

Remediation Summary and Site Closure Request

July 25, 2019

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Q13EC-190730-C-1410

Willow 17 State SWD #001 (2RP-5044)

Prepared For:

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TABLE OF CONTENTS

1.0	INTRODUCTION AND BACKGROUND INFORMATION	.3
2.0	INITIAL DELINEATION INVESTIGATION	.4
3.0	NMOCD APPROVED WORKPLAN	.5
4.0	SUMMARY OF SOIL REMEDIATION ACTIVITIES	.5
5.0	SITE CLOSURE REQUEST	.6
6.0	LIMITATION	.6
7.0	DISTRIBUTION	.7



TABLES

Table 1: Concentrations of Benzene, BTEX, TPH and Chloride in Soil

FIGURES

- Figure 1: Topographic Map
- Figure 2: Aerial Map
- Figure 3: Karst Potential Map
- Figure 4: Site and Sample Location Map Initial Investigation
- Figure 5: Site and Sample Location Map Secondary Investigation
- Figure 6: Site and Confirmation Sample Location Map

APPENDICES

- Appendix A Photographic Documentation
- Appendix B Release Notification and Corrective Action (Form C-141)
- Appendix C Laboratory Analytical Reports
- Appendix D Depth to Groundwater Data



1.0 Introduction and Background Information

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Remediation Summary and Site Closure Request* for the Release at the Site known as the Willow 17 State SWD #001 (the Site). The legal description of the Site is Unit Letter "P", Section 17, Township 25 South, Range 28 East, in Eddy County, New Mexico. The subject property is owned by the State of New Mexico and administered by New Mexico State Land Office (NMSLO). The GPS coordinates for the Site are N 32.12489°, W 104.10216°. A topographical map is provided as **Figure 1**. Photographs are provided in the photolog as **Appendix A**.

On October 29, 2018, COG discovered a crude oil and produced water release had occurred at the Site. The Release was attributed to a crimped fitting failure, which impacted a caliche pad. On the discovery date, COG notified the New Mexico Oil and Conservation Division (NMOCD) and New Mexico State Land Office (NMSLO) of the Release and the Release was assigned an NMOCD Reference number of 2RP-5044. During initial response activities, a vacuum truck was dispatched to recover all freestanding fluids. On October 31, 2018, the initial Release Notification and Corrective Action (Form C-141) was submitted to the NMOCD. The Form C-141 indicated one half (0.5) barrel (bbl) of crude oil and sixty and one half (60.5) barrels (bbls) of produced water was released. Approximately thirty (30) bbls of produced water was recovered during initial response activities. The release affected an area measuring approximately twelve thousand (12,000) square feet (sq. ft.). The C-141 indicated the impacted area was pastureland, however, the photos from the release date and subsequent visits by TRC personnel indicate a caliche pad was impacted. A copy of the submitted Form C-141 for the Release is provided in **Appendix B**.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 17, Township 25 South, Range 28 East. A reference map utilized by the NMOCD indicates groundwater should be encountered at approximately fifty (50) to seventy-five (75) feet below ground surface (bgs). No water wells were observed within one-thousand (1,000) feet of the Site. No surface water was observed within one-thousand (1,000) feet of the release. An aerial map of the site location is provided as **Figure 2**.

Based on the depth to groundwater at the Willow 17 State SWD #001 Release Site, the NMOCD *Closure Criteria for Soils Impacted by a Release* are not the most stringent closure criteria listed. However, the Willow 17 State SWD #001 is located in the 'medium karst' area as outlined in the BLM publicly available Karst Potential Map, provided as **Figure 3**. The NMOCD guidance on the regulation of releases in 'medium karst' areas is unclear. Subsequently, COG will utilize the most stringent NMOCD Closure Criteria for Soils Impacted by a Release for the Willow 17 State SWD #001 as follows:

- Benzene 10 mg/kg
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) 50 mg/kg
- Total Petroleum Hydrocarbons (TPH) –100 mg/kg
- Chloride 600 mg/kg



2.0 Initial Delineation Investigation

January 3, 2019, an initial investigation was conducted at the Release Site. During the initial investigation activities, ten (10) surface samples (SP1 @ S, SP2 @ S, W1 @ S, W1b @ S, E1 @ S, N1 @ S, S1 @ S, S1b @ S, S2 @ S, and N2 @ S) were collected at the Release Site in an effort to characterize the horizontal extent of soil impact based on regulatory guidelines listed in Table 1 of NMAC 19.15.29.12. Collected soil samples were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of laboratory analytical results indicated TPH and BTEX concentrations were below NMOCD regulatory guidelines in the submitted samples. Chloride concentrations were above ten thousand (10,000) mg/kg in each of the submitted soil sample with the exception of N1 @ S and S2 @ S. Please reference Figure 4 – Site & Sample Location Map – Initial Investigation.

On January 11, 2019, a second investigation was conducted at the Release Site. During the investigation, four (4) soil samples (SP-1 @ 6", SP-2 @ 6", W2 @ S, and E2 @ S) were collected at the Release Site in a further effort to characterize the extent of soil impact. Collected soil samples were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of laboratory analytical results indicated TPH and BTEX concentrations were below the laboratory method detection limit (MDL) in each submitted soil sample. Chloride concentrations were below ten thousand (10,000) mg/kg in each submitted soil sample.

Following discussion with COG personnel, the interpretation of the NMOCD regulatory guidelines for chloride concentration changed to reflect an NMOCD regulatory guideline limit of 600 mg/kg for the Release Site.

On January 29, 2019, further delineation (both horizontal and vertical) was attempted utilizing backhoe trenching. Seventeen (17) soil samples (TT1 @ 0-6", TT1 @ 6"-1, TT1 @ 3', TT1 @ 5', TT1 @ 6', TT2 @ 0-6", TT2 @ 6"-1', TT2 @ 2', TT2 @ 3', TT3 @ 0-6", TT3 @ 6"-1', S TT @ 2.5', N TT @ 3', W1 TT @ 3', W2 TT @ 3', E1 TT @ 3', and E2 TT @ 3') were collected from nine (9) trench locations and were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of analytical results indicated BTEX and TPH concentrations were below laboratory MDL in the submitted soil samples. Chloride concentrations were above 600 mg/kg in each submitted soil samples, with the exception of S TT @ 2.5', W2 TT @ 3', and E1 TT @ 3'. Please reference **Figure 5 – Site & Sample Location Map – Secondary Investigation**.

