	•	y EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
	An	alytes			[D]					
1,4-Difluorobenzene	e		0.0301	0.0300	100	70-130				
4-Bromofluorobenze	ene		0.0371	0.0300	124	70-130				

**Lab Batch #:** 3088027

Sample: 623130-002 / SMP

Batch: 1

Matrix: Soil

**Units:** 

Units:	its: mg/kg Date Analyzed: 05/03/19 19:46 SURROGATE RECOVERY STUDY								
	BTEX	oy EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	A	nalytes			[D]				
1,4-Difluorobenz	zene		0.0304	0.0300	101	70-130			
4-Bromofluorob	enzene		0.0372	0.0300	124	70-130			

Lab Batch #: 3088027

Sample: 623130-003 / SMP

Batch:

Matrix: Soil

Date Analyzed: 05/03/19 20:05

Units: mg/kg	Oate Analyzed: 05/03/19 20:05	SURROGATE RECOVERY STUDY						
BTEX by	EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Ana	lytes			[D]				
1,4-Difluorobenzene		0.0304	0.0300	101	70-130			
4-Bromofluorobenzene		0.0362	0.0300	121	70-130			

**Lab Batch #:** 3088027

mg/kg

**Sample:** 623130-004 / SMP

Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 20:24	SU	RROGATE R	ECOVERY	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	robenzene		0.0283	0.0300	94	70-130	
4-Bromofli	uorobenzene		0.0416	0.0300	139	70-130	**

Lab Batch #: 3088027

Sample: 623130-005 / SMP

Batch:

Matrix: Soil

**Units:** 

mg/kg

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 20:43	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoi	robenzene		0.0303	0.0300	101	70-130	
4-Bromofli	uorobenzene		0.0382	0.0300	127	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Lab Batch #:** 3088033 **Sample:** 623130-006 / SMP **Project ID:** 212CMD-01739

mø/kø

Date Analyzed: 05/03/19 23:31

Matrix: Soil Batch: 1

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 23:31	SU	SURROGATE RECOVERY STUDY							
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluorob	enzene		0.0298	0.0300	99	70-130					
4-Bromofluoi	robenzene		0.0358	0.0300	119	70-130					

**Lab Batch #:** 3088033

Sample: 623130-007 / SMP

Batch: 1

Matrix: Soil

Units: mg/kg Date Analyzed: 05/03/19 23:50 SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1,4-Difluorobenzene	0.0305	0.0300	102	70-130				
4-Bromofluorobenzene	0.0349	0.0300	116	70-130				

Lab Batch #: 3088033

mg/kg

Sample: 623130-008 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/04/19 00:10	SU	SURROGATE RECOVERY STUDY							
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluor	obenzene		0.0292	0.0300	97	70-130					

0.0396

**Lab Batch #:** 3088044

4-Bromofluorobenzene

Sample: 623130-001 / SMP

Batch:

Matrix: Soil

132

70-130

0.0300

Units:	mg/kg	<b>Date Analyzed:</b> 05/05/19 02:07	SURROGATE RECOVERY STUDY							
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		103	99.7	103	70-135				
o-Terpheny	1		51.6	49.9	103	70-135				

Lab Batch #: 3088044

Sample: 623130-002 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/05/19 02:27	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[D]				
1-Chloroocta	ane		101	99.7	101	70-135			
o-Terphenyl			50.4	49.9	101	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Sample:** 623130-003 / SMP

**Project ID:** 212CMD-01739

**Lab Batch #:** 3088044

mø/kø

Matrix: Soil Batch: 1 Date Analyzed: 05/05/19 02:48

Omts: hig/kg Date Analyzett: 05/05/19 02.48	SURROGATE RECOVERY STUDY					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	99.3	100	99	70-135		
o-Terphenyl	50.1	50.0	100	70-135		

**Lab Batch #:** 3088044

Sample: 623130-004 / SMP

Batch: 1

Matrix: Soil

SUDDOCATE DECOVEDV STUDY

**Units:** 

I Inite

mg/kg

**Date Analyzed:** 05/05/19 03:50

88 <b>2 ave</b> 1211a2 <b>3 20 av</b> 00 7 00 7 0 0 0 0 0	50	KNOGATE KI	COVERT	51001		
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes	[13]	[D]	[D]	/ <b>U</b> R		
	99.9	99.8	100	70-135		
	50.4	49.9	101	70-135		1

Lab Batch #: 3088044

1-Chlorooctane o-Terphenyl

Sample: 623130-005 / SMP

Batch:

Matrix: Soil

**Units:** 

mg/kg

**Date Analyzed:** 05/05/19 04:10

Units:	mg/kg	<b>Date Analyzed:</b> 05/05/19 04:10	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[10]				
1-Chlorooc	tane		102	99.9	102	70-135			
o-Terpheny	1		51.1	50.0	102	70-135			

**Lab Batch #:** 3088044

Sample: 623130-006 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/05/19 04:30	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		100	99.8	100	70-135			
o-Terpheny	1		50.1	49.9	100	70-135			

Lab Batch #: 3088044

Sample: 623130-007 / SMP

Batch:

Matrix: Soil

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

**Date Analyzed:** 05/05/19 04:50

	SCRROGATE RECOVERT STODI				
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	99.8	100	100	70-135	
o-Terphenyl	50.1	50.0	100	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Lab Batch #:** 3088044 Sample: 623130-008 / SMP **Project ID:** 212CMD-01739

mg/kg

Matrix: Soil Batch: Date Analyzed: 05/05/19 05:11

Units:	mg/kg	<b>Date Analyzed:</b> 05/05/19 05:11	SURROGATE RECOVERY STUDY					
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
		Analytes			. ,			
1-Chlorooct	ane		101	99.7	101	70-135		
o-Terphenyl	1		50.9	49.9	102	70-135		

**Lab Batch #:** 3088027

**Sample:** 7677215-1-BLK / BLK

Batch: Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 05/03/19 13:17

SURROGATE RECOVERY STUDY									
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
Analytes			[D]						
1,4-Difluorobenzene	0.0311	0.0300	104	70-130					
4-Bromofluorobenzene	0.0302	0.0300	101	70-130					

Lab Batch #: 3088033

Sample: 7677221-1-BLK / BLK

Batch:

Matrix: Solid

**Date Analyzed:** 05/03/19 23:13

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 23:13	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	robenzene		0.0313	0.0300	104	70-130			
4-Bromoflu	uorobenzene		0.0310	0.0300	103	70-130			

**Lab Batch #:** 3088044

Sample: 7677204-1-BLK / BLK

Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/04/19 22:02	SURROGATE RECOVERY STUDY					
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooct	tane		109	100	109	70-135		
o-Terpheny	1		55.4	50.0	111	70-135		

Lab Batch #: 3088027

Sample: 7677215-1-BKS / BKS

Batch:

Matrix: Solid

Units:	Units: mg/kg Date Analyzed: 05/03/19 11:43 SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	robenzene		0.0288	0.0300	96	70-130	
4-Bromofl	uorobenzene		0.0315	0.0300	105	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Sample:** 7677221-1-BKS / BKS

**Project ID:** 212CMD-01739

**Lab Batch #:** 3088033

Matrix: Solid Batch: 1 **Date Analyzed:** 05/03/19 21:39 SUPPOCATE RECOVERY STUDY

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 21:39	SURROGATE RECOVERY STUDY					
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluorobenzene			0.0283	0.0300	94	70-130		
4-Bromofluorobenzene			0.0321	0.0300	107	70-130		

**Lab Batch #:** 3088044

**Sample:** 7677204-1-BKS / BKS

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 05/04/19 22:22

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Found [A]	Amount [B]	Recovery %R	Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	61.1	50.0	122	70-135	

Lab Batch #: 3088027

Sample: 7677215-1-BSD / BSD

Batch: 1

Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 05/03/19 12:02

SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Limits Found Amount Recovery Flags %R %R [A] [B] [D] **Analytes** 1,4-Difluorobenzene 0.0287 0.0300 96 70-130 4-Bromofluorobenzene 0.0316 0.0300 105 70-130

Lab Batch #: 3088033

**Sample:** 7677221-1-BSD / BSD

Batch:

Matrix: Solid

Units: mg/kg Date Analyzed: 05/03/19 21:58 SURROGATE RECOVERY STUDY										
BTEX by EPA 8021B  Analytes		nt True I Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
Allalytes			[-]							
1,4-Difluorobenzene	0.0281	0.0300	94	70-130						
4-Bromofluorobenzene	0.0320	0.0300	107	70-130						

Lab Batch #: 3088044

Sample: 7677204-1-BSD / BSD

Batch:

Matrix: Solid

CUDDOCATE DECOVEDY CTUDY

Unite.

ma/ka

Date Analyzed: 05/05/19 09:07

Omts: mg/kg Date Analyzed: 03/0	St	RROGATE RI	ECOVERY	STUDY	
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	56.3	50.0	113	70-135	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

Work Orders: 623130, 623130

**Sample:** 623115-001 S / MS

**Project ID:** 212CMD-01739

**Lab Batch #:** 3088027

Matrix: Soil Batch: 1

Units:	<b>nits:</b> mg/kg <b>Date Analyzed:</b> 05/03/19 12:21		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		0.0293	0.0300	98	70-130					
4-Bromofluo	orobenzene		0.0331	0.0300	110	70-130					

**Lab Batch #:** 3088033

**Sample:** 623130-006 S / MS

Batch: 1

Matrix: Soil

Units: mg/l	<b>Date Analyzed:</b> 05/03/19 22:17	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-Difluorobenzene		0.0289	0.0300	96	70-130	
4-Bromofluorobenze	ene	0.0337	0.0300	112	70-130	

Lab Batch #: 3088044

**Sample:** 623115-001 S / MS

Batch:

Matrix: Soil

Units:	mg/Kg	<b>Date Analyzed:</b> 05/04/19 23:24	SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1-Chlorooctane	122	99.8	122	70-135	
o-Terphenyl	53.9	49.9	108	70-135	

**Lab Batch #:** 3088027

**Sample:** 623115-001 SD / MSD

Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 12:40	SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluoro	obenzene		0.0293	0.0300	98	70-130					
4-Bromoflu	orobenzene		0.0333	0.0300	111	70-130					

Lab Batch #: 3088033

**Sample:** 623130-006 SD / MSD

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/03/19 22:36	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluor	robenzene		0.0292	0.0300	97	70-130					
4-Bromofli	uorobenzene		0.0325	0.0300	108	70-130					

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: JRs Horz Federal #2 (4-4-19)

**Work Orders**: 623130, 623130

**Sample:** 623115-001 SD / MSD

**Project ID:** 212CMD-01739

**Lab Batch #:** 3088044

σ/kσ **Date Analyzed:** 05/04/19 23:44

Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 05/04/19 23:44	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chloroocta	nne		129	99.9	129	70-135	
o-Terphenyl			63.5	50.0	127	70-135	

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



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**Project Name:** JRs Horz Federal #2 (4-4-19)

**Work Order #:** 623130, 623130

**Project ID:** 212CMD-01739

**Analyst:** 

SCM

**Date Prepared:** 05/03/2019

**Date Analyzed:** 05/03/2019

**Lab Batch ID:** 3088027

**Sample:** 7677215-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]				
Benzene	< 0.00198	0.0992	0.0973	98	0.101	0.104	103	7	70-130	35	
Toluene	< 0.00198	0.0992	0.0935	94	0.101	0.0999	99	7	70-130	35	
Ethylbenzene	<0.00198	0.0992	0.102	103	0.101	0.108	107	6	70-130	35	
m,p-Xylenes	< 0.00397	0.198	0.211	107	0.202	0.225	111	6	70-130	35	
o-Xylene	<0.00198	0.0992	0.104	105	0.101	0.110	109	6	70-130	35	

**Analyst:** 

SCM

**Date Prepared:** 05/03/2019

**Date Analyzed:** 05/03/2019

**Lab Batch ID:** 3088033

**Sample:** 7677221-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

#### BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0983	97	0.100	0.101	101	3	70-130	35	
Toluene	< 0.00202	0.101	0.0970	96	0.100	0.0994	99	2	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.105	104	0.100	0.108	108	3	70-130	35	
m,p-Xylenes	< 0.00403	0.202	0.219	108	0.200	0.224	112	2	70-130	35	
o-Xylene	< 0.00202	0.101	0.109	108	0.100	0.111	111	2	70-130	35	

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



#### **BS / BSD Recoveries**



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Project Name: JRs Horz Federal #2 (4-4-19)

**Work Order #:** 623130, 623130

**Project ID:** 212CMD-01739

Analyst:

CHE

**Date Prepared:** 05/03/2019

**Date Analyzed:** 05/03/2019

**Lab Batch ID:** 3087995

Sample: 7677141-1-BKS

**Batch #:** 1

Matrix: Solid

Units:	mg/kg		BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
Anal	Chloride by EPA 300	Blank Sample Result [A]	mple Result Added Spike Spike Added Spike Dup. RPD Limits Limits Flag										
Allai	ly ics												
Chloride		< 0.858	250	261	104	250	261	104	0	90-110	20		

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



#### Form 3 - MS / MSD Recoveries

TNI LABORATORA Page 123 of 214

Project Name: JRs Horz Federal #2 (4-4-19)

Work Order #:

623130

**Project ID:** 212CMD-01739

Lab Batch ID:

3088027

**QC- Sample ID:** 623115-001 S

Batch #:

Matrix: Soil

Date Analyzed:

05/03/2019

**Date Prepared:** 05/03/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.00199	0.0996	0.0826	83	0.100	0.0785	79	5	70-130	35	
Toluene	< 0.00199	0.0996	0.0703	71	0.100	0.0682	68	3	70-130	35	X
Ethylbenzene	< 0.00199	0.0996	0.0640	64	0.100	0.0641	64	0	70-130	35	X
m,p-Xylenes	<0.00398	0.199	0.132	66	0.200	0.134	67	2	70-130	35	X
o-Xylene	< 0.00199	0.0996	0.0666	67	0.100	0.0670	67	1	70-130	35	X

Lab Batch ID:

3088033

**QC- Sample ID:** 623130-006 S

S Batch #:

Matrix: Soil

Date Analyzed:

05/03/2019

**Date Prepared:** 05/03/2019

Analyst: SCM

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]	[0]	[D]	[E]	Kesuit [F]	[G]	/0	/0K	70KI D	
Benzene	< 0.00201	0.100	0.103	103	0.100	0.0979	98	5	70-130	35	
Toluene	< 0.00201	0.100	0.0995	100	0.100	0.0935	94	6	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.106	106	0.100	0.0994	99	6	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.221	110	0.200	0.206	103	7	70-130	35	
o-Xylene	< 0.00201	0.100	0.109	109	0.100	0.102	102	7	70-130	35	



#### Form 3 - MS / MSD Recoveries



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**Project Name: JRs Horz Federal #2 (4-4-19)** 

Work Order #:

623130

**Project ID:** 212CMD-01739

Lab Batch ID:

3087995

**QC- Sample ID:** 623108-009 S

Batch #:

Matrix: Soil

Date Analyzed:

05/03/2019

**Date Prepared:** 05/03/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]		Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	927	252	2230	517	252	2220	513	0	90-110	20	X

Lab Batch ID:

3087995

**QC- Sample ID:** 623108-020 S

Batch #:

l **Matrix:** Soil

**Date Analyzed:** 

05/03/2019

**Date Prepared:** 05/03/2019

Analyst: CHE

CHE

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
<u> </u>					. ,		L - J				
Chloride	303	250	546	97	250	533	92	2	90-110	20	

Lab Batch ID:

3088044

**QC- Sample ID:** 623115-001 S

Batch #:

Matrix: Soil

Date Analyzed:

05/04/2019

**Date Prepared:** 05/04/2019

Analyst: ARM

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

1

TPH by SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<7.99	998	978	98	999	1160	116	17	70-135	20	
Diesel Range Organics (DRO)	406	998	1250	85	999	1530	113	20	70-135	20	

Relinquished by: **Analysis Request of Chain of Custody Record** Relinquished by: Project Name: Client Name: Relinquished by: Receiving Laboratory: nvoice to: roject Location: LAB USE LAB# đ AH-4 (0-1') 3'BEB AH-2 (2') 3'BEB AH-2 (0-1') 3'BEB AH-4 (4') 3'BEB AH-4 (3') 3'BEB AH-4 (2') 3'BEB AH-2 (4') 3'BEB AH-2 (3') 3'BEB Xenco Eddy County, New Mexico COG COG Ike Tavarez JRs Horz Federal Tetra Tech, Inc. SAMPLE IDENTIFICATION 5-3-19 Date: Date: ORIGINAL COPY Site Manager: Received by: Sampler Signature: 'EAR: 2019 5/2/2019 5/2/2019 5/2/2019 5/2/2019 5/2/2019 5/2/2019 5/2/2019 5/2/2019 DATE SAMPLING TIME WATER Mike Carmona MATRIX × × × × SOIL X Mike Carmona 212C-MD-01739 901 West Wall, Suite 100 Midland, Texas 79701 Tel (432) 682-4559 Fax (432) 682-3946 Date: Date: HCL PRESERVATIVE METHOD HNO<sub>3</sub>  $\times \times$ ×  $\times \times \times \times$ ICE None # CONTAINERS Z Z z z Z z FILTERED (Y/N) Sample Temperature  $\times \times$ × BTEX 8260B LAB USE ONLY BTEX 8021B 2/00 TPH TX1005 (Ext to C35)  $\overline{\times}$  $\overline{\times}$  $\overline{\times}$  $\overline{\times}$ TPH 8015M (GRO - DRO - ORO - MRO) HAND DELIVERED PAH 8270C (Circle or Specify Method Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg REMARKS: TCLP Volatiles **ANALYSIS REQUEST** NRUSH: Same Day 24 hr 48 hr 72 hr Rush Charges Authorized TCLP Semi Volatiles Special Report Limits or TRRP Report EDEX UPS STANDARD GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM PLM (Asbestos)  $\overline{\times}$ × X  $\times \times \times$  $\times$ Chloride Z TDS Chloride Sulfate General Water Chemistry (see attached list) Anion/Cation Balance '으

1.001



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 05/03/2019 09:45:00 AM

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

Work Order #: 623130

Temperature Measuring device used: R8

	Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?		2.1	
#2 *Shipping container in good condition?		Yes	
#3 *Samples received on ice?		Yes	
#4 *Custody Seals intact on shipping contai	ner/ 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 relinquish	ned/ received?	Yes	
#10 Chain of Custody agrees with sample la	abels/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)?		N/A	
#18 Water VOC samples have zero headsp	ace?	N/A	

	completed for after-hours de		lacing in the refrigerator
Analyst:		PH Device/Lot#:	
	Checklist completed by:	Bridge Tuf Brianna Teel	Date: 05/03/2019
	Checklist reviewed by:	Jessica Vramer  Jessica Kramer	Date: <u>05/03/2019</u>

# **Analytical Report 628467**

# for Tetra Tech- Midland

**Project Manager: Mike Carmona** 

COG JRS Horz Federal #2 (Job number :212C-MD-01739)

28-JUN-19

Collected By: Client





#### 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429), North Carolina (483)





28-JUN-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 628467

COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Project Address:

#### Mike Carmona:

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) 628467. 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. 628467 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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

Certified and approved by numerous States and Agencies.

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



# **Sample Cross Reference 628467**



## Tetra Tech- Midland, Midland, TX

COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH-1	S	06-19-19 00:00	0 - 1 ft	628467-001
AH-1	S	06-19-19 00:00	1 - 1.5 ft	628467-002
AH-1	S	06-19-19 00:00	2 - 2.5 ft	628467-003
AH-2	S	06-19-19 00:00	0 - 1 ft	628467-004
AH-7	S	06-19-19 00:00	0 - 1 ft	628467-005
AH-7	S	06-19-19 00:00	1 - 1.5 ft	628467-006
AH-7	S	06-19-19 00:00	2 - 2.5 ft	628467-007
AH-7	S	06-19-19 00:00	3 - 3.5 ft	628467-008

#### **CASE NARRATIVE**

Client Name: Tetra Tech- Midland

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Project ID: Report Date: 28-JUN-19 Work Order Number(s): 628467 Date Received: 06/20/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3093834 BTEX by EPA 8021B

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



# Certificate of Analysis Summary 628467

#### Tetra Tech- Midland, Midland, TX

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Date Received in Lab: Thu Jun-20-19 11:13 am

Report Date: 28-JUN-19

**Contact:** 

Project Id:

Mike Carmona **Project Location:** Project Manager: Jessica Kramer

	Lab Id:	628467-0	001	628467-0	02	628467-0	003	628467-0	004	628467-0	005	628467-0	006
Analusia Doguestad	Field Id:	AH-1		AH-1		AH-1		AH-2		AH-7		AH-7	
Analysis Requested	Depth:	0-1 ft		1-1.5 ft	:	2-2.5 f	t	0-1 ft		0-1 ft		1-1.5 f	t
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	,	SOIL	
	Sampled:	Jun-19-19 (	00:00	Jun-19-19 0	00:00	Jun-19-19 (	00:00	Jun-19-19 (	00:00	Jun-19-19	00:00	Jun-19-19 (	00:00
BTEX by EPA 8021B	Extracted:	Jun-27-19 (	05:00					Jun-27-19 (	)5:00	Jun-27-19	05:00		
	Analyzed:	Jun-27-19 1	18:18					Jun-27-19	18:42	Jun-27-19	19:05		
	Units/RL:	mg/kg	RL					mg/kg	RL	mg/kg	RL		
Benzene	·	< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
Toluene		< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
Ethylbenzene		< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
m,p-Xylenes		< 0.00399	0.00399					< 0.00398	0.00398	< 0.00398	0.00398		
o-Xylene		< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
Total Xylenes		< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
Total BTEX		< 0.00200	0.00200					< 0.00199	0.00199	< 0.00199	0.00199		
Chloride by EPA 300	Extracted:	Jun-21-19 1	11:45	Jun-21-19 1	1:45	Jun-21-19 1	1:45	Jun-21-19	1:45	Jun-21-19	11:45	Jun-21-19 1	11:45
	Analyzed:	Jun-21-19 1	15:06	Jun-21-19 1	5:12	Jun-21-19 1	15:17	Jun-21-19	15:23	Jun-21-19	15:28	Jun-21-19 1	15:34
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3740	25.2	1300	4.97	919	50.1	931	5.00	2960	50.2	5190	49.7
TPH by SW8015 Mod	Extracted:	Jun-23-19 (	09:00					Jun-23-19 (	9:00	Jun-23-19	09:00		
	Analyzed:	Jun-23-19 2	20:08					Jun-23-19 2	20:33	Jun-23-19	20:57		
	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					<15.0	15.0	26.2	15.0		
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0					<15.0	15.0	<15.0	15.0		
Total TPH		<15.0	15.0					<15.0	15.0	26.2	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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.%

Jessica Kramer Project Assistant

Jessica Vermer



Mike Carmona

Project Id:

**Project Location:** 

**Contact:** 

# Certificate of Analysis Summary 628467

#### Tetra Tech- Midland, Midland, TX

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Date Received in Lab: Thu Jun-20-19 11:13 am

**Report Date:** 28-JUN-19

Project Manager: Jessica Kramer

	Lab Id:	628467-007	628467-008		
Analysis Requested	Field Id:	AH-7	AH-7		
Anaiysis Kequesieu	Depth:	2-2.5 ft	3-3.5 ft		
	Matrix:	SOIL	SOIL		
	Sampled:	Jun-19-19 00:00	Jun-19-19 00:00		
Chloride by EPA 300	Extracted:	Jun-21-19 11:45	Jun-21-19 12:15		
	Analyzed:	Jun-21-19 15:39	Jun-21-19 18:41		
	Units/RL:	mg/kg RL	mg/kg RL		
Chloride		12200 100	595 5.00		

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.

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Version: 1.%

fession Weamer

Jessica Kramer Project Assistant



# Flagging Criteria



- Page 133 of 214
- 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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

**Work Orders** : 628467,

**Sample:** 628467-001 / SMP

**Project ID:** 

**Lab Batch #:** 3093433 Units:

Date Analyzed: 06/23/19 20:08

Matrix: Soil Batch:

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 06/23/19 20:08	SURROGATE RECOVERY STUDY									
TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chloroctane	75.0	99.9	75	70-135						
o-Terphenyl	39.3	50.0	79	70-135						

**Lab Batch #:** 3093433

Sample: 628467-004 / SMP

Batch: 1

Matrix: Soil

**Units:** 

mg/kg

Date Analyzed: 06/23/19 20:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	77.9	99.9	78	70-135	
o-Terphenyl	43.5	50.0	87	70-135	

**Lab Batch #:** 3093433

Sample: 628467-005 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 06/23/19 20:57	URROGATE RECOVERY STUDY				
TPH by SW8015 Mod  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorood	ctane	Tillary ves	82.3	99.7	83	70-135	
o-Terpheny			46.7	49.9	94	70-135	

Lab Batch #: 3093834

Sample: 628467-001 / SMP

Batch:

Matrix: Soil

Units: mg/kg Date Analyzed:	06/27/19 18:18 <b>S</b>	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Analytes  1.4-Difluorobenzene	0.0205	0.0200	1 -	70.120		
4-Bromofluorobenzene	0.0305	0.0300	102	70-130		

Lab Batch #: 3093834

Sample: 628467-004 / SMP

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 06/27/19 18:42	SURROGATE RECOVERY STUDY				
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorob	enzene		0.0308	0.0300	103	70-130	
4-Bromofluor	obenzene		0.0333	0.0300	111	70-130	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Work Orders: 628467,

**Sample:** 628467-005 / SMP

**Project ID:** 

**Lab Batch #:** 3093834 Units: mø/kø

**Date Analyzed:** 06/27/19 19:05

Matrix: Soil Batch:

Units:	mg/kg	<b>Date Analyzed:</b> 06/27/19 19:05	SURROGATE RECOVERY STUDY				
	BTE	X 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	70-130	
4-Bromofluo	orobenzene		0.0324	0.0300	108	70-130	

**Lab Batch #:** 3093433

**Sample:** 7680670-1-BLK / BLK

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

**Date Analyzed:** 06/23/19 12:39

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	100	100	70-135	
o-Terphenyl	59.7	50.0	119	70-135	

Lab Batch #: 3093834

Sample: 7680951-1-BLK / BLK

Batch:

Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 06/27/19 08:08

SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Limits Found Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0271 0.0300 90 70-130 4-Bromofluorobenzene 0.0353 0.0300 118 70-130

**Lab Batch #:** 3093433

**Sample:** 7680670-1-BKS / BKS

Batch:

Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 06/23/19 13:04

SURROGATE RECOVERY STUDY Amount True Control TPH by SW8015 Mod Flags Found Amount Recovery Limits [B] %R %R [A] [D] **Analytes** 1-Chlorooctane 82.2 100 82 70-135 o-Terphenyl 50.0 102 70-135 51.1

Lab Batch #: 3093834

**Sample:** 7680951-1-BKS / BKS

Batch: 1 Matrix: Solid

mg/kg

Units:	mg/kg	<b>Date Analyzed:</b> 06/27/19 05:46	SURROGATE RECOVERY STUDY					
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluoro	benzene		0.0264	0.0300	88	70-130		
4-Bromoflu	orobenzene		0.0354	0.0300	118	70-130		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Batch:

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

**Work Orders** : 628467,

**Sample:** 7680670-1-BSD / BSD

**Project ID:** 

Matrix: Solid

**Lab Batch #:** 3093433 **Units:** 

mg/kg

Date Analyzed: 06/23/19 13:29

SURROGATE RECOVERY STUDY

			200 (2111 21021					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
1-Chlorooctane	90.7	100	91	70-135				
o-Terphenyl	52.7	50.0	105	70-135				

**Lab Batch #:** 3093834

**Sample:** 7680951-1-BSD / BSD

Batch: 1 Matrix: Solid

**Units:** 

mg/kg

Date Analyzed: 06/27/19 06:10

SURROGATE RECOVERY STUDY **Amount** True Control Found Limits Amount Flags Recovery [B] %R %R [D]

[A] **Analytes** 1,4-Difluorobenzene 0.0271 0.0300 90 70-130 4-Bromofluorobenzene 0.0348 0.0300 116 70-130

**Lab Batch #:** 3093433

Sample: 628256-001 S / MS

Batch:

Matrix: Soil

**Units:** mg/kg Date Analyzed: 06/23/19 14:19 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	78.2	99.9	78	70-135	
o-Terphenyl	47.7	50.0	95	70-135	