On April 18, 2019, the trenches utilized for the January 29, 2019 delineation event were further vertically advanced. Eleven (11) soil samples (TT-1 @ 7', TT-1 @ 8', TT-2 @ 4', TT-2 @ 5', TT-3 @ 2', N-TT @ 4', W1-TT @ 5', W1-TT @ 6', W1-TT @ 7', and E2-TT @ 4') were collected from the previous trench locations and were submitted to the laboratory for chloride analyses. A review of analytical results indicated soil samples exhibited chloride concentrations above 600 mg/kg in each of the submitted soil sample, with the exception of TT-1 @ 8', TT-2 @ 5', TT-3 @ 2', N-TT @ 4', W1-TT @ 7', and E2-TT @ 4'. In addition, seven (7) soil samples (N2-TT @ 0-1', S2-TT @ 0-1', E3-TT @ 0-1', E4-TT @ 0-1', W3-TT @ 0-1', W4-TT @ 0-1', and W5-TT @ 0-1') were collected from the submitted to the laboratory for chloride interval immediately outside the apparent release margins and were submitted to the laboratory for chloride



analysis. A review of analytical results indicated soil samples exhibited chloride concentrations below 600 mg/kg in each submitted soil sample, with the exception of soil sample W3-TT @ 0-1'.

3.0 NMOCD Approved Workplan

Based on the laboratory analytical results from the soil samples collected in January 2019, the Release Site was not impacted above NMOCD regulatory guidelines by TPH or BTEX constituents. In addition, based on laboratory analytical results of soil samples collected in January and April 2019, vertical and horizontal delineation of chloride concentrations to six hundred (600) mg/kg has been achieved. COG proposes the following field activities designed to advance the Willow 17 State SWD #001 Release Site toward an NMOCD-approved closure:

- Impacted soil in the area represented by test trench TT-1 was to be excavated to an approximate depth of at least seven (7) feet bgs.
- Impacted soil in the area represented by test trench W1-TT was to be excavated to an approximate depth of at least six (6) feet bgs.
- Impacted soil in the area represented by test trench TT-2 was to be excavated to an approximate depth of at least four (4) feet bgs.
- Impacted soil in the area represented by test trenches N-TT and E2-TT was to be be excavated to an approximate depth of at least three (3) feet bgs.
- Impacted soil in the area represented by test trench TT-3 was to be excavated to an approximate depth of at least one (1) foot bgs.
- Six (6) five point composite sidewall confirmation soil samples, one (1) soil sample to represent the north side wall, two (2) soil samples to represent the west side wall, two (2) soil samples to represent the east side wall, and one (1) soil sample to represent the south side wall were to be collected to ensure the lateral extent of the impact had been removed.
- Collect one (1) five point composite floor confirmation soil sample for every one thousand (1,000) square feet of excavation floor to ensure the vertical extent of impact had been removed.
- Impacted soil excavated during remediation activities was to be staged on a polyurethane liner pending final disposition at a NMOCD-approved disposal facility.
- After review of analytical results from the excavation confirmation soil samples, the excavated area was to be backfilled with locally-sourced, non-impacted 'like' material and returned to grade.

On May 7, 2019, the proposed workplan was accepted as it was proposed by the NMOCD.

4.0 Summary of Soil Remediation Activities

On June 10, 2019, remediation activities commenced at the Release Site. The excavation began in the northwest corner of the impacted area, and excavation activities continued to the east, and to the south. Excavated soil was stockpiled on polyurethane liners pending final disposition at an



NMOCD approved disposal facility. On June 11, 2019, three (3) five-point composite floor confirmation samples (FL-1-3, FL-2-3, and FL-3-3) and one (1) five-point composite sidewall confirmation sample (SW-N1-1.5) were collected from the excavated area. On June 13, 2019, two (2) five-point composite sidewall confirmation samples (SW-W1-1 and SW-W2-0.25) were collected from the excavated area. On June 17, 2019, four (4) five-point composite floor confirmation samples (FL-5-7, FL-7-3, FL-8-1.5, and FL-9-3) and one (1) five-point composite sidewall confirmation soil sample (SW-E2-1.5) were collected from the excavated area. Soil samples collected between June 11 and June 17th were submitted to Cardinal Laboratories in Hobbs, NM, for chloride and/or TPH and BTEX analyses. All soil samples submitted for TPH and BTEX analyses were below the laboratory detection limits for each constituent. Each soil sample, with the exception of FL-5-7 and FL-8-1.5, was below NMOCD regulatory guidelines for chloride concentrations. The areas represented by soil samples FL-5-7 and FL-8-1.5 were advanced to greater depths in those areas, and excavation continued to the south and east.

On the second half of June 17, June 18, and June 19, 2019, three (3) five-point composite floor confirmation soil samples (FL-4-8.5, FL-5-8, and FL-6-6) and two (2) five-point composite sidewall confirmation soil samples (SW-E1-3.5 and SW-S1-0.75) were collected and submitted for chloride and/or TPH and BTEX analyses. Each soil sample submitted for TPH and BTEX analyses exhibited TPH and BTEX concentrations below the laboratory detection limits. Each soil sample submitted for chloride analysis exhibited chloride concentrations below NMOCD regulatory guidelines with the exception of FL-4-8.5, FL-5-8, and FL-6-6. The areas represented by soil samples FL-4-8.5, FL-5-8, and FL-6-6 were further excavated to greater depths, and the excavation continued to the south.

On June 20, 2019, four (4) five-point composite floor confirmation soil samples (FL-4-9, FL-5-8.5, FL-6-6.5, and FL-8-3.5) were collected and submitted for chloride analysis. Each soil sample exhibited chloride concentrations below NMOCD regulatory guidelines. Confirmation soil sample locations are depicted in **Figure 6**. A summary of analytical data is shown in **Table 1**. Laboratory analytical reports are provided in **Appendix C**.

5.0 Site Closure Request

Remediation activities were conducted in accordance with NMCOD guidelines and in adherence to the NMOCD approved workplan. Laboratory analytical results from excavation confirmation soil samples indicated TPH, BTEX, and/or chloride concentrations were below the NMOCD regulatory guidelines in the submitted confirmation soil samples. The impacted soil was transported to the R360 Red Bluff Facility, and the Site was returned to grade with locally sourced non-impacted backfill material. Based on laboratory analytical results and field activities conducted to date, TRC recommends COG provide copies of this Remediation Summary and Site Closure Request to the NMOCD and BLM and request closure status to the Willow 17 State SWD #001.

6.0 Limitation



TRC has prepared this Remediation Summary and Site Closure Request to the best of its ability. No other warranty, expressed or implied, is made or intended.

TRC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. TRC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. TRC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. TRC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of COG Operating, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of TRC and/or COG Operating, LLC.

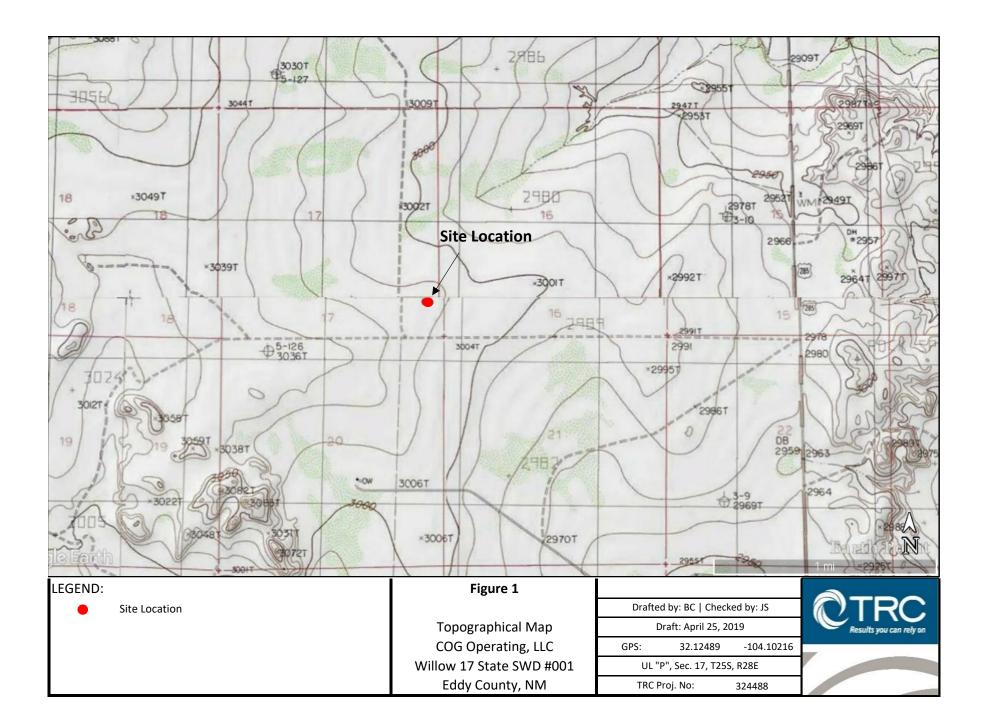
7.0 Distribution

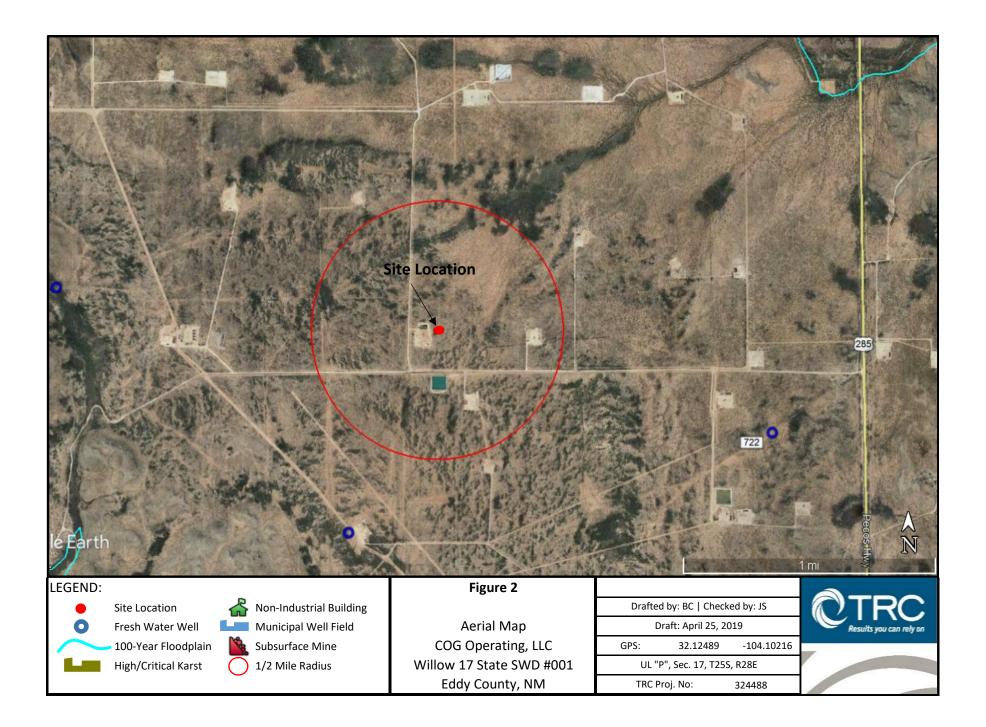
Copy 1:	Mike Bratcher New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, District 2 811 S. First Street Artesia, NM 88210
Copy 2:	Jim Amos U.S. Department of the Interior Carlsbad Field Office 620 E Greene Street Carlsbad, New Mexico 88220
Copy 3:	Rebecca Haskell COG Operating, LLC 600 W. Illinois Avenue Midland, Texas 79701
Copy4:	TRC Environmental Corporation 10 Desta Dr STE 150E Midland, TX 79705

		Co	oncentrations of	of BTEX, TPH	and/or Ch	loride in So	bil				
				SW 846	8021B		SM	/ 846 8015M E	xt.		E 300
Sample ID	Date	Depth	Soil Status	Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆₋ C ₂₈ (mg/kg)	ORO C ₂₈ - C ₃₅ (mg/kg)	TPH C ₆ -C ₃₅ (mg/kg)	Chloride (mg/kg)
SP-1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	20,600
SP-1 @ 6"	1/11/19	6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
W1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	10.6	<10.0	10.6	<10.0	10.6	41,600
W1B @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	15,600
E1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	14,400
N1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,440
S1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	18,000
S1B @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	40,400
SP-2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	12,202
SP-2 @ 6"	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,970
S2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	8,320
N2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32,800
W2 @ S	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	736
E2 @ S	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	896
TT1 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
TT1 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,200
TT1 @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,440
TT1 @ 5'	1/29/19	5'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,400
TT1 @ 6'	1/29/19	6'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	832
TT-1 @ 7'	4/18/19	7'	Excavated	-	-	-	-	-	-	-	1,010
TT-1 @ 8'	4/18/19	8'	Excavated	-	-	-	-		-	-	400
TT2 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	4,480
TT2 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,360
TT2 @ 2'	1/29/19	2'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,650
TT2 @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	880
Ν	IMOCD Closure (Criteria		10	50	-	-	1,000	-	2,500	600