**Lab Batch #:** 3093834

Sample: 627832-001 S / MS

Batch:

Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 06/27/19 06:33	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluoro	benzene	Tanana y voo	0.0274	0.0300	91	70-130	
4-Bromofluo	orobenzene		0.0350	0.0300	117	70-130	

Lab Batch #: 3093433

Sample: 628256-001 SD / MSD

Batch:

Matrix: Soil

SURROGATE RECOVERY STUDY

**Units:** 

mg/kg

Date Analyzed: 06/23/19 14:44

	SCRROGATE RECOVERT STODI					
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
1-Chlorooctane	83.4	99.7	84	70-135		
o-Terphenyl	45.3	49.9	91	70-135		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

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

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Batch:

0.0343

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

**Work Orders:** 628467, **Lab Batch #:** 3093834

1,4-Difluorobenzene

4-Bromofluorobenzene

**Sample:** 627832-001 SD / MSD

**Project ID:** 

0.0300

1 Matrix: Soil

**Units:** 

mg/kg

**Date Analyzed:** 06/27/19 06:56

BTEX by EPA 8021B

**Analytes** 

SURROGATE RECOVERY STUDY						
Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
0.0276	0.0300	92	70-130			

114

70-130

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



Page 138 of 214

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Work Order #: 628467

**Project ID:** 

**Analyst:** 

DVM

**Date Prepared:** 06/27/2019

**Date Analyzed:** 06/27/2019

**Lab Batch ID:** 3093834

**Sample:** 7680951-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	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]				
Benzene	< 0.00199	0.0994	0.0837	84	0.100	0.0862	86	3	70-130	35	
Toluene	< 0.000453	0.0994	0.102	103	0.100	0.102	102	0	70-130	35	
Ethylbenzene	< 0.00199	0.0994	0.116	117	0.100	0.116	116	0	70-130	35	
m,p-Xylenes	< 0.00101	0.199	0.234	118	0.200	0.232	116	1	70-130	35	
o-Xylene	0.000349	0.0994	0.112	113	0.100	0.111	111	1	70-130	35	

**Analyst:** 

SPC

**Date Prepared:** 06/21/2019

**Date Analyzed:** 06/21/2019

**Lab Batch ID:** 3093266

**Sample:** 7680449-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

# BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	< 5.00	250	233	93	250	234	94	0	90-110	20	

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



#### **BS / BSD Recoveries**



Page 139 of 214

Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-01739)

Work Order #: 628467

**Project ID:** 

**Analyst:** 

SPC

**Date Prepared:** 06/21/2019

**Date Analyzed:** 06/21/2019

**Lab Batch ID:** 3093268

**Sample:** 7680450-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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]				
Chloride	< 5.00	250	235	94	250	235	94	0	90-110	20	

**Analyst:** 

ARM

**Date Prepared:** 06/23/2019

**Date Analyzed:** 06/23/2019

**Lab Batch ID:** 3093433

**Sample:** 7680670-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1020	102	1000	1080	108	6	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1160	116	1000	1170	117	1	70-135	20	

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



#### Form 3 - MS / MSD Recoveries



Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-0173)

Work Order #:

628467 3093834

Batch #:

Matrix: Soil

**Project ID:** 

Lab Batch ID: Date Analyzed:

06/27/2019

**QC- Sample ID:** 627832-001 S **Date Prepared:** 06/27/2019

Analyst: DVM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00201	0.101	0.0777	77	0.100	0.0748	75	4	70-130	35	
Toluene	< 0.000458	0.101	0.0806	80	0.100	0.0747	75	8	70-130	35	
Ethylbenzene	< 0.00201	0.101	0.0815	81	0.100	0.0756	76	8	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.154	77	0.200	0.142	71	8	70-130	35	
o-Xylene	< 0.00201	0.101	0.0777	77	0.100	0.0723	72	7	70-130	35	

Lab Batch ID:

3093266

**QC- Sample ID:** 628028-012 S

Batch #:

Matrix: Soil

Date Analyzed:

06/21/2019

**Date Prepared:** 06/21/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
,		[-,		[-,	,		[~]				
Chloride	21.7	252	260	95	252	260	95	0	90-110	20	

Lab Batch ID:

3093266

**QC- Sample ID:** 628028-022 S

Batch #:

Matrix: Soil

Date Analyzed:

06/21/2019

**Date Prepared:** 06/21/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

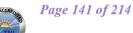
#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	4.87	250	258	101	250	257	101	0	90-110	20	

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



#### Form 3 - MS / MSD Recoveries



Project Name: COG JRS Horz Federal #2 (Job number :212C-MD-0173)

Work Order #:

628467

**QC- Sample ID:** 627846-001 S

Batch #:

Matrix: Soil

**Project ID:** 

Lab Batch ID: Date Analyzed: 3093268 06/21/2019

**Date Prepared:** 06/21/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	121	251	369	99	251	367	98	1	90-110	20	

Lab Batch ID:

3093268

**QC- Sample ID:** 628468-008 S

Batch #:

Matrix: Soil

**Date Analyzed:** 

06/21/2019

**Date Prepared:** 06/21/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	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	
Chloride	633	251	879	98	251	883	100	0	90-110	20	

Lab Batch ID:

3093433

**QC- Sample ID:** 628256-001 S

Batch #:

Matrix: Soil

**Date Analyzed:** 

06/23/2019

**Date Prepared:** 06/23/2019

Analyst: ARM

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

1

TPH by SW8015 Mod	Parent Sample Result	Spike Added	Spiked Sample Result	Spiked Sample %R	Spike Added	Duplicate Spiked Sample		RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[C]	%K [D]	[E]	Result [F]	%R [G]	70	% <b>K</b>	%KPD	
Gasoline Range Hydrocarbons (GRO)	11.6	999	871	86	997	854	84	2	70-135	20	
Diesel Range Organics (DRO)	11.8	999	966	96	997	993	98	3	70-135	20	

Stafford, Texas (281-240-4200)

Setting the Standard since 1990

# CHAIN OF CUSTODY

San Antonio, Texas (210-509-3334)

Phoenix, Arizona (480-355-0900)

Email: Samplers's Name: Mike Carmona & Devin Brown Project Contact: Company Address: Company Name / Branch: Ÿ. 9 œ G ω N 3 Day EMERGENCY Same Day TAT Relinquished by: Dallas Texas (214-902-0300) Relinquished by Sampler: Relinquished by: TAT Starts Day received by Lab, if received by 5:00 pm 2 Day EMERGENCY Next Day EMERGENCY Client / Reporting Information mike.carmona@tetratech.com Furnaround Time (Business days) etra Tech, Inc. on behalf of COG Operating, LLC 901 W. Wall St., Ste. 100, Midland, TX 79705 Field ID / Point of Collection Mike Carmona AH-7 AH-1 ₽ ₽÷7 AH-7 AH-7 AH-2 ₽÷ 7 Day TAT 5 Day TAT SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY Contract TAT Phone No: (432) 682-4559 Date Time: Date Time: Date Time: Sample Depth 2-2.5 2-2.5 1-1.5<u>1</u> 3-3.5 1-1.5 9 9 0-1 Date 6/19/19 PO Number: Invoice To: Project Name/Number: Midland, Texas (432-704-5251) 6/19/19 6/19/19 6/19/19 6/19/19 6/19/19 6/19/19 6/19/19 COG JRS Horz Federal #2 (job number: 212C-MD-01739) Received By: Received By: Codived By: Level III Std QC+ Forms Time Level 3 (CLP Forms) lke Tavarez, P.G. Senior HSE Supervisor - COG Operating, Project Information TRRP Checklist Level II Std QC Matrix S S S S S S ഗ S Data Deliverable Information www.xenco.com # of June 20th, 2019 HCI NaOH/Zn Acetate HNO3 Custody Seal # Relinquished By: Relinquished By: UST / RG -411 TRRP Level IV Level IV (Full Data Pkg /raw data) H2SO4 , LLC. NaOH NaHSO4 меон Kenco Quote # Preserved where applicable BTEX 8021B BTEX 8260B Date Time: Date Time: TPH 8015M (GRO - DRO - ORO - MRO) Analytical Information =ED-EX / UPS: Tracking # Notes: Xenco Job # Received By: Received By: Field Comments OW =Ocean/Sea Water WI = Wipe O = Oil WW= Waste Water SL = Sludge DW = Drinking Water SW = Surface water P = Product GW =Ground Water S = Soil/Sed/Solid W = Water Thermo. Corr. Factor Matrix Codes

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors, it assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and stall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 06/20/2019 11:13:00 AM

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

Work Order #: 628467

Temperature Measuring device used: R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.4	
#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)?	N/A	
#18 Water VOC samples have zero headspace?	N/A	

#10 Water	voo samples have zelo head	35paoc :	IVA	
Must be co	ompleted for after-hours de	elivery of samples prior to place PH Device/Lot#:	ing in the refrigerator	
·	Checklist completed by:	Bridde Tol Brianna Teel	Date: <u>06/20/2019</u>	
	Checklist reviewed by:	Jessica Kramer	Date: 06/20/2019	

# **Analytical Report 628468**

# for Tetra Tech- Midland

Project Manager: Mike Carmona
COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

25-JUN-19

Collected By: Client





#### 1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)

Page 1 of 14





25-JUN-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 628468

COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Project Address:

#### Mike Carmona:

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) 628468. 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. 628468 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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



# **Sample Cross Reference 628468**



# Tetra Tech- Midland, Midland, TX

COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH-1	S	06-19-19 00:00	0 - 1 ft	628468-001
AH-1	S	06-19-19 00:00	2 - 1 ft	628468-002
AH-1	S	06-19-19 00:00	3 - 1 ft	628468-003
AH-1	S	06-19-19 00:00	4 - 1 ft	628468-004
AH-2	S	06-19-19 00:00	0 - 1 ft	628468-005
AH-2	S	06-19-19 00:00	2 - 1 ft	628468-006
AH-2	S	06-19-19 00:00	3 - 1 ft	628468-007
AH-2	S	06-19-19 00:00	4 - 1 ft	628468-008
AH-3	S	06-19-19 00:00	0 - 1 ft	628468-009
AH-3	S	06-19-19 00:00	2 - 1 ft	628468-010
AH-3	S	06-19-19 00:00	3 - 1 ft	628468-011
AH-3	S	06-19-19 00:00	0 - 1 ft	628468-012
AH-4	S	06-19-19 00:00	2 - 1 ft	628468-013
AH-4	S	06-19-19 00:00	3 - 1 ft	628468-014
AH-6	S	06-19-19 00:00	0 - 1 ft	628468-015
AH-6	S	06-19-19 00:00	2 - 1 ft	628468-016
ESW-1	S	06-19-19 00:00	ft	628468-017
SSW-1	S	06-19-19 00:00	ft	628468-018
WSW-1	S	06-19-19 00:00	ft	628468-019
WSW-2	S	06-19-19 00:00	ft	628468-020

# **CASE NARRATIVE**

Client Name: Tetra Tech- Midland

Project Name: COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Project ID: Report Date: 25-JUN-19 Work Order Number(s): 628468 Date Received: 06/20/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None



Mike Carmona

# Certificate of Analysis Summary 628468

# Tetra Tech- Midland, Midland, TX

Project Name: COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Date Received in Lab: Thu Jun-20-19 11:13 am

Report Date: 25-JUN-19

Project Manager: Jessica Kramer

Project Id: Contact: Project Location:

	Lab Id:	628468-0	01	628468-0	02	628468-0	03	628468-0	04	628468-0	005	628468-0	06
Analysis Requested	Field Id:	AH-1		AH-1		AH-1		AH-1		AH-2		AH-2	
Anaiysis Requesteu	Depth:	0-1 ft		2-1 ft		3-1 ft		4-1 ft		0-1 ft		2-1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-19-19 (	00:00	Jun-19-19 0	00:00	Jun-19-19 0	0:00	Jun-19-19 0	0:00	Jun-19-19 (	00:00	Jun-19-19 0	0:00
Chloride by EPA 300	Extracted:	Jun-21-19	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15
	Analyzed:	Jun-21-19	6:29	Jun-21-19 1	6:34	Jun-21-19 1	6:40	Jun-21-19 1	6:45	Jun-21-19 1	7:02	Jun-21-19 1	7:07
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		72.6	5.00	177	4.95	403	5.02	1150	5.00	58.6	5.01	130	5.00

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Vramer



**Project Id:** 

# Certificate of Analysis Summary 628468

# Tetra Tech- Midland, Midland, TX

Project Name: COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Date Received in Lab: Thu Jun-20-19 11:13 am

**Report Date:** 25-JUN-19

Project Manager: Jessica Kramer

Contact: Mike Carmona

Project Location:

	Lab Id:	628468-0	07	628468-0	08	628468-0	09	628468-0	10	628468-0	11	628468-0	12
Analysis Requested	Field Id:	AH-2		AH-2		AH-3		AH-3		AH-3		AH-3	
Anaiysis Kequesieu	Depth:	3-1 ft		4-1 ft		0-1 ft		2-1 ft		3-1 ft		0-1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-19-19 0	00:00	Jun-19-19 0	0:00	Jun-19-19 (	0:00	Jun-19-19 0	0:00	Jun-19-19 (	00:00	Jun-19-19 0	00:00
Chloride by EPA 300	Extracted:	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15
	Analyzed:	Jun-21-19 1	7:13	Jun-21-19 1	7:29	Jun-21-19 1	7:18	Jun-21-19 1	7:24	Jun-21-19 1	7:46	Jun-21-19 1	7:51
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1190	5.03	633	5.02	1160	25.1	11300	100	10600	49.6	94.9	4.96

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Vramer



Mike Carmona

**Project Id:** 

**Project Location:** 

**Contact:** 

# Certificate of Analysis Summary 628468

# Tetra Tech- Midland, Midland, TX

Project Name: COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Date Received in Lab: Thu Jun-20-19 11:13 am