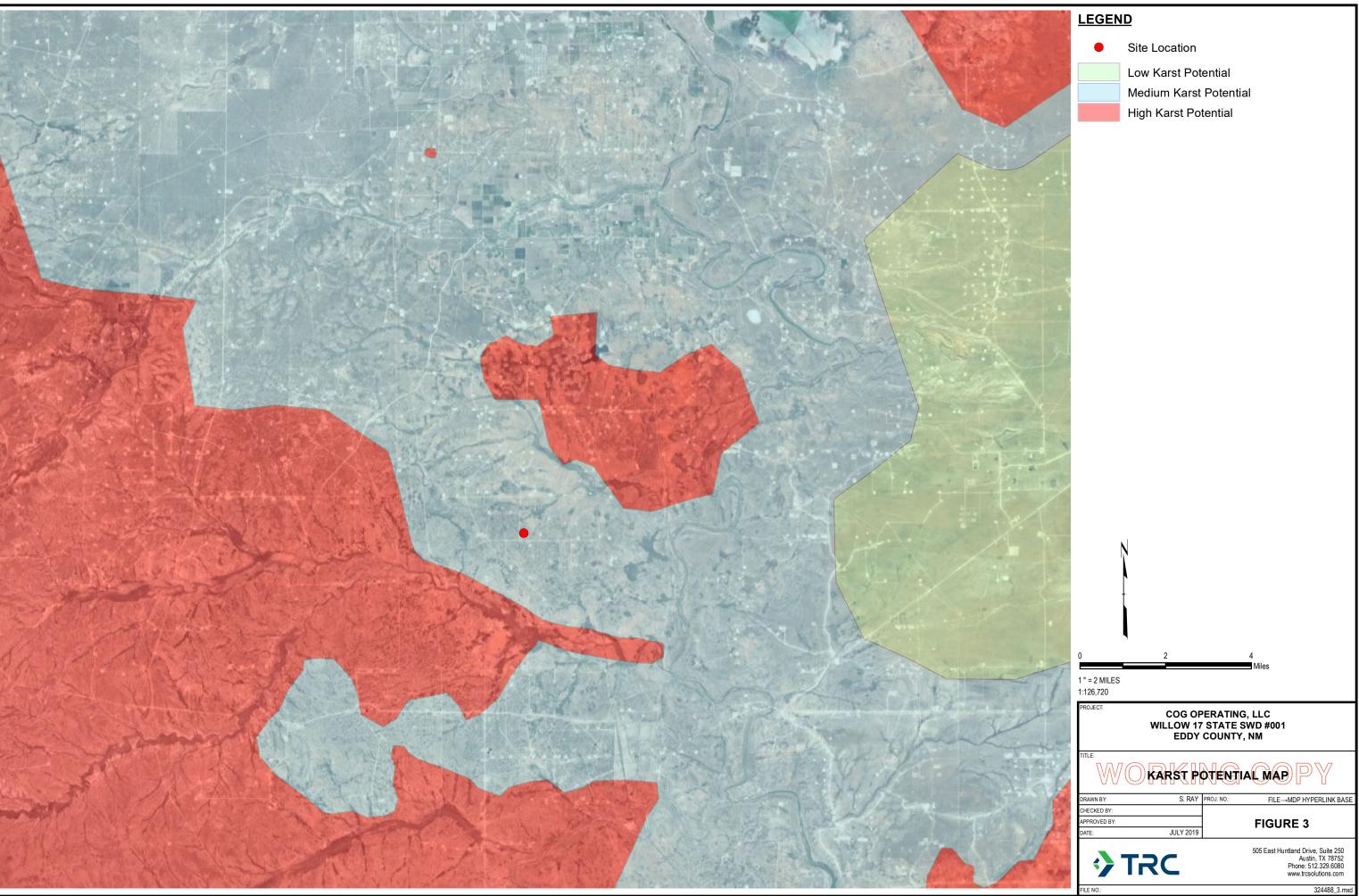
		C	oncentrations o	of BTEX, TPH	and/or Ch	loride in So	oil				
				SW 846	8021B		SM	/ 846 8015M E	xt.		E 300
Sample ID	Date	Depth	Soil Status	Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆₋ C ₂₈ (mg/kg)	ORO C ₂₈ · C ₃₅ (mg/kg)	TPH C ₆ -C ₃₅ (mg/kg)	Chloride (mg/kg)
TT-2 @ 4'	4/18/19	4'	Excavated	-	-	-	-	-	-	-	1,710
TT-2 @ 5'	4/18/19	5'	Excavated	-	-	-	-	-	-	-	129
TT3 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,040
TT3 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,120
TT-3 @ 2'	4/18/19	2'	Excavated	-	-	-	-	-	-	-	584
S TT @ 2.5'	1/29/19	2.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
N TT @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	784
N-TT @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	581
W1 TT @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	768
W1-TT @ 4'	4/18/19	4'	Excavated	-	-	-	-	-	-	-	1,360
W1-TT @ 5'	4/18/19	5'	Excavated	-	-	-	-	-	-	-	1,750
W1-TT @ 6'	4/18/19	6'	Excavated	-	-	-	-	-	-	-	935
W1-TT @ 7'	4/18/19	7'	Excavated	-	-	-	-	-	-	-	488
W2 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	208
E1 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	208
E2 TT @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	688
E2-TT @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	69.0
N2-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	98.2
S2-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	413
N	NMOCD Closure Criteria				50	-	-	1,000	-	2,500	600

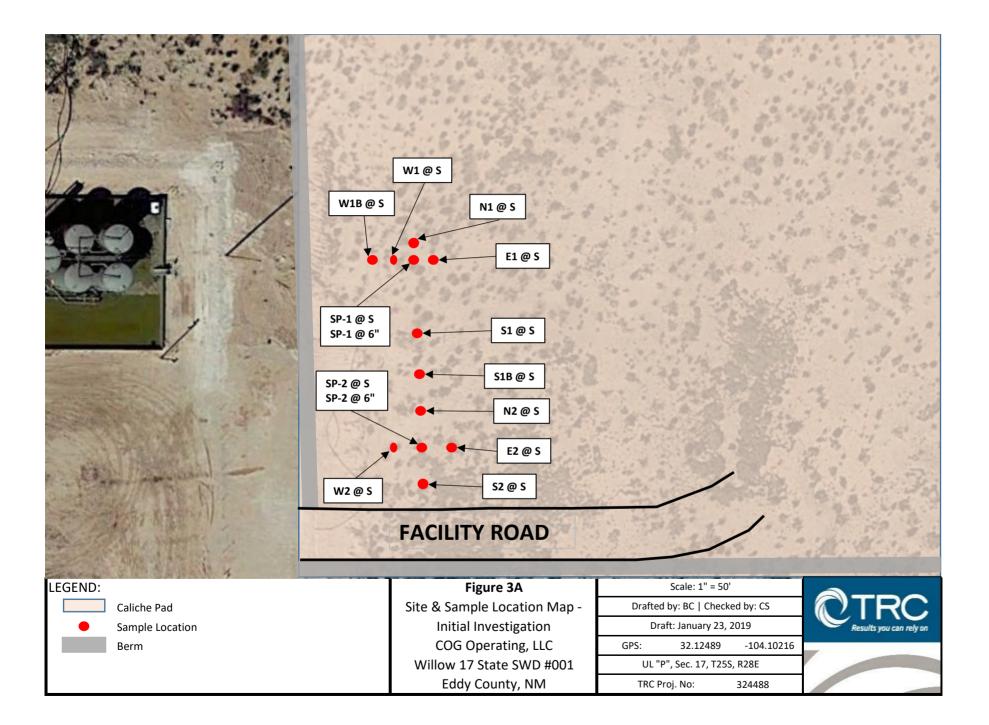
		Co	oncentrations of	of BTEX, TPH	and/or Ch	loride in So	oil				
				SW 846	8021B		SM	/ 846 8015M E	xt.		E 300
Sample ID	Date	Depth	Soil Status	Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆₋ C ₂₈ (mg/kg)	ORO C ₂₈ - C ₃₅ (mg/kg)	TPH C ₆ -C ₃₅ (mg/kg)	Chloride (mg/kg)
E3-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	167
E4-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	220
W3-TT @ 0-1'	4/18/19	0-1'	Excavated	-	-	-	-	-	-	-	714
W4-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	142
W5-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	137
SW-N1-1.5	6/11/19	1.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	224
FL-1-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	224
FL-2-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	160
FL-3-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	208
SW-W1-1	6/13/19	1'	In-Situ	-	-	-	-	-	-	-	240
SW-W2-0.25	6/13/19	0.25'	In-Situ	-	-	-	-	-	-	-	400
SW-E2-1.5	6/17/19	1.5'	In-Situ	-	-	-	-	-	-	-	64.0
FL-5-7	6/17/19	7'	Excavated	-	-	-	-	-	-	-	624
FL-7-3	6/17/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	304
FL-8-1.5	6/17/19	1.5'	Excavated	-	-	-	-	-	-	-	880
FL-9-3	6/17/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
SW-E1-3.5	6/17/19	3.5'	In-Situ	-	-	-	-	-	-	-	576
SW-S1-0.75	6/18/19	0.75'	In-Situ	-	-	-	-	-	-	-	432
FL-4-8.5	6/19/19	8.5'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	704
FL-5-8	6/19/19	8'	Excavated	-	-	-	-	-	-	-	640
FL-6-6	6/19/19	6'	Excavated	-	-	-	-	-	-	-	656
FL-8-3.5	6/20/19	3.5'	In-Situ	-	-	-	-	-	-	-	480
FL-4-9	6/20/19	9'	In-Situ	-	-	-	-	-	-	-	560
FL-5-8.5	6/20/19	8.5'	In-Situ	-	-	-	-	-	-	-	560
FL-6-6.5	6/20/19	6.5'	In-Situ	-	-	-	-	-	-	-	592
NI	NMOCD Closure Criteria				50	-	-	1,000	-	2,500	600