**Report Date:** 25-JUN-19

Project Manager: Jessica Kramer

	Lab Id:	628468-0	013	628468-0	14	628468-0	15	628468-0	16	628468-0	17	628468-0	018
Analysis Requested	Field Id:	AH-4		AH-4		AH-6		AH-6		ESW-1		SSW-1	ı
Anaiysis Requesieu	Depth:	2-1 ft		3-1 ft		0-1 ft		2-1 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-19-19 (	00:00	Jun-19-19 (	00:00	Jun-19-19 0	0:00	Jun-19-19 0	0:00	Jun-19-19 (	00:00	Jun-19-19 (	00:00
Chloride by EPA 300	Extracted:	Jun-21-19	12:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15	Jun-21-19 1	2:15
	Analyzed:	Jun-21-19	18:08	Jun-21-19 1	8:14	Jun-21-19 1	8:19	Jun-21-19 1	8:25	Jun-21-19 1	8:30	Jun-21-19 1	8:36
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1450	25.2	809	4.97	31.5	4.98	55.9	4.96	339	5.02	346	5.01

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer



# Certificate of Analysis Summary 628468

# Tetra Tech- Midland, Midland, TX



Date Received in Lab: Thu Jun-20-19 11:13 am

Report Date: 25-JUN-19

Project Manager: Jessica Kramer



**Project Id:** 

**Contact:** 

Mike Carmona

**Project Location:** 

	Lab Id:	628468-019	Т	628468-0	20		
Analysis Requested	Field Id:	WSW-1		WSW-2	2		
Analysis Requesieu	Depth:						
	Matrix:	SOIL		SOIL			
	Sampled:	Jun-19-19 00:00		Jun-19-19 0	00:00		
Chloride by EPA 300	Extracted:	Jun-22-19 10:50		Jun-22-19 1	0:50		
	Analyzed:	Jun-22-19 11:52		Jun-22-19 1	1:56		
	Units/RL:	mg/kg RI	L	mg/kg	RL		
Chloride		230 5.0	00	4210	25.1		

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

fession Weamer

Jessica Kramer Project Assistant



# 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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



# **BS / BSD Recoveries**



Page 153 of 214

**Project Name:** COG Jrs Horz Federal #2 (Job number:212C-MD-01739)

Work Order #: 628468

**Project ID:** 

**Analyst:** 

SPC

**Date Prepared:** 06/21/2019

**Date Analyzed:** 06/21/2019

**Lab Batch ID:** 3093268

**Sample:** 7680450-1-BKS

**Batch #:** 1 Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

**Units:** 

mg/kg

Chloride by EPA 300	Blank Sample Result	Spike Added	Blank Spike	Blank Spike	Spike Added	Blank Spike	Blk. Spk Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	[B]	Result [C]	%R [D]	[E]	Duplicate Result [F]	%R [G]	%	%R	%RPD	
Chloride	< 5.00	250	235	94	250	235	94	0	90-110	20	

**Analyst:** 

CHE

**Date Prepared:** 06/22/2019

**Date Analyzed:** 06/22/2019

**Lab Batch ID:** 3093318

**Sample:** 7680530-1-BKS

**Batch #:** 1

Matrix: Solid

**Units:** 

U <b>nits:</b> mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUPI	LICATE	RECOVI	ERY STUD	Y	
Chloride by EPA 300	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]				
Chloride	<5.00	250	239	96	250	239	96	0	90-110	20	

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



# Form 3 - MS / MSD Recoveries



Page 154 of 214

Project Name: COG Jrs Horz Federal #2 (Job number:212C-MD-01739

Work Order #:

628468

**Project ID:** 

Lab Batch ID:

3093268

**QC- Sample ID:** 627846-001 S

Batch #:

Matrix: Soil

Date Analyzed:

06/21/2019

**Date Prepared:** 06/21/2019

Analyst: SPC

**Reporting Units:** 

mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride	121	251	369	99	251	367	98	1	90-110	20	

Lab Batch ID:

3093268

**QC- Sample ID:** 628468-008 S

28468-008 S

Batch #:

Matrix: Soil

**Date Analyzed:** 

06/21/2019

**Date Prepared:** 06/21/2019

019

Analyst: SPC

•

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	633	251	879	98	251	883	100	0	90-110	20	

Lab Batch ID:

3093318

**QC- Sample ID:** 626604-080 S

Batch #:

Matrix: Soil

Date Analyzed:

06/22/2019

**Date Prepared:** 06/22/2019

Analyst: CHE

**Reporting Units:** 

mg/kg

#### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

1

Chloride by EPA 300	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]	[0]	[D]	[E]	Kesuit [F]	[G]	/0	/0K	70KI D	
Chloride	<5.03	252	244	97	252	244	97	0	90-110	20	

Setting the Standard since 1990

Stafford, Texas (281-240-4200)

# CHAIN OF CUSTODY

Page 1 Of

San Antonio, Texas (210-509-3334)

Phoenix, Arizona (480-355-0900)

Dallas Texas (214-902-0300)		Midland, Tex	Midland, Texas (432-704-5251)	-5251)								ا ک	5	
				www.xenco.com	:0.com			Xenco Quote #	*		Xenco Job #	5	で て	AMI
									Analytic	Analytical Information				Matrix Codes
Client / Reporting Information			Project In	Project Information										-
Company Name / Branch: Tetra Tech Inc. on behalf of COG Ones.	7	Project Name/Number:	e/Number:	T-4-1-1 #0 (	- L mhar	ame/Number:	400)							W = Water
Company Address:	9	Date					20)							
901 W. Wall St., Ste. 100, Midland, TX 79705	X 79705			June 2	June 20 <sup>th</sup> , 2019									DW = Drinking Water
Email: Ph	Phone No:	Invoice To:						L						e water
mike.carmona@tetratech.com	(432) 682-4559			lke Tava	lke Tavarez, P.G.									
Project Contact:			1	Senior HSE Supervisor - COG Operating, LLC	r - COG Ope	rating, LLC.								WI = Wipe
Samplers's Name: Mike Carmona & Devin Brown		PO Number:												WW- Wasta Water
Campion o France, mine Cambina a Demi Demi		Collection			Numbe	Number of preserved bottles	bottles							A = Air
No. Field ID / Point of Collection					Zn		D4	ides						
	Sample Depth	Date	Time Matrix	# of bottles	HCI NaOH/ Acetate	HNO3 H2SO4 NaOH	NaHSC MEOH NONE	Chlor						Field Comments
1 AH-1	0-1'	6/19/19	S	3				· •						
2 AH-1	2.	6/19/19	S	1			· ·	<b>\</b>						
3 AH-1	3.	6/19/19	S	1			<u> </u>	\ \						of
4 AH-1	4'	6/19/19	S	1			<u> </u>	` <					-	
5 AH-2	0-1'	6/19/19	S	1				` <						Pag
6 AH-2	22:	6/19/19	S	٠ -			· ·	` `						
7 AH-2	3'	6/19/19	S	1				. <						
8 AH-2	4.	6/19/19	S	1			\   	١,						
9 AH-3	.0-1	6/19/19	S					<u> </u>						
10 AH-3	2.	6/19/19	S	1			٨	\ \						
Turnaround Time (Business days)				Data Delive	Data Deliverable Information	ion				Notes:				
Same Day TAT	5 Day TAT		Level II Std QC	Std QC		Level IV	Level IV (Full Data Pk	Pkg /raw data)						
Next Day EMERGENCY	]7 Day TAT		Level III	Level III Std QC+ Forms	] sur	TRRP Level IV	vel IV							
2 Day EMERGENCY	Contract TAT		Level 3	Level 3 (CLP Forms)		UST / RG -411	3-411	-						
3 Day EMERGENCY			TRRP Checklist	hecklist						·				
TAT Starts Day received by Lab, if received by 5:00 pm	ived by 5:00 pm			>		-				FED-EX / UF	FED-EX / UPS: Tracking #	#		
	SAMPLE CUSTODY MUST BE DOCUMENTED BELOX	OCUMENTED E	(EAG)	IME/SAMPLES	S CHANGE PO	IME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY	LUDING COURI	ER DELIVERY						
Heinquisned by sampier:	Date Time:	=======================================	Coeived N.	Z		Relinquis 2	hed By:		Date Time:		Received By:			
Relinquished-fy:	Date Time:	,	Received By:			Relinquished By:	hed By:		Date Time:		Received By:	• •		
Relinquished by:	Date Time:		Received By:			Custody Seal #	Seal #	Pres	Preserved where applicable	L		On Jes	Cooler-Temp.	p. Thermo. Corry Factor

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the dost of samples and shall not assime any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

Setting the Standard since 1990

# CHAIN OF CUSTODY

Samplers's Name: Mike Carmona & Devin Brown Project Contact: Company Address: Company Name / Branch: No. 10 3 Day EMERGENCY Stafford, Texas (281-240-4200) Relinquished by: Relinquished by Sampler: Same Day TAT Dallas Texas (214-902-0300) TAT Starts Day received by Lab, if received by 5:00 pm 2 Day EMERGENCY Next Day EMERGENCY Client / Reporting Information mike.carmona@tetratech.com Turnaround Time (Business days) Tetra Tech, Inc. on behalf of COG Operating, LLC 901 W. Wall St., Ste. 100, Midland, TX 79705 Field ID / Point of Collection WSW-1 WSW-2 SSW-1 ESW-1 AH-6 AH-6 AH-4 AH-4 AH-4 ₽1-3 Contract TAT 7 Day TAT 5 Day TAT (432) 682-4559 Date Time: Date Time: Date Time: MUST BE DOCUMENTED Sample N/ N/A N/A N/A 2 <u>-</u> ယ္ νõ ω Ň Date Project Information
Project Name/Number: 6/19/19 6/19/19 6/19/19 6/19/19 PO Number: Invoice To: Midland, Texas (432-704-5251) San Antonio, Texas (210-509-3334) 6/19/19 6/19/19 6/19/19 6/19/19 6/19/19 6/19/19 Date COG JRS Horz Federal #2 (job number: 212C-MD-01739) Received By: TRRP Checklist Received By: Time Senior HSE Supervisor - COG Operating, LLC. Level 3 (CLP Forms) Level III Std QC+ Forms Level II Std QC Matrix S S S S S S S Ś S S www.xenco.com Data Deliverable Information # of bottles SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY lke Tavarez, P.G. June 20th, 2019 HCI NaOH/Zn Number of preserved bottles Acetate -INO3 Relinquished By: Relinquished By: UST / RG -411 TRRP Level IV Level IV (Full Data Pkg /raw data) H2SO4 NaOH NaHSO4 MEOH lone/On lo Phoenix, Arizona (480-355-0900) Chlorides Preserved where applicable Date Time: Date Time: Analytical Information FED-EX / UPS: Tracking # Notes: Xenco Job # Received By: Received By: Field Comments O = Oil WW= Waste Water OW =Ocean/Sea Water SL = Sludge SW = Surface water P = Product DW = Drinking Water GW =Ground Water S = Soil/Sed/Solid W = Water WI = Wipe Matrix Codes Factor



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 06/20/2019 11:13:00 AM

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

Work Order #: 628468

Temperature Measuring device used: R8

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		.4
#2 *Shipping container in good condition	?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shipping cor	ntainer/ cooler?	N/A
#5 Custody Seals intact on sample bottle	es?	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 relinqu	uished/ received?	Yes
#10 Chain of Custody agrees with sampl	e 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 indicat	ed test(s)?	Yes
#16 All samples received within hold time	e?	Yes
#17 Subcontract of sample(s)?		N/A
#18 Water VOC samples have zero head	dspace?	N/A
* Must be completed for after-hours de Analyst:	livery of samples prior to placing in	n the refrigerator
Checklist completed by: Checklist reviewed by:	Brianna Teel  Jessica Wamer  Jessica Kramer	Date: <u>06/20/2019</u> Date: <u>06/20/2019</u>



August 27, 2019

MIKE CARMONA
TETRA TECH
901 WEST WALL STREET , STE 100
MIDLAND, TX 79701

RE: JRS HORS FED 2 (2.4.19)

Enclosed are the results of analyses for samples received by the laboratory on 08/22/19 15:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/ga/lab">www.tceq.texas.gov/field/ga/lab</a> accred certif.html.

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

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

Accreditation applies to public drinking water matrices.

Celey D. Keine

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



# Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Analyzed By me

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition:

Cool & Intact

Project Number:

212C-MD-01739

Sample Received By:

Tamara Oldaker

Project Location:

COG - EDDY CO NM

# Sample ID: TRENCH # 1 ( 2') (H902893-01)

BTEX 8021B	mg,	/kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/23/2019	ND	1.69	84.6	2.00	7.56	
Toluene*	<0.050	0.050	08/23/2019	ND	1.83	91.3	2.00	8.61	
Ethylbenzene*	<0.050	0.050	08/23/2019	ND	1.94	97.0	2.00	8.57	
Total Xylenes*	<0.150	0.150	08/23/2019	ND	5.84	97.4	6.00	8.47	
Total BTEX	<0.300	0.300	08/23/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.7	% 73.3-12	9						
Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	08/26/2019	ND	432	108	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/24/2019	ND	191	95.6	200	3.67	
DRO >C10-C28*	<10.0	10.0	08/24/2019	ND	189	94.4	200	6.47	
EXT DRO >C28-C36	<10.0	10.0	08/24/2019	ND					
Surrogate: 1-Chlorooctane	86.3	% 41-142	,						
Surrogate: 1-Chlorooctadecane	91.8	% 37.6-14	7						

# Cardinal Laboratories

\*=Accredited Analyte

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Celeg D. Freene



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19) 212C-MD-01739

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

Analyte

COG - EDDY CO NM

Sample ID: TRENCH # 1 ( 3' ) (H902893-02)

Chloride, SM4500Cl-B

Analyzed By: AC

BS

% Recovery

True Value QC RPD

3.77

Qualifier

Chloride

Result 208

16.0

Reporting Limit

Reporting Limit

16.0

Analyzed 08/26/2019 Method Blank ND

432

108

400

Sample ID: TRENCH # 1 ( 4' ) (H902893-03)

Chloride, SM4500Cl-B

Analyzed By: AC

Method Blank

% Recovery

True Value QC

RPD

Chloride

336

Result

08/26/2019

Analyzed

ND

BS 432

108

400

Qualifier

Sample ID: TRENCH # 1 ( 6' ) (H902893-04)

Chloride, SM4500Cl-B

Analyzed By: AC

Analyte Result Reporting Limit Analyzed Method Blank Chloride 480 08/26/2019 16.0

ND

BS 432 % Recovery 108

True Value QC 400

RPD 3.77

3.77

Qualifier

Cardinal Laboratories

\*=Accredited Analyte

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Celeg D. Keene

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Fax To:

TETRA TECH MIKE CARMONA 901 WEST WALL STREET , STE 100 MIDLAND TX, 79701

(432) 682-3946

Analyzed By: me

Received:

RTFY 8021R

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By:

Cool & Intact Tamara Oldaker

Project Number:

212C-MD-01739

Project Location:

COG - EDDY CO NM

# Sample ID: TRENCH # 2 ( 1' ) (H902893-05)

BIEX 8021B	тд/кд		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/23/2019	ND	1.69	84.6	2.00	7.56	
Toluene*	<0.050	0.050	08/23/2019	ND	1.83	91.3	2.00	8.61	
Ethylbenzene*	<0.050	0.050	08/23/2019	ND	1.94	97.0	2.00	8.57	
Total Xylenes*	<0.150	0.150	08/23/2019	ND	5.84	97.4	6.00	8.47	
Total BTEX	<0.300	0.300	08/23/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	92.5	% 73.3-12	9						
Chloride, SM4500CI-B	mg/	kg	Analyze	ed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9000	16.0	08/26/2019	ND	432	108	400	3.77	
TPH 8015M	mg/	'kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/24/2019	ND	191	95.6	200	3.67	
DRO >C10-C28*	<10.0	10.0	08/24/2019	ND	189	94.4	200	6.47	
EXT DRO >C28-C36	<10.0	10.0	08/24/2019	ND					
Surrogate: 1-Chlorooctane	106 %	% 41-142	1						
Surrogate: 1-Chlorooctadecane	112 9	% 37.6-14	7						

# Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keine



# Analytical Results For:

TETRA TECH MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name: Project Number: JRS HORS FED 2 (2.4.19) 212C-MD-01739 Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Location:

COG - EDDY CO NM

#### Sample ID: TRENCH # 2 ( 2' ) (H902893-06)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14800	16.0	08/26/2019	ND	400	100	400	0.00	QM-07

# Sample ID: TRENCH # 2 ( 3' ) (H902893-07)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2120	16.0	08/26/2019	ND	400	100	400	0.00	

# Sample ID: TRENCH # 2 ( 4' ) (H902893-08)

Chloride, SM4500CI-B	Analyze	d By: AC							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3720	16.0	08/26/2019	ND	400	100	400	0.00	

#### Sample ID: TRENCH # 2 ( 5' ) (H902893-09)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2280	16.0	08/26/2019	ND	400	100	400	0.00	

# Sample ID: TRENCH # 2 ( 6' ) (H902893-10)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3600	16.0	08/26/2019	ND	400	100	400	0.00	

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Celey D. Keine



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Analyzed

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

Analyte

Analyte

Analyte

212C-MD-01739 COG - EDDY CO NM

Sample ID: TRENCH # 2 ( 7' ) (H902893-11)

Chloride, SM4500Cl-B

Analyzed By: AC

% Recovery

100

True Value QC RPD

Qualifier

Chloride

Result 5600

16.0 08/26/2019

Reporting Limit

Reporting Limit

Reporting Limit

Reporting Limit

16.0

Method Blank ND

BS 400

0.00

Sample ID: TRENCH # 2 ( 8' ) (H902893-12)

Chloride, SM4500Cl-B

Analyzed By: AC

Analyzed Method Blank

BS

% Recovery 100

RPD True Value QC

Qualifier

Chloride

Result 4640

16.0 08/26/2019 ND

400

400

400

0.00

Sample ID: TRENCH # 2 ( 10' ) (H902893-13)

Chloride, SM4500Cl-B

Analyzed By: AC

BS

% Recovery

True Value QC

RPD

Qualifier

Chloride

Result 1730

08/26/2019 16.0

Analyzed

Analyzed

08/26/2019

Method Blank

400

100

100

400

0.00

Chloride

Result

4120

ND

Method Blank

ND

BS

400

400

0.00

Sample ID: TRENCH # 2 ( 12' ) (H902893-14)

Chloride, SM4500Cl-B

Analyzed By: AC

% Recovery True Value QC

**RPD** 

Qualifier

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Celeg D. Keene

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Fax To:

**TETRA TECH** MIKE CARMONA 901 WEST WALL STREET, STE 100 MIDLAND TX, 79701

(432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

212C-MD-01739

COG - EDDY CO NM

Sample ID: TRENCH # 3 ( 1' ) (H902893-15)

BTEX 8021B	mg/kg Analyzed By: ms								
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/24/2019	ND	1.68	83.8	2.00	3.40	
Toluene*	<0.050	0.050	08/24/2019	ND	1.84	92.2	2.00	1.47	
Ethylbenzene*	<0.050	0.050	08/24/2019	ND	1.98	98.8	2.00	1.53	
Total Xylenes*	< 0.150	0.150	08/24/2019	ND	5.90	98.3	6.00	1.11	
Total BTEX	<0.300	0.300	08/24/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	92.9 9	73.3-12	9						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	800	16.0	08/26/2019	ND	400	100	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/24/2019	ND	191	95.6	200	3.67	
DRO >C10-C28*	<10.0	10.0	08/24/2019	ND	189	94.4	200	6.47	
EXT DRO >C28-C36	<10.0	10.0	08/24/2019	ND					
Surrogate: 1-Chlorooctane	107 %	6 41-142							
Surrogate: 1-Chlorooctadecane	113 %	6 37.6-14	7						

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Celey D. Keine



# Analytical Results For:

TETRA TECH MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

212C-MD-01739 COG - EDDY CO NM

#### Sample ID: TRENCH # 3 ( 2' ) (H902893-16)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	08/26/2019	ND	400	100	400	0.00	
Sample ID: TRENCH # 3 ( 3	' ) (H9028	93-17)							
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	736	16.0	08/26/2019	ND	400	100	400	0.00	
Sample ID: TRENCH # 3 ( 4	' ) (H9028	93-18)							
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1180	16.0	08/26/2019	ND	400	100	400	0.00	
Sample ID: TRENCH # 3 ( 6	' ) (H9028	93-19)							
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	08/26/2019	ND	400	100	400	0.00	
Sample ID: TRENCH # 3 ( 8	' ) (H9028	93-20)							
Chloride, SM4500Cl-B	, ,	/kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	08/26/2019	ND	400	100	400	0.00	

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Celey D. Keene



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Analyzed

08/26/2019

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

Analyte

212C-MD-01739 COG - EDDY CO NM

Sample ID: TRENCH # 3 ( 10' ) (H902893-21)

Chloride, SM4500Cl-B

Analyzed By: AC

BS

% Recovery

True Value QC RPD

Qualifier

Chloride

Result 432

Result

272

16.0 08/26/2019

Reporting Limit

Reporting Limit

16.0

ND

Method Blank

400

BS

400

100

400

Sample ID: TRENCH #3 ( 12' ) (H902893-22)

Chloride, SM4500Cl-B

Analyzed By: AC

Analyzed Method Blank

ND

% Recovery

100

True Value QC

400

RPD Qualifier

0.00

0.00

Chloride

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Celeg D. Keene

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Fax To:

**TETRA TECH** MIKE CARMONA 901 WEST WALL STREET, STE 100 MIDLAND TX, 79701

(432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number:

212C-MD-01739

Project Location:

COG - EDDY CO NM

Sample ID: TRENCH # 5 ( 1' ) (H902893-23)

BTEX 8021B	mg/	kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/24/2019	ND	1.68	83.8	2.00	3.40	
Toluene*	<0.050	0.050	08/24/2019	ND	1.84	92.2	2.00	1.47	
Ethylbenzene*	< 0.050	0.050	08/24/2019	ND	1.98	98.8	2.00	1.53	
Total Xylenes*	< 0.150	0.150	08/24/2019	ND	5.90	98.3	6.00	1.11	
Total BTEX	<0.300	0.300	08/24/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	93.8 9	73.3-12	9						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1940	16.0	08/26/2019	ND	400	100	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/24/2019	ND	191	95.6	200	3.67	
DRO >C10-C28*	<10.0	10.0	08/24/2019	ND	189	94.4	200	6.47	
EXT DRO >C28-C36	<10.0	10.0	08/24/2019	ND					
Surrogate: 1-Chlorooctane	110 %	6 41-142	?						
Surrogate: 1-Chlorooctadecane	117 %	6 37.6-14	7						

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Celeg D. Keene



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name: Project Number: JRS HORS FED 2 (2.4.19) 212C-MD-01739

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Location:

Analyte

COG - EDDY CO NM

Sample ID: TRENCH # 5 ( 2' ) (H902893-24)

Chloride, SM4500Cl-B

Analyzed By: AC

BS % Recovery

True Value QC

Qualifier

Chloride

Chloride

Result 528

16.0

Reporting Limit

400

BS

100

% Recovery

RPD

08/26/2019

Analyzed

ND

Method Blank

Method Blank

400

0.00

Sample ID: TRENCH # 5 ( 3' ) (H902893-25)

Chloride, SM4500Cl-B

Analyzed By: AC

Reporting Limit Analyzed Analyte Result 16.0 16.0 08/26/2019

400 ND

100

True Value QC 400

RPD Qualifier

0.00

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Celeg D. Keene

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

Fax To:

**TETRA TECH** MIKE CARMONA 901 WEST WALL STREET, STE 100 MIDLAND TX, 79701

(432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition:

Cool & Intact

Project Number: Project Location: 212C-MD-01739 COG - EDDY CO NM Sample Received By:

Tamara Oldaker

# Sample ID: TRENCH # 6 ( 1' ) (H902893-26)

BTEX 8021B	mg/	kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/24/2019	ND	1.68	83.8	2.00	3.40	
Toluene*	<0.050	0.050	08/24/2019	ND	1.84	92.2	2.00	1.47	
Ethylbenzene*	< 0.050	0.050	08/24/2019	ND	1.98	98.8	2.00	1.53	
Total Xylenes*	< 0.150	0.150	08/24/2019	ND	5.90	98.3	6.00	1.11	
Total BTEX	<0.300	0.300	08/24/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.9 9	% 73.3-12	9						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	08/26/2019	ND	432	108	400	3.77	QM-07
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/24/2019	ND	191	95.6	200	3.67	
DRO >C10-C28*	<10.0	10.0	08/24/2019	ND	189	94.4	200	6.47	
EXT DRO >C28-C36	<10.0	10.0	08/24/2019	ND					
Surrogate: 1-Chlorooctane	109 %	% 41-142	?						
Surrogate: 1-Chlorooctadecane	116 %	37.6-14	7						

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Celeg D. Keene



# Analytical Results For:

TETRA TECH MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

212C-MD-01739

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

COG - EDDY CO NM

# Sample ID: TRENCH # 6 ( 2' ) (H902893-27)

Chloride, SM4500Cl-B	mg/kg		Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4480	16.0	08/26/2019	ND	432	108	400	3.77	

# Sample ID: TRENCH # 6 ( 3' ) (H902893-28)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5920	16.0	08/26/2019	ND	432	108	400	3.77	

# Sample ID: TRENCH # 6 ( 4' ) (H902893-29)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1920	16.0	08/26/2019	ND	432	108	400	3.77	

#### Sample ID: TRENCH # 6 ( 5' ) (H902893-30)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	08/26/2019	ND	432	108	400	3.77	

# Sample ID: TRENCH # 6 ( 8' ) (H902893-31)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	08/26/2019	ND	432	108	400	3.77	

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Celey D. Keine



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By:

Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

212C-MD-01739

COG - EDDY CO NM

Sample ID: TRENCH # 6 ( 10' ) (H902893-32)

Chloride, SM4500Cl-B

Analyzed By: AC

BS

% Recovery

True Value QC RPD

3.77

3.77

Qualifier

Chloride

Chloride

Result 1410 Reporting Limit 16.0

Analyzed 08/26/2019 Method Blank ND

432

108

400

Sample ID: TRENCH # 6 ( 12' ) (H902893-33)

Chloride, SM4500Cl-B

Analyzed By: AC

Analyzed Analyte Result Reporting Limit 144 16.0 08/26/2019 Method Blank ND

BS 432 % Recovery 108

True Value QC 400

RPD Qualifier

Cardinal Laboratories

\*=Accredited Analyte

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Celeg D. Keene

Celey D. Keene, Lab Director/Quality Manager



# Analytical Results For:

TETRA TECH MIKE CARMONA 901 WEST WALL STREET , STE 100 MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/22/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

212C-MD-01739

COG - EDDY CO NM

Sample ID: AUGER HOLE # 7 ( 0-1' ) (H902893-34)

BIEX 8021B	mg,	/ kg	Anaiyze	a By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/24/2019	ND	1.68	83.8	2.00	3.40	
Toluene*	< 0.050	0.050	08/24/2019	ND	1.84	92.2	2.00	1.47	

Ethylbenzene\* < 0.050 0.050 08/24/2019 ND 1.98 98.8 2.00 1.53 Total Xylenes\* < 0.150 0.150 08/24/2019 ND 5.90 98.3 6.00 1.11 Total BTEX 08/24/2019 < 0.300 0.300 ND

Surrogate: 4-Bromofluorobenzene (PID

90.8 %

73.3-129

			-						
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2520	16.0	08/26/2019	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/26/2019	ND	192	95.8	200	0.189	
DRO >C10-C28*	<10.0	10.0	08/26/2019	ND	190	95.0	200	4.12	
EXT DRO >C28-C36	<10.0	10.0	08/26/2019	ND					

Surrogate: 1-Chlorooctane

80.4 %

41-142

Surrogate: 1-Chlorooctadecane

87.6 %

37.6-147

Cardinal Laboratories \*=Accredited Analyte

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Celeg D. Freene



# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/22/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Reporting Limit

Reporting Limit

16.0

Reporting Limit

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

Analyte

Analyte

212C-MD-01739 COG - EDDY CO NM

Sample ID: AUGER HOLE # 7 ( 1-1.5' ) (H902893-35)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AC

Analyzed

Analyzed

08/26/2019

Analyzed

% Recovery

108

108

True Value QC RPD Qualifier

Chloride

Result 5280

Result

7280

08/26/2019 16.0

Method Blank ND

Method Blank

ND

432

BS

400

Sample ID: AUGER HOLE # 7 ( 2-2.5' ) (H902893-36)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AC

BS

432

True Value QC % Recovery

RPD

3.77

3.77

Qualifier

Sample ID: AUGER HOLE # 7 ( 3-3.5' ) (H902893-37)