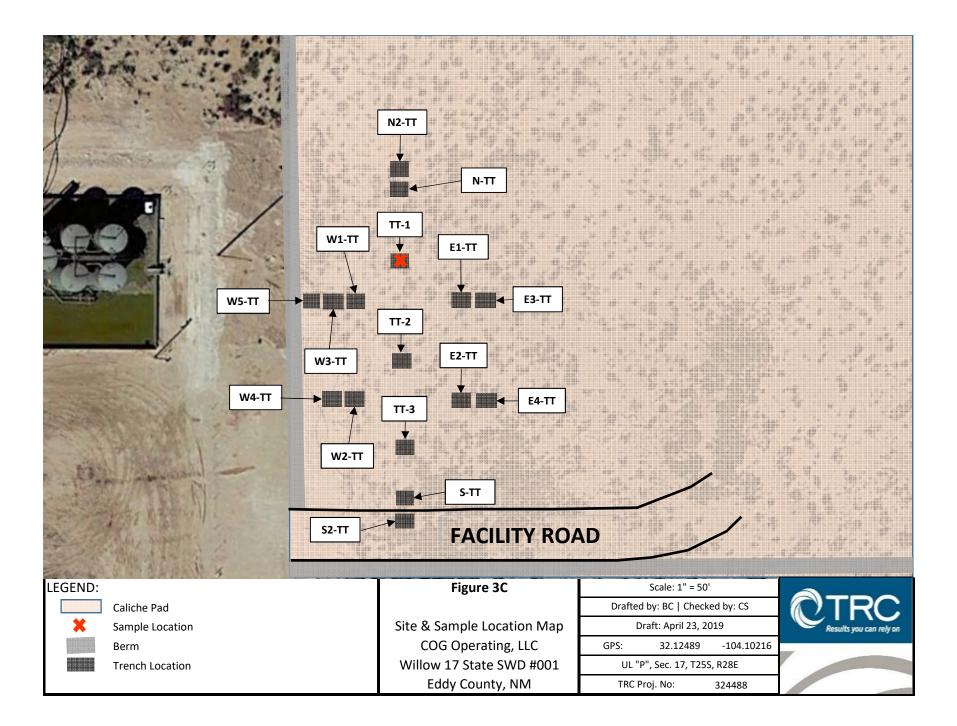


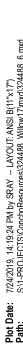


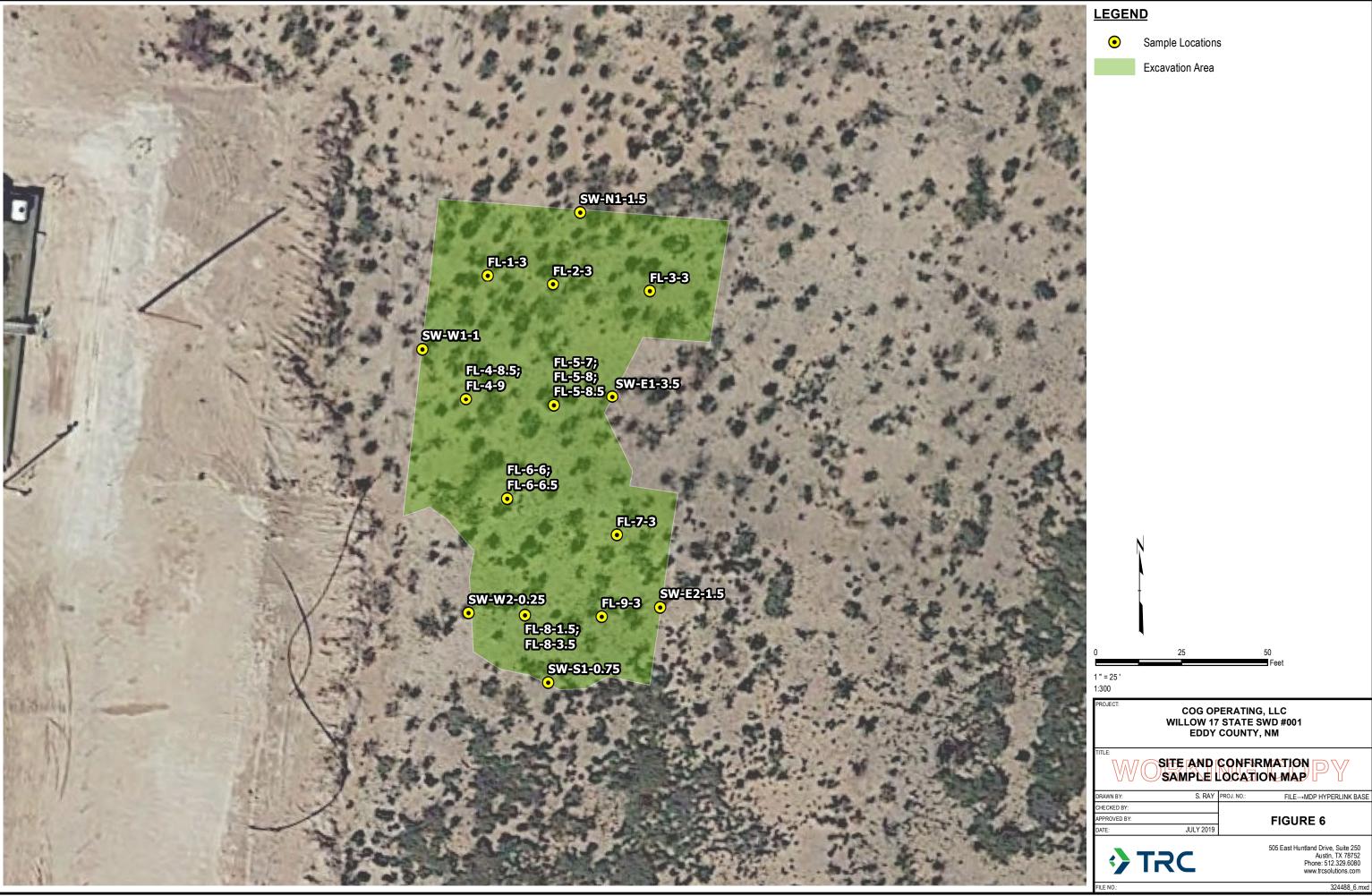












Appendix A: Laboratory Analytical Reports



January 14, 2019

JAROD STOFFEL TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 STATE SWD #001

Enclosed are the results of analyses for samples received by the laboratory on 01/07/19 15:20.

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 www.tceq.texas.gov/field/ga/lab_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.

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. Keine

Celey D. Keene Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: SP-1 @ S (H900028-01)

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	01/11/2019	ND	1.79	89.5	2.00	2.57	
Toluene*	<0.050	0.050	01/11/2019	ND	1.86	92.8	2.00	1.46	
Ethylbenzene*	<0.050	0.050	01/11/2019	ND	1.91	95.3	2.00	2.60	
Total Xylenes*	<0.150	0.150	01/11/2019	ND	5.79	96.6	6.00	2.25	
Total BTEX	<0.300	0.300	01/11/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.8	% 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	20600	16.0	01/09/2019	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	83.2	% 41-142	,						
Surrogate: 1-Chlorooctadecane	80.2	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: SP- 2 @ S (H900028-02)

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	01/11/2019	ND	1.79	89.5	2.00	2.57	
Toluene*	<0.050	0.050	01/11/2019	ND	1.86	92.8	2.00	1.46	
Ethylbenzene*	<0.050	0.050	01/11/2019	ND	1.91	95.3	2.00	2.60	
Total Xylenes*	<0.150	0.150	01/11/2019	ND	5.79	96.6	6.00	2.25	
Total BTEX	<0.300	0.300	01/11/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	96.1	% 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	12200	16.0	01/09/2019	ND	416	104	400	0.00	
TPH 8015M	mg,	/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	80.0	% 41-142	,						
Surrogate: 1-Chlorooctadecane	75.0	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: W 1 @ S (H900028-03)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	0.226	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	92.7	% 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	41600	16.0	01/09/2019	ND	416	104	400	0.00	
TPH 8015M	mg	/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	10.6	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	87.9	% 41-142	,						
Surrogate: 1-Chlorooctadecane	83.3	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: W 1B @ S (H900028-04)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	90.7	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15600	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	89.2	% 41-142							
Surrogate: 1-Chlorooctadecane	86.4	% 37.6-14	7						

Cardinal Laboratories

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: E 1 @ S (H900028-05)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.6	% 73.3-12	9						
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14400	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	79.5	% 41-142	2						
Surrogate: 1-Chlorooctadecane	74.9	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: N 1 @ S (H900028-06)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	96.2	% 73.3-12	9						
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2440	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	70.0	% 41-142	2						
Surrogate: 1-Chlorooctadecane	70.2	% 37.6-14	7						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: S 1 @ S (H900028-07)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	90.7	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	85.4	% 41-142	,						
Surrogate: 1-Chlorooctadecane	82.3	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: S 1B @ S (H900028-08)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.2	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	40400	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	89.7	% 41-142	,						
Surrogate: 1-Chlorooctadecane	87.0	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: S 2 @ S (H900028-09)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.0	% 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	8320	16.0	01/09/2019	ND	416	104	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	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	74.9	% 41-142	,						
Surrogate: 1-Chlorooctadecane	68.2	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JAROD STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: N 2 @ S (H900028-10)

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	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	benzene (PID 92.6 % 73.3-1		9						
Chloride, SM4500Cl-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32800	16.0	01/09/2019	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					
Surrogate: 1-Chlorooctane	75.6	% 41-142	,						
Surrogate: 1-Chlorooctadecane	72.1	% 37.6-14	7						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