Chloride, SM4500Cl-B

Analyzed By: AC

% Recovery

True Value QC

RPD Qualifier

Chloride

Chloride

Result 5760

08/26/2019 16.0

Method Blank ND

BS 432

108

108

400

400

400

3.77

Sample ID: AUGER HOLE # 7 ( 4-4.5' ) (H902893-38)

Chloride, SM4500Cl-B

Analyzed By: AC

Reporting Limit Analyte Result Chloride 3960 16.0

Analyzed

08/26/2019

Method Blank ND

432

BS

% Recovery True Value QC

**RPD** 

3.77

Qualifier

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Page 16 of 24



# Analytical Results For:

Fax To:

**TETRA TECH** MIKE CARMONA 901 WEST WALL STREET, STE 100 MIDLAND TX, 79701

(432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition:

Cool & Intact

Project Number:

212C-MD-01739

Sample Received By:

Tamara Oldaker

Project Location:

COG - EDDY CO NM

# Sample ID: BACKGROUND ( 1' ) (H902893-39)

BTEX 8021B	mg/	kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/26/2019	ND	1.67	83.6	2.00	1.03	QR-03
Toluene*	<0.050	0.050	08/26/2019	ND	1.87	93.4	2.00	0.837	
Ethylbenzene*	<0.050	0.050	08/26/2019	ND	1.97	98.5	2.00	3.20	
Total Xylenes*	<0.150	0.150	08/26/2019	ND	6.13	102	6.00	2.59	
Total BTEX	<0.300	0.300	08/26/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	93.6	% 73.3-12	9						
Chloride, SM4500CI-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	08/26/2019	ND	432	108	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/26/2019	ND	192	95.8	200	0.189	
DRO >C10-C28*	<10.0	10.0	08/26/2019	ND	190	95.0	200	4.12	
EXT DRO >C28-C36	<10.0	10.0	08/26/2019	ND					
Surrogate: 1-Chlorooctane	72.9	% 41-142	ı						
Surrogate: 1-Chlorooctadecane	78.0	% 37.6-14	7						

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\*=Accredited Analyte

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# Analytical Results For:

**TETRA TECH** MIKE CARMONA

901 WEST WALL STREET, STE 100

MIDLAND TX, 79701

Analyzed

08/26/2019

Analyzed

08/26/2019

Fax To: (432) 682-3946

Received:

08/22/2019

Sampling Date:

08/20/2019

Reported:

08/27/2019

Sampling Type:

Soil

Project Name:

JRS HORS FED 2 (2.4.19)

Sampling Condition: Sample Received By: Cool & Intact Tamara Oldaker

Project Number: Project Location:

Analyte

Analyte

212C-MD-01739 COG - EDDY CO NM

Sample ID: BACKGROUND ( 2' ) (H902893-40)

Chloride, SM4500Cl-B

Analyzed By: AC

BS % Recovery

True Value QC

Qualifier

Chloride

Result 32.0

Result

16.0

16.0

Reporting Limit

ND

Method Blank

Method Blank

ND

432

BS

432

108

400

RPD

3.77

3.77

Sample ID: BACKGROUND ( 3' ) (H902893-41)

Chloride, SM4500Cl-B

Reporting Limit

16.0

Analyzed By: AC

% Recovery

108

True Value QC

400

RPD Qualifier

Qualifier

Chloride

Chlor

Sample ID: BACKGROUND ( 4' ) (H902893-42)

Chloride, SM4500Cl-B

Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD
ride	176	16.0	08/26/2019	ND	432	108	400	3.77

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Celey D. Keene, Lab Director/Quality Manager

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# **Notes and Definitions**

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keine

PIX	## Sampler Signature:    Sampler Signature:   Conner Moehring
ger:  Mike Carmo  WATER  WATER  SOIL  WATRIX  HCL  Signature:  Onner N  HCL	901W Wall Street, Ste 100  Midland, Texas 79705  Tel (432) 682-4559  Fax (432) 682-4559  Fax (432) 682-3946   901W Wall Street, Ste 100  Mike Carmona  212C-MD-01739
TIME  Softw Walls  WATER  Mike Carmo  Conner N  Conner N  Date  Date  Time (432)  Fax (432)  Date  Mike Carmo  Conner N  Conner N  Conner N  Conner N	TIME  WATER  WAT
	CONTAINERS

78 of 12 ebed 78 of 21 hz jo 12 ebed 78 of 21 hz jo 12 ebed 78 of Chain of Custody Record 78 may 12 hz jo 12 ebed 78 of 21 hz jo 12 ebed

eceived by	OCD: 4	/3/202	0 4:25	.11	PM.		-			711	24	-11											Pa	ge 179 of
eceived by	Relinquished by	nemiquismed by	4.25	Relinguished by	29	86	B	36	25	THE	23	B	2	( LAB USE )	LAB #	רמבימלו	Comments:	Receiving Laboratory:	Invoice to:	Project Location: (county, state)	Project Name:	Cheff Name:	<b>7</b>	Analysis Re
			moren	(5)		(31)	1 (2.)	TRENCH #6 (1)	(3)	(2')	TRENCH #5 (1)	4 (2)	TRENCH # 3 (10)		SAN		æ	atory: Cardinal	COG - Ike	Eddy Co, NM	JRS Hors	Concho	Te	179 1Analysis Request of Chain of Custody Record
	Date: Time:	Date: Time:	7.2	Date: Time:		an .									SAMPLE IDENTIFICATION				Tavarez	NM	Fed 2 (2.4.19)		Tetra Tech, Inc.	ustody Record
ORIGINAL COPY	Received by:	Hecelved by:	lami	Received hy:	-							-	8/20/19	DATE	YEAR: 2019	SAMPLING		Sampler Signature:		Project #:		Site Manager:		
OOPY			era Mila	<u> </u>	X	*	×	メ	×	<b>X</b>	×	X	×	TIME WATEI SOIL	3	NG MATRIX		-		2120		Mike C	901v Mi	
	Date: Time:	Date: Time:	21	Date: Time:	×	*	*	×	×	×	×	*	*	HCL HNO <sub>3</sub> ICE None		PRESERVATIVE METHOD		Conner Moehring		212C-MD-01739		Carmona	901W Wall Street, Ste 100 Midland, Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946	
			2-19 15:25	~	2'	7	7	7	7	-	- Z	7	7	# CONT		RS								
(Circle) HAND DELIVERED	Corrected	Sample Temperature 3.3c #87	ONLY	Г		\$	9	×			×			PAH 82 Total Me TCLP Me	1005 ( 15M ( 70C tals A	(Ext to GRO - g As B	DRO - C	DRO - I	Нg		(Circle			
FEDEX UPS	Special Report	Rush Charges Authorized	X STANDARD											TCLP Vo TCLP Se RCI GC/MS \ GC/MS S PCB's 8	oni Vo Vol. 85 Semi.	latiles 260B / Vol. 8		5				ANALYSIS RE		
Tracking #:	Special Report Limits or TRRP Report	24 hr 48 hr orized		人	×	Υ,	×	×	×	×	×	×		NORM PLM (Asi Chloride Chloride General Anion/Ca	Su Wate	lfate r Cher		ee atta	ched lis	et)	Method No.)			Page 3
	ă	72 hr																						of S

Page 180 of 214

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Analysis Request of Chain of Custody Record Received by QCD: 4/3/2020 4:25:11 PM Relinquished by: Relinquished by: Relinquished by: Invoice to: Comments: county, state) Client Name: roject Location: roject Name: Receiving Laboratory: 1902893 LAB# ONLY ONLY gun Mar 늄 30 4 50 4 60 E Anger Hole # reach Eddy Co, NM Concho Cardinal JRS Hors Fed 2 (2.4.19) COG - Ike Tavarez Tetra Tech, Inc. (10) (8) SAMPLE IDENTIFICATION 72) (1-21.5) (0-1) (3-3.5) (2-2.5) 4-4.5) 22/19 Date: Date: lime: Time: lime: ORIGINAL COPY 8/20/19 21/22/8 Received by: 8/22/19 22/15 Sampler Signature: Project #: Site Manager: 8/22/19 EAR: 2019 122/15 DATE SAMPLING TIME WATER Mike Carmona MATRIX SOIL X Conner Moehring 212C-MD-01739 901W Wall Street, Ste 100 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946 Date: HCL PRESERVATIVE METHOD HNO<sub>3</sub> X × X CE × X lime: None # CONTAINERS 3 E 2 3 5 2 2 2 7 FILTERED (Y/N) Sample Temperature
3.3c #67 BTEX 8021B BTEX 8260B Circle) HAND DELIVERED TPH TX1005 (Ext to C35) ONLY LAB USE X X TPH 8015M (GRO - DRO - ORO - MRO) PAH 8270C Circle or Specify Method Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg TCLP Volatiles ANALYSIS REQUEST TCLP Semi Volatiles Rush Charges Authorized RUSH: Same Day FEDEX UPS Special Report Limits or TRRP Report RCI STANDARD GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM Page PLM (Asbestos) 24 hr XX × × Chloride Chloride Sulfate **TDS** 48 hr General Water Chemistry (see attached list) Anion/Cation Balance T: 72 hr of S Hold

Tetra Tech, Inc.    Sample Service Service   Service Service   Service Service Service   Service Service Service   Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Service Ser
TIME  WATER  WATER  WATER  WATER  SOIL  HCL  HNO3  HHNO3  HHNO3  WETHOD  Date: Time:  Total Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Volatilies  TCLP Semi Volatilies  TCLP Semi Volatilies
Mike Carmona  WATER  MATRIX  Mike Carmona  M
Time:
Sample Temperature  Sample Temperature  Sample Temperature  Total Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Metals Ag As Ba Cd Cr Pb Se Hg  TCLP Volatiles  TCLP Semi Volatiles
TCLP Semi Volatiles

Page 24 of 24

# **Analytical Report 640369**

for Tetra Tech- Midland

Project Manager: Mike Carmona
JRS HORZ FED 2H (2.4.19)
212C-MD-01739
22-OCT-19

Collected By: Client



## 1089 N Canal Street Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142), North Carolina (681)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



22-OCT-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 640369

JRS HORZ FED 2H (2.4.19) Project Address: Eddy Co, NM

#### Mike Carmona:

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) 640369. 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. 640369 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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# **Sample Cross Reference 640369**

# Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
AH#7 (0-1')	S	10-17-19 00:00	0 - 1 ft	640369-001
AH#7 (1-1.5')	S	10-17-19 00:00	1 - 1.5 ft	640369-002
AH#7 (2-2.5')	S	10-17-19 00:00	2 - 2.5 ft	640369-003
AH#7 (3-3.5')	S	10-17-19 00:00	3 - 3.5 ft	640369-004



Certificate of Analysis Summary 640369

Tetra Tech- Midland, Midland, TX

**Project Name: JRS HORZ FED 2H (2.4.19)** 

**Date Received in Lab:** Thu Oct-17-19 04:35 pm

**Report Date:** 22-OCT-19 **Project Manager:** Jessica Kramer

Project Id: 212C-MD-01739
Contact: Mike Carmona
Project Location: Eddy Co, NM

	Lab Id:	640369-0	01	640369-0	02	640369-0	03	640369-0	04			
Analysis Requested	Field Id:	AH#7 (0-	1')	AH#7 (1-1	.5')	AH#7 (2-2	2.5')	AH#7 (3-3	.5')			
Analysis Requested	Depth:	0-1 ft		1-1.5 ft	:	2-2.5 ft	:	3-3.5 ft				
	Matrix:	SOIL		SOIL		SOIL		SOIL				
	Sampled:	Oct-17-19 (	00:00	Oct-17-19 0	00:00	Oct-17-19 0	00:00	Oct-17-19 0	0:00			
BTEX by EPA 8021B	Extracted:	Oct-17-19 1	Oct-17-19 17:10									
	Analyzed:	Oct-18-19 1	Oct-18-19 12:56									
	Units/RL:	mg/kg	RL									
Benzene		< 0.00100	0.00100									
Toluene		< 0.00100	0.00100									
Ethylbenzene		< 0.00100	0.00100									
m,p-Xylenes			0.00200									
o-Xylene			0.00100									
Total Xylenes			0.00100									
Total BTEX		< 0.00100	0.00100									
Chloride by EPA 300	Extracted:	Oct-18-19 1	17:10	Oct-18-19 1	7:10	Oct-18-19 1	7:10	Oct-18-19 1	7:10			
	Analyzed:	Oct-18-19 2	20:18	Oct-18-19 2	0:25	Oct-18-19 2	0:46	Oct-18-19 2	0:52			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Chloride		895	99.8	1160	99.4	7310	501	11100	503			
TPH by SW8015 Mod	Extracted:	** ** **	**				ĺ					
	Analyzed:	Oct-18-19 (	Oct-18-19 07:25									
	Units/RL:	mg/kg	RL									
Gasoline Range Hydrocarbons (GRO)		<50.1	50.1									
Diesel Range Organics (DRO)		<50.1	50.1					<u> </u>			<u> </u>	
Motor Oil Range Hydrocarbons (MRO)		<50.1 50.1										
Total TPH		<50.1	50.1									

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer

Jessica Kramer Project Assistant

## CASE NARRATIVE

22-OCT-19

Client Name: Tetra Tech- Midland Project Name: JRS HORZ FED 2H (2.4.19)

Project ID: 212C-MD-01739

Report Date: Work Order Number(s): 640369 Date Received: 10/17/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3104782 BTEX by EPA 8021B

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



## Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Soil

Sample Id: AH#7 (0-1') Matrix:

Date Received:10.17.19 16.35

Lab Sample Id: 640369-001

Date Collected: 10.17.19 00.00

Sample Depth: 0 - 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech:

MAB

% Moisture:

Analyst:

MAB

Date Prep:

10.18.19 17.10

Basis:

Wet Weight

Seq Number: 3104897

Parameter	Cas Number	Result	RL	Units	<b>Analysis Date</b>	Flag	Dil
Chloride	16887-00-6	895	99.8	mg/kg	10.18.19 20.18		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech:

DTH

% Moisture:

Analyst:

DTH

10.17.19 16.30 Date Prep:

Basis:

Wet Weight

Parameter	Cas Number	Result	RL		Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	< 50.1	50.1		mg/kg	10.18.19 07.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	< 50.1	50.1		mg/kg	10.18.19 07.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	< 50.1	50.1		mg/kg	10.18.19 07.25	U	1
Total TPH	PHC635	< 50.1	50.1		mg/kg	10.18.19 07.25	U	1
Surrogate		Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane		111-85-3	102	%	70-135	10.18.19 07.25		
o-Terphenyl		84-15-1	105	%	70-135	10.18.19 07.25		



# Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Soil

Sample Id: **AH#7** (0-1')

Matrix:

Date Received:10.17.19 16.35

Lab Sample Id: 640369-001

Date Collected: 10.17.19 00.00

Sample Depth: 0 - 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech:

MAB

% Moisture:

Basis:

Analyst: MAB

Date Prep:

10.17.19 17.10

Wet Weight

Parameter	Cas Number	Result	RL		Units	Analysis Date	Flag	Dil
Benzene	71-43-2	< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
Toluene	108-88-3	< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
Ethylbenzene	100-41-4	< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
m,p-Xylenes	179601-23-1	< 0.00200	0.00200		mg/kg	10.18.19 12.56	U	1
o-Xylene	95-47-6	< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
Total Xylenes	1330-20-7	< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
Total BTEX		< 0.00100	0.00100		mg/kg	10.18.19 12.56	U	1
Surrogate		Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene		540-36-3	108	%	70-130	10.18.19 12.56		
4-Bromofluorobenzene		460-00-4	123	%	70-130	10.18.19 12.56		



# Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Soil

Sample Id: **AH#7** (1-1.5')

Matrix:

Date Received:10.17.19 16.35

Lab Sample Id: 640369-002

Date Collected: 10.17.19 00.00

Sample Depth: 1 - 1.5 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P % Moisture:

Tech: Analyst: MAB MAB

Date Prep:

10.18.19 17.10 Basis:

s: Wet Weight

Parameter	Cas Number	Result	RL	Units	<b>Analysis Date</b>	Flag	Dil
Chloride	16887-00-6	1160	99.4	mg/kg	10.18.19 20.25		10



# Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Sample Id: AH#7 (2-2.5') Lab Sample Id: 640369-003

MAB

MAB

Matrix: Soil Date Received:10.17.19 16.35

Date Collected: 10.17.19 00.00

Sample Depth: 2 - 2.5 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

% Moisture:

Date Prep:

10.18.19 17.10

Basis: Wet Weight

Seq Number: 3104897

Tech:

Analyst:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7310	501	mg/kg	10.18.19 20.46		50



# Tetra Tech- Midland, Midland, TX

JRS HORZ FED 2H (2.4.19)

Sample Id: AH#7 (3-3.5') Lab Sample Id: 640369-004

Analytical Method: Chloride by EPA 300

MAB

MAB

Matrix: Soil Date Received:10.17.19 16.35

Date Collected: 10.17.19 00.00

Sample Depth: 3 - 3.5 ft

Prep Method: E300P

% Moisture:

10.18.19 17.10

Basis: Wet Weight

Seq Number: 3104897

Tech:

Analyst:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11100	503	mg/kg	10.18.19 20.52		50

Date Prep:



## Flagging Criteria

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

BRL Below Reporting Limit.

RL Reporting Limit

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

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

**DL** Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Flag

X

Flag



#### **QC Summary** 640369

## **Tetra Tech- Midland** JRS HORZ FED 2H (2.4.19)

Analytical Method: Chloride by EPA 300

Seq Number: 3104897

MB Sample Id: 7688482-1-BLK

Matrix: Solid

LCS Sample Id: 7688482-1-BKS

E300P Prep Method:

Date Prep: 10.18.19

LCSD Sample Id: 7688482-1-BSD

MR Spike LCS LCS Limits %RPD RPD Limit Units LCSD LCSD Analysis **Parameter** Result Amount Result %Rec Date %Rec Result

10.18.19 18:30 Chloride <10.0 250 249 100 245 98 90-110 2 20 mg/kg

Analytical Method: Chloride by EPA 300

Seq Number:

3104897

Matrix: Soil

Prep Method:

E300P

10.18.19 Date Prep: Parent Sample Id: 640368-020 MS Sample Id: 640368-020 S MSD Sample Id: 640368-020 SD

MS MS %RPD RPD Limit Units Parent Spike **MSD MSD** Limits Analysis Flag **Parameter** Result %Rec Date Result Amount Result %Rec

Chloride 7340 4020 12400 126 12300 124 90-110 20 mg/kg 10.18.19 18:50

Analytical Method: Chloride by EPA 300

Seq Number: Parent Sample Id:

Prep Method:

E300P

3104897 Matrix: Solid Date Prep: 10.18.19

MS Sample Id: 640369-002 S MSD Sample Id: 640369-002 SD

MS %RPD RPD Limit Units Parent Spike MS **MSD MSD** Limits Analysis Flag **Parameter** Result Date Result %Rec Amount Result %Rec Chloride 1160 1990 3350 3280 107 90-110 2 20 10.18.19 20:32 110 mg/kg

Analytical Method: TPH by SW8015 Mod

640369-002

Prep Method:

SW8015P

Seq Number: 3104747 Matrix: Solid Date Prep: 10.17.19

7688441-1-BKS LCSD Sample Id: 7688441-1-BSD LCS Sample Id: MB Sample Id: 7688441-1-BLK

LCS %RPD RPD Limit Units MB Spike LCS Limits Analysis LCSD LCSD **Parameter** Result %Rec Date Result Amount Result %Rec Gasoline Range Hydrocarbons (GRO) 1010 101 970 97 70-135 4 10.18.19 02:11 < 50.0 1000 35 mg/kg 10.18.19 02:11 92 70-135 7 35 Diesel Range Organics (DRO) 1000 920 861 86 < 50.0 mg/kg

LCS MB MB LCS LCSD LCSD Limits Units Analysis **Surrogate** %Rec Flag %Rec Flag Flag Date %Rec 10.18.19 02:11 1-Chlorooctane 98 117 109 70-135 % 10.18.19 02:11 o-Terphenyl 101 112 109 70-135 %

Analytical Method: TPH by SW8015 Mod

Seg Number:

3104747

Matrix: Solid

Prep Method: Date Prep:

SW8015P

10.17.19

MB Sample Id: 7688441-1-BLK

**Parameter** 

MB Result

Units

Analysis Flag

Motor Oil Range Hydrocarbons (MRO)

< 50.0

mg/kg

Date 10.18.19 01:52

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

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

Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample

A = Parent Result = MS/LCS Result

= MSD/LCSD Result

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



#### **QC Summary** 640369

## **Tetra Tech- Midland** JRS HORZ FED 2H (2.4.19)

Analytical Method: TPH by SW8015 Mod

Seq Number: 3104747

Prep Method: SW8015P Date Prep: 10.17.19

Parent Sample Id: 640361-0	16		MS Sar	nple Id:	640361-0	40361-016 S MSD Sample Id: 640361-016 SD						
Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	< 50.1	1000	894	89	882	89	70-135	1	35	mg/kg	10.18.19 03:10	
Diesel Range Organics (DRO)	< 50.1	1000	817	82	811	82	70-135	1	35	mg/kg	10.18.19 03:10	
Surrogate				AS Rec	MS Flag	MSD %Re		_	Limits	Units	Analysis Date	
1-Chlorooctane			1	08		113		7	0-135	%	10.18.19 03:10	
o-Terphenyl			1	07		116		7	0-135	%	10.18.19 03:10	

Matrix: Soil

Analytical Method: BTEX by EPA 8021B

Seq Number: 3104782

MB Sample Id:

7688433-1-BLK

Matrix: Solid

LCS Sample Id: 7688433-1-BKS

Prep Method: Date Prep:

SW5030B

10.17.19

LCSD Sample Id: 7688433-1-BSD

*				_					-			
Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPI	RPD Limit	Units	Analysis Date	Flag
Benzene	< 0.00100	0.100	0.0939	94	0.0966	97	70-130	3	35	mg/kg	10.18.19 06:37	
Toluene	< 0.00100	0.100	0.0927	93	0.0955	96	70-130	3	35	mg/kg	10.18.19 06:37	
Ethylbenzene	< 0.00100	0.100	0.0930	93	0.0960	96	71-129	3	35	mg/kg	10.18.19 06:37	
m,p-Xylenes	< 0.00200	0.200	0.202	101	0.209	105	70-135	3	35	mg/kg	10.18.19 06:37	
o-Xylene	< 0.00100	0.100	0.102	102	0.106	106	71-133	4	35	mg/kg	10.18.19 06:37	
Surrogate	MB %Rec	MB Flag			LCS Flag	LCSD %Rec			Limits	Units	Analysis Date	
1,4-Difluorobenzene	100		1	05		105		,	70-130	%	10.18.19 06:37	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3104782 Parent Sample Id:

4-Bromofluorobenzene

640361-021

120

Matrix: Soil

123

MS Sample Id: 640361-021 S

123

Prep Method: Date Prep:

70-130

SW5030B

10.18.19 06:37

Flag

10.17.19

MSD Sample Id: 640361-021 SD

%

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date
Benzene	< 0.000982	0.0982	0.0837	85	0.0880	89	70-130	5	35	mg/kg	10.18.19 07:15
Toluene	< 0.000982	0.0982	0.0799	81	0.0841	85	70-130	5	35	mg/kg	10.18.19 07:15
Ethylbenzene	< 0.000982	0.0982	0.0775	79	0.0831	84	71-129	7	35	mg/kg	10.18.19 07:15
m,p-Xylenes	< 0.00196	0.196	0.162	83	0.176	89	70-135	8	35	mg/kg	10.18.19 07:15
o-Xylene	<0.000982	0.0982	0.0845	86	0.0945	96	71-133	11	35	mg/kg	10.18.19 07:15

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		107		70-130	%	10.18.19 07:15
4-Bromofluorobenzene	123		125		70-130	%	10.18.19 07:15

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

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

Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample

A = Parent Result

C = MS/LCS Result E = MSD/LCSD Result MS = Matrix SpikeB = Spike Added D = MSD/LCSD % Rec

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Tetra Tech, Inc.

Analysis Request of Chain of Custody Record

Final 1.000

# **Analytical Report 640370**

for Tetra Tech- Midland

Project Manager: Mike Carmona
JRS (2.4.19)
212C-MD-01739
22-OCT-19

Collected By: Client



## 1089 N Canal Street Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142), North Carolina (681)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



22-OCT-19

Project Manager: Mike Carmona Tetra Tech- Midland 901 West Wall ST Midland, TX 79701

Reference: XENCO Report No(s): 640370

JRS (2.4.19)

Project Address: Eddy Co, NM

#### Mike Carmona:

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) 640370. 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. 640370 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,

Jessica Kramer

Jessica Vramer

**Project Assistant** 

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

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# **Sample Cross Reference 640370**

# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
Bore Hole#2 (0-1')	S	10-17-19 00:00	0 - 1 ft	640370-001
Bore Hole#2 (2-3')	S	10-17-19 00:00	2 - 3 ft	640370-002
Bore Hole#2 (4-5')	S	10-17-19 00:00	4 - 5 ft	640370-003
Bore Hole#2 (6-7')	S	10-17-19 00:00	6 - 7 ft	640370-004
Bore Hole#2 (9-10')	S	10-17-19 00:00	9 - 10 ft	640370-005
Bore Hole#2 (14-15')	S	10-17-19 00:00	14 - 15 ft	640370-006
Bore Hole#2 (19-20')	S	10-17-19 00:00	19 - 20 ft	640370-007

# Received by OCD: 4/3/2020 4:25:11 PM XENCO LABORATORIES

**Project Location:** 

Certificate of Analysis Summary 640370

Tetra Tech- Midland, Midland, TX

Project Name: JRS (2.4.19)

**Date Received in Lab:** Thu Oct-17-19 04:35 pm

**Report Date:** 22-OCT-19 **Project Manager:** Jessica Kramer

Project Id: 212C-MD-01739
Contact: Mike Carmona

Eddy Co, NM

	Lab Id:	640370-0		640370-00	·	640370-0	-	640370-0	04	640370-0		640370-0	
Analysis Requested	Field Id:	Bore Hole#2	(0-1')	Bore Hole#2	(2-3')	Bore Hole#2	(4-5')	Bore Hole#2	(6-7')	Bore Hole#2	(9-10')	Bore Hole#2 (	14-15')
Thutysis Requested	Depth:	0-1 ft		2-3 ft		4-5 ft		6-7 ft		9-10 ft		14-15 f	t
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-17-19 (	00:00	Oct-17-19 0	0:00	Oct-17-19 0	00:00	Oct-17-19 (	00:00	Oct-17-19 0	00:00	Oct-17-19 (	00:00
BTEX by EPA 8021B	Extracted:	Oct-17-19 1	7:10										
	Analyzed:	Oct-18-19 1	2:37										
	Units/RL:	mg/kg	RL										
Benzene		<0.000998	0.000998										
Toluene		<0.000998	0.000998										
Ethylbenzene		<0.000998	0.000998										
m,p-Xylenes		< 0.00200	0.00200										
o-Xylene		<0.000998	0.000998										
Total Xylenes		< 0.000998	0.000998										
Total BTEX		<0.000998	0.000998										
Chloride by EPA 300	Extracted:	Oct-18-19 1	7:10	Oct-18-19 1'	7:10	Oct-18-19 1	7:10	Oct-18-19 1	7:10	Oct-18-19 1	7:10	Oct-18-19 1	7:10
	Analyzed:	Oct-18-19 2	21:13	Oct-18-19 2	1:19	Oct-18-19 2	1:26	Oct-18-19 2	1:33	Oct-18-19 2	1:40	Oct-18-19 2	21:46
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1600	101	3490 D	202	273 D	50.1	147 D	50.1	218	202	135	50.1
TPH by SW8015 Mod	Extracted:	** ** **	**										
	Analyzed:	Oct-18-19 (	7:45										
	Units/RL:	mg/kg	RL										
Gasoline Range Hydrocarbons (GRO)		<50.2	50.2										
Diesel Range Organics (DRO)		<50.2	50.2										
Motor Oil Range Hydrocarbons (MRO)		< 50.2	50.2										
Total TPH		< 50.2	50.2										

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Vramer

Jessica Kramer Project Assistant



**Project Location:** 

# **Certificate of Analysis Summary 640370**

## Tetra Tech- Midland, Midland, TX

Project Name: JRS (2.4.19)