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 SM4500CI-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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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

Page 12 of 13

Company Name: Relinquished By: Relinquished By: Project Location: Project Name: WILLOWIT STATE Project #: Phone #: city: Midland Project Manager: Joel Lowey analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, H900023 Address: Sampler - UPS - Bus - Other: Sampler Name: Delivered By: (Circle One) FOR LAB USE ONLY EASE NOTE: Liabi Lab I.D. 640 432 466 4450 0 2 10 Desta Drive Suite 150E 57-205 101 East Marland, Hobbs, NM 88240 E (575) 393-2326 FAX (575) 393-2476 SEC 5205 5100 セーシの **TRC Solutions** of or related to the performance 20 105 10 1 0 P ardinal's liability and client's exclusive remedy for any claim Sample I.D. 0 5 6,03 Project Owner: Course Fax #: Time: IS: 20 Date: Time: 1-7-19 2220 State: TX ---under by STOFFEL Zip: 5 (G)RAB OR (C)OMP Received By: Received By: 5455#00 # CONTAINERS 79705 GROUNDWATER less of whether such daim is based upon any of the above stated reasons or otherwise. ed By: Phone Result: Fax Result: REMARKS: Maka Cool Intact Sample Condition WASTEWATER based in contract or tort, shall be limited to the amoun MATRIX × A XX < × X 5 4 SOIL OIL SLUDGE State: City: P.O. #: Phone #: Attn: SECKS TASTER OTHER Fax #: Address: Company: Coscho ACID/BASE: PRESERV. 1 CHECKED BY: ICE / COOL (Initials) 3/44369 OTHER : Zip: -3-199:00 DATE SAMPLING baid by the client for th 9:20 9:50 9:30 10:10 RHASKELL@ GNCHO. GOM BCOOPEL@JRC SOLUTIONS, COM 9:40 9:10 2 CONDEX OTRES DUNTIONS COM 10:20 10:00 BRAZIFINE TRE Southous Con 10:30 TIME STOFFEL TICSOLUTIONS, CON BIE □ Yes R) * DRIDE Add'l Phone #: Add'l Fax #: ANALYSIS REQUEST

Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Laboratories

Page 13 of 13



January 23, 2019

BRIAN COOPER TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 STATE SWD #001

Enclosed are the results of analyses for samples received by the laboratory on 01/14/19 15:10.

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 www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5
Method EPA 524.2	Total Trihalomethanes (TTHM
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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. Keine

Celey D. Keene Lab Director/Quality Manager



14-Jan-19 15:10

11-Jan-19 12:15

Analytical Results For:

TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705		oject Number:	WILLOW 17 STATE SWD #001 NONE GIVEN BRIAN COOPER	Reported: 23-Jan-19 10:51		
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received		
SP-1 @ 6"	H900110-01	Soil	11-Jan-19 12:00	14-Jan-19 15:10		
SP-2 @ 6"	H900110-02	Soil	11-Jan-19 12:05	14-Jan-19 15:10		
W2 @ S	H900110-03	Soil	11-Jan-19 12:10	14-Jan-19 15:10		

Project name and sample IDs were changed as per Brian Cooper 01/23/19 via email. This is the revised report as per those instructions. This report will replace the one sent on 01/15/19.

Soil

H900110-04

Cardinal Laboratories

E2 @ S

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	•							Reported: 23-Jan-19 10::	51	
				1 @ 6' 110-01 (Se						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Inorganic Compounds Chloride	3600		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
		0.001	10.0		·	,01100,		10 000 17	1000 01 2	
Volatile Organic Compounds by		8021	0.050		50	9011109		14-Jan-19	8021B	
Benzene* Toluene*	< 0.050 < 0.050		0.050 0.050	mg/kg	50 50	9011109	ms	14-Jan-19 14-Jan-19	8021B 8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg mg/kg	50	9011109	ms ms	14-Jan-19 14-Jan-19	8021B 8021B	
Total Xylenes*	< 0.030		0.030	mg/kg	50 50	9011109	ms	14-Jan-19	8021B 8021B	
Total BTEX	< 0.130		0.130	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)	<0.500		97.5 %	73.3		9011109	ms	14-Jan-19	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctane			85.0 %	41-	142	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctadecane			79.5 %	37.6	-147	9011409	MS	15-Jan-19	8015B	

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TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	Project: WILLOW 17 STATE SWD #001 Reported: Project Number: NONE GIVEN 23-Jan-19 10:57 Project Manager: BRIAN COOPER Fax To:								51	
				2 @ 6' 110-02 (So						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	1970		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.9 %	73.3	-129	9011109	ms	14-Jan-19	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctane			88.4 %	41-	142	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctadecane			84.3 %	37.6	-147	9011409	MS	15-Jan-19	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	Project:WILLOW 17 STATE SWD #001Reported:Project Number:NONE GIVEN23-Jan-19 10Project Manager:BRIAN COOPERFax To:Fax To:							51		
				V2 @ S 110-03 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	736		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.7 %	73.3	-129	9011109	ms	14-Jan-19	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctane			74.5 %	41-	142	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctadecane			67.1 %	37.6	-147	9011409	MS	15-Jan-19	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Num Project Mana	ber: NO	-	-	#001	2	Reported: 23-Jan-19 10:	51
E2 @ S H900110-04 (Soil)										
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride	896		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			97.7 %	73.3	-129	9011109	ms	14-Jan-19	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctane			68.7 %	41-	142	9011409	MS	15-Jan-19	8015B	
Surrogate: 1-Chlorooctadecane			63.0 %	37.6	-147	9011409	MS	15-Jan-19	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:		Reported: 23-Jan-19 10:51
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Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9011509 - General Prep - Wet Chem										
Blank (9011509-BLK1)				Prepared &	Analyzed:	15-Jan-19				
Chloride	ND	16.0	mg/kg							
LCS (9011509-BS1)				Prepared &	Analyzed:	15-Jan-19				
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (9011509-BSD1)				Prepared &	Analyzed:	15-Jan-19				
Chloride	400	16.0	mg/kg	400		100	80-120	7.69	20	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRCProject:WILLOW 17 STATE SWD #10 DESTA DR. SUITE 150 EProject Number:NONE GIVENMIDLAND TX, 79705Project Manager:BRIAN COOPERFax To:Fax To:Fax To:	#001 Reported: 23-Jan-19 10:51
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Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardi	inal	Lab	orat	tories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 9011109 - Volatiles										
Blank (9011109-BLK1)				Prepared: 1	1-Jan-19 A	nalyzed: 14	4-Jan-19			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0977		mg/kg	0.100		97.7	73.3-129			
LCS (9011109-BS1)				Prepared: 1	1-Jan-19 A	nalyzed: 14	4-Jan-19			
Benzene	2.11	0.050	mg/kg	2.00		106	72.2-131			
Toluene	2.03	0.050	mg/kg	2.00		102	71.7-126			
Ethylbenzene	2.00	0.050	mg/kg	2.00		100	68.9-126			
Total Xylenes	6.09	0.150	mg/kg	6.00		102	71.4-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0967		mg/kg	0.100		96.7	73.3-129			
LCS Dup (9011109-BSD1)				Prepared: 1	1-Jan-19 A	nalyzed: 14	4-Jan-19			
Benzene	2.09	0.050	mg/kg	2.00		104	72.2-131	1.22	6.91	
Toluene	2.01	0.050	mg/kg	2.00		101	71.7-126	0.860	7.12	
Ethylbenzene	1.98	0.050	mg/kg	2.00		99.1	68.9-126	1.07	7.88	
Total Xylenes	6.04	0.150	mg/kg	6.00		101	71.4-125	0.840	7.46	
Surrogate: 4-Bromofluorobenzene (PID)	0.0950		mg/kg	0.100		95.0	73.3-129			