Project Id: 212C-MD-01739
Contact: Mike Carmona

Eddy Co, NM

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**Date Received in Lab:** Thu Oct-17-19 04:35 pm **Report Date:** 22-OCT-19

Project Manager: Jessica Kramer

	Lab Id:	640370-007			
4 1 1 2	Field Id:	Bore Hole#2 (19-20')			
Analysis Requested	Depth:	19-20 ft			
	Matrix:	SOIL			
	Sampled:	Oct-17-19 00:00			
Chloride by EPA 300	Extracted:	Oct-18-19 14:10			
	Analyzed:	Oct-18-19 18:04			
	Units/RL:	mg/kg RL			
Chloride		141 49.9			

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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

fession Weamer

## CASE NARRATIVE

22-OCT-19

Client Name: Tetra Tech- Midland

Project Name: JRS (2.4.19)

Project ID: 212C-MD-01739

Report Date: Work Order Number(s): 640370 Date Received: 10/17/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3104782 BTEX by EPA 8021B

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



## Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (0-1') Matrix: Soil Date Received:10.17.19 16.35

Lab Sample Id: 640370-001

Date Collected: 10.17.19 00.00

Sample Depth: 0 - 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech:

MAB

% Moisture:

Analyst:

MAB

10.18.19 17.10 Date Prep:

Basis:

Wet Weight

Seq Number: 3104897

Parameter	Cas Number	Result	RL	Units	<b>Analysis Date</b>	Flag	Dil
Chloride	16887-00-6	1600	101	mg/kg	10.18.19 21.13		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: Analyst: DTH DTH

Date Prep:

10.17.19 16.30

Basis:

% Moisture:

Wet Weight

Parameter	Cas Number	Result	RL		Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	< 50.2	50.2		mg/kg	10.18.19 07.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	< 50.2	50.2		mg/kg	10.18.19 07.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	< 50.2	50.2		mg/kg	10.18.19 07.45	U	1
Total TPH	PHC635	< 50.2	50.2		mg/kg	10.18.19 07.45	U	1
Surrogate		Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane		111-85-3	103	%	70-135	10.18.19 07.45		
o-Terphenyl		84-15-1	106	%	70-135	10.18.19 07.45		



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (0-1') Matrix: Soil Date Received:10.17.19 16.35

Lab Sample Id: 640370-001

Date Collected: 10.17.19 00.00

Sample Depth: 0 - 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech:

% Moisture:

Analyst:

MABMAB

10.17.19 17.10 Date Prep:

Basis:

Wet Weight

Parameter	Cas Number	Result	RL		Units	Analysis Date	Flag	Dil
Benzene	71-43-2	< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
Toluene	108-88-3	< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
Ethylbenzene	100-41-4	< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
m,p-Xylenes	179601-23-1	< 0.00200	0.00200		mg/kg	10.18.19 12.37	U	1
o-Xylene	95-47-6	< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
Total Xylenes	1330-20-7	< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
Total BTEX		< 0.000998	0.000998		mg/kg	10.18.19 12.37	U	1
Surrogate		Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene		460-00-4	107	%	70-130	10.18.19 12.37		
1,4-Difluorobenzene		540-36-3	93	%	70-130	10.18.19 12.37		



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (2-3')

Matrix: Soil

Date Received:10.17.19 16.35

Lab Sample Id: 640370-002

Date Collected: 10.17.19 00.00

Sample Depth: 2 - 3 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P % Moisture:

Tech: Analyst: MAB

MAB

Date Prep: 10.18.19 17.10

Basis:

Wet Weight

Parameter	Cas Number	Result	RL	Uni	ts	Analysis Date	Flag	Dil
Chloride	16887-00-6	3490	202	mg/l	κg	10.21.19 16.15	D	20



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (4-5')

Matrix: Soil

Date Received:10.17.19 16.35

Lab Sample Id: 640370-003

Date Collected: 10.17.19 00.00

Sample Depth: 4 - 5 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: Analyst: MAB

% Moisture:

70 Wioisture.

Seq Number: 3104897

MAB Date Prep: 10.18.19 17.10

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	273	50.1	mg/kg	10.21.19 12.11	D	5



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (6-7') Matrix: Soil Date Received:10.17.19 16.35

Lab Sample Id: 640370-004

Date Collected: 10.17.19 00.00

Sample Depth: 6 - 7 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech:

% Moisture:

Basis:

Wet Weight

Analyst:

MABMAB

Seq Number: 3104897

10.18.19 17.10 Date Prep:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	147	50.1	mg/kg	10.21.19 12.17	D	5



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (9-10')

Matrix: Soil

Date Received:10.17.19 16.35

Lab Sample Id: 640370-005

Date Collected: 10.17.19 00.00

Sample Depth: 9 - 10 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P % Moisture:

Tech: Analyst: MAB MAB

Date Prep:

10.18.19 17.10

Basis:

Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	218	202	mg/kg	10.18.19 21.40		20



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: **Bore Hole#2** (14-15')

Matrix: Soil

Date Received:10.17.19 16.35

Lab Sample Id: 640370-006

Date Collected: 10.17.19 00.00

Sample Depth: 14 - 15 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech:

MAB MAB

% Moisture:

e:

Analyst:

Seq Number: 3104897

Date Prep: 10.18.19 17.10

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	135	50.1	mg/kg	10.18.19 21.46		5



# Tetra Tech- Midland, Midland, TX

JRS (2.4.19)

Sample Id: Bore Hole#2 (19-20')

Matrix: Soil

Date Received:10.17.19 16.35

Lab Sample Id: 640370-007

Date Collected: 10.17.19 00.00

Sample Depth: 19 - 20 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech:

MAB

% Moisture:

Analyst: MA

MAB

Date Prep: 10.18.19 14.10

Basis:

Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	141	49.9	mg/kg	10.18.19 18.04		5



# **Flagging Criteria**

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

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

E300P

E300P

E300P

Prep Method:



#### **QC Summary** 640370

#### **Tetra Tech- Midland**

JRS (2.4.19)

Analytical Method: Chloride by EPA 300

Prep Method: Seq Number: 3104896 Matrix: Solid Date Prep: 10.18.19

LCS Sample Id: 7688478-1-BKS LCSD Sample Id: 7688478-1-BSD MB Sample Id: 7688478-1-BLK

MR Spike LCS LCS Limits %RPD RPD Limit Units LCSD LCSD Analysis Flag **Parameter** Result Amount Result %Rec Date %Rec Result 90-110 10.18.19 13:14 Chloride <10.0 250 253 101 253 101 0 20 mg/kg

Analytical Method: Chloride by EPA 300

Prep Method: Seq Number: 3104897 Matrix: Solid Date Prep: 10.18.19

7688482-1-BKS MB Sample Id: 7688482-1-BLK LCS Sample Id: LCSD Sample Id: 7688482-1-BSD

MB Spike LCS LCS %RPD RPD Limit Units LCSD LCSD Limits Analysis Flag **Parameter** Result %Rec Date Result Amount Result %Rec Chloride <10.0 250 249 100 245 98 90-110 2 20 mg/kg 10.18.19 18:30

Analytical Method: Chloride by EPA 300

Seq Number: 3104896 Matrix: Soil 10.18.19 Date Prep:

MS Sample Id: 640368-001 S MSD Sample Id: 640368-001 SD Parent Sample Id: 640368-001

MS %RPD RPD Limit Units Parent Spike MS **MSD MSD** Limits Analysis Flag **Parameter** Result Date Result %Rec Amount Result %Rec 10.18.19 15:22 Chloride 26.5 200 224 99 225 99 90-110 0 20 mg/kg

Analytical Method: Chloride by EPA 300

E300P Prep Method: Seq Number: 3104896 Matrix: Soil Date Prep: 10.18.19

640368-011 S MSD Sample Id: 640368-011 SD Parent Sample Id: 640368-011 MS Sample Id:

MS %RPD RPD Limit Units Parent Spike MS **MSD MSD** Limits Analysis Flag **Parameter** Result Result %Rec Date Amount Result %Rec Chloride 32.2 994 985 96 996 97 90-110 20 10.18.19 16:49 mg/kg 1

Analytical Method: Chloride by EPA 300

E300P Prep Method: 3104897 Matrix: Soil Seq Number: Date Prep: 10.18.19

640368-020 S MS Sample Id: Parent Sample Id: 640368-020 MSD Sample Id: 640368-020 SD

Parent Spike MS MS Limits %RPD RPD Limit Units Analysis **MSD MSD** Flag **Parameter** Result Date Result Amount %Rec Result %Rec Chloride 7340 4020 12400 126 12300 124 90-110 20 mg/kg 10.18.19 18:50 X

Flag

E300P

10.18.19

SW8015P

Prep Method:



#### **QC Summary** 640370

#### **Tetra Tech- Midland**

JRS (2.4.19)

Analytical Method: Chloride by EPA 300

Seq Number: 3104897 Matrix: Solid Date Prep:

MS Sample Id: 640369-002 S MSD Sample Id: 640369-002 SD Parent Sample Id: 640369-002

Spike MS MS Limits %RPD RPD Limit Units Parent **MSD MSD** Analysis Flag **Parameter** Result Result Date Amount %Rec %Rec Result 90-110 10.18.19 20:32 Chloride 1160 1990 3350 110 3280 107 2 20 mg/kg

Analytical Method: TPH by SW8015 Mod

SW8015P Prep Method: Seq Number: 3104747 Matrix: Solid 10.17.19 Date Prep:

MB Sample Id: 7688441-1-BLK LCS Sample Id: 7688441-1-BKS LCSD Sample Id: 7688441-1-BSD

Spike LCS LCS %RPD RPD Limit Units MB LCSD LCSD Limits Analysis **Parameter** Result %Rec Date Result Amount Result %Rec Gasoline Range Hydrocarbons (GRO) < 50.0 1000 1010 101 970 97 70-135 4 35 mg/kg 10.18.19 02:11 Diesel Range Organics (DRO) 1000 920 92 861 70-135 7 35 10.18.19 02:11 < 50.0 86 mg/kg

MB MB LCS LCS LCSD LCSD Limits Units Analysis Surrogate %Rec Flag %Rec Flag %Rec Flag Date 10.18.19 02:11 1-Chlorooctane 98 117 109 70-135 % 101 109 70-135 10.18.19 02:11 o-Terphenyl 112 %

Analytical Method: TPH by SW8015 Mod

Prep Method: Seq Number: 3104747 Matrix: Solid Date Prep: 10.17.19

MB Sample Id: 7688441-1-BLK

MB Units Analysis Flag **Parameter** Result Date

Motor Oil Range Hydrocarbons (MRO) 10.18.19 01:52 < 50.0 mg/kg

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P Seq Number: 3104747 Matrix: Soil Date Prep: 10.17.19

MS Sample Id: 640361-016 S MSD Sample Id: 640361-016 SD Parent Sample Id: 640361-016

%RPD RPD Limit Units MS MS Limits Parent Spike **MSD MSD** Analysis Flag **Parameter** Amount Result Date Result %Rec Result %Rec Gasoline Range Hydrocarbons (GRO) 10.18.19 03:10 < 50.1 1000 894 89 882 89 70-135 1 35 mg/kg 1000 70-135 10.18.19 03:10 Diesel Range Organics (DRO) < 50.1 817 82 811 82 35 mg/kg

MS MS **MSD** Limits Units Analysis **MSD Surrogate** %Rec Flag Flag Date %Rec 10.18.19 03:10 1-Chlorooctane 108 113 70-135 % 10.18.19 03:10 o-Terphenyl 107 116 70-135 %

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

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

Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample

A = Parent Result

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

Flag

Flag



#### **QC Summary** 640370

### **Tetra Tech- Midland**

JRS (2.4.19)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3104782 Matrix: Solid Prep Method: Date Prep: 10.17.19

SW5030B

LCS Sample Id: 7688433-1-BKS LCSD Sample Id: 7688433-1-BSD MB Sample Id: 7688433-1-BLK

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Lim	it Units	Analysis Date	]
Benzene	< 0.00100	0.100	0.0939	94	0.0966	97	70-130	3	35	mg/kg	10.18.19 06:37	
Toluene	< 0.00100	0.100	0.0927	93	0.0955	96	70-130	3	35	mg/kg	10.18.19 06:37	
Ethylbenzene	< 0.00100	0.100	0.0930	93	0.0960	96	71-129	3	35	mg/kg	10.18.19 06:37	
m,p-Xylenes	< 0.00200	0.200	0.202	101	0.209	105	70-135	3	35	mg/kg	10.18.19 06:37	
o-Xylene	< 0.00100	0.100	0.102	102	0.106	106	71-133	4	35	mg/kg	10.18.19 06:37	
Surrogate	MB %Rec	MB Flag		CS Rec	LCS Flag	LCSI		_	Limits	Units	Analysis Date	

%Rec Flag %Rec Flag Flag Date %Rec 100 105 105 70-130 10.18.19 06:37 1,4-Difluorobenzene % 10.18.19 06:37 4-Bromofluorobenzene 120 123 123 70-130 %

Analytical Method: BTEX by EPA 8021B

SW5030B Prep Method: Seq Number: 3104782 Matrix: Soil Date Prep: 10.17.19 MS Sample Id: 640361-021 S MSD Sample Id: 640361-021 SD 640361-021 Parent Sample Id:

Spike MS MSD %RPD RPD Limit Units MS Limits Analysis **Parent MSD Parameter** Result Amount Result %Rec Date Result %Rec 10.18.19 07:15 < 0.000982 0.0982 70-130 5 Benzene 0.0837 85 0.088089 35 mg/kg Toluene < 0.000982 0.0982 0.0799 81 0.0841 85 70-130 5 35 10.18.19 07:15 mg/kg < 0.000982 10.18.19 07:15 Ethylbenzene 0.0982 0.0775 79 0.0831 84 71-129 7 35 mg/kg 10.18.19 07:15 m,p-Xylenes < 0.00196 0.196 0.162 83 70-135 8 35 0.17689 mg/kg < 0.000982 71-133 10.18.19 07:15 o-Xylene 0.09820.0845 86 0.0945 96 11 35 mg/kg

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		107		70-130	%	10.18.19 07:15
4-Bromofluorobenzene	123		125		70-130	%	10.18.19 07:15

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Final 1.000