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	Project: WILLOW 1 Project Number: NONE GIV Project Manager: BRIAN CO Fax To:		
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Petroleum Hydrocarbons by GC FID - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 9011409 - General Prep - Organics										
Blank (9011409-BLK1)				Prepared: 1	4-Jan-19 A	nalyzed: 1:	5-Jan-19			
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	46.5		mg/kg	50.0		93.1	41-142			
Surrogate: 1-Chlorooctadecane	43.1		mg/kg	50.0		86.2	37.6-147			
LCS (9011409-BS1)				Prepared &	Analyzed:	14-Jan-19				
GRO C6-C10	209	10.0	mg/kg	200		105	76.5-133			
DRO >C10-C28	210	10.0	mg/kg	200		105	72.9-138			
Total TPH C6-C28	419	10.0	mg/kg	400		105	78-132			
Surrogate: 1-Chlorooctane	49.9		mg/kg	50.0		99.8	41-142			
Surrogate: 1-Chlorooctadecane	46.5		mg/kg	50.0		93.0	37.6-147			
LCS Dup (9011409-BSD1)				Prepared: 1	4-Jan-19 A	nalyzed: 1:	5-Jan-19			
GRO C6-C10	219	10.0	mg/kg	200		110	76.5-133	4.61	20.6	
DRO >C10-C28	207	10.0	mg/kg	200		103	72.9-138	1.44	20.6	
Total TPH C6-C28	426	10.0	mg/kg	400		107	78-132	1.63	18	
Surrogate: 1-Chlorooctane	47.9		mg/kg	50.0		95.8	41-142			
Surrogate: 1-Chlorooctadecane	44.8		mg/kg	50.0		89.6	37.6-147			

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*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

- 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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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

roject name + Sample ID changed as per brian. 1123111	*	5.92 #1 =	Sampler - UPS - Bus - Other:	Sat
Kusu.	n CHECKED BY: (Initials)		Delivered By: (Circle One)	De
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It: Ves INO Add'I Fax #: IS: S:	Phone Kesult: Fax Result: REMARKS:	Date: $1 - 1 q$ Received By:	Relinquished By:	Reli
	analyses. Au cams including uses not insugative own over consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, service. In no event shall Cardinal be liable for inclential and anages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, services. In no event shall Cardinal be liable for inclentiant or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, services or subsidiaries, services arised as a subsidiaries of the services between the subsidiaries of whether such claim is based upon any of the above stated reasons or otherwise.	damages, including without limitation, business ces hereunder by Cardinal, regardless of wheth	nanyses. Au claims including inversion insurgence and an or consequential damages, including without limitation, business interruptions, loss envice. In no event shall Cardinal be Bable for incidential or consequential damages, including without limitation, business interruptions, loss fiftaive or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is be	service
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	Address:	#	Phone #: Fax #:	Phon
	Attn:	State: TX Zip:	Mr. Mand The	City:
	Company: Colo	105	Desk Dr	Addre
	P.O. #:			Proje
ANALYSIS REQUEST	BILL TO		Company Name: UPUR TKC	Comp

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February 06, 2019

BRIAN COOPER TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 SWD

Enclosed are the results of analyses for samples received by the laboratory on 01/30/19 16:35.

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 www.tceq.texas.gov/field/ga/lab_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.

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. Keine

Celey D. Keene Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 1 @ 0-6" (H900351-01)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	89.5	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3600	16.0	02/04/2019	ND	416	104	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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	89.1	% 41-142	,						
Surrogate: 1-Chlorooctadecane	88.5	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 1 @ 6"-1' (H900351-02)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	96.2	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	85.9	% 41-142	,						
Surrogate: 1-Chlorooctadecane	84.3	% 37.6-14	7						

Cardinal Laboratories

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 1 @ 3' (H900351-03)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.3	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1440	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	89.1	% 41-142	,						
Surrogate: 1-Chlorooctadecane	88.4	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 1 @ 5' (H900351-04)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.1	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2400	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	86.5	% 41-142	2						
Surrogate: 1-Chlorooctadecane	86.5	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 1 @ 6' (H900351-05)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	93.3	% 73.3-12	9						
Chloride, SM4500Cl-B	mg/	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	832	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	94.3	% 41-142	,						
Surrogate: 1-Chlorooctadecane	93.0	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 2 @ 6"-1' (H900351-06)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	98.3	% 73.3-12	9						
Chloride, SM4500Cl-B	mg/	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	87.2	% 41-142	2						
Surrogate: 1-Chlorooctadecane	86.0	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 2 @ 2' (H900351-07)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.2	% 73.3-12	9						
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	88.5	% 41-142	,						
Surrogate: 1-Chlorooctadecane	88.2	% 37.6-14	7						

Cardinal Laboratories

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 2 @ 3' (H900351-08)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	89.6	% 73.3-12	9						
Chloride, SM4500Cl-B	mg/	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	880	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	87.1	% 41-142	,						
Surrogate: 1-Chlorooctadecane	86.2	% 37.6-14	7						

Cardinal Laboratories

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 3 @ 0-6" (H900351-09)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	93.7	% 73.3-12	9						
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1040	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	89.4	% 41-142	,						
Surrogate: 1-Chlorooctadecane	87.7	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 3 @ 6"-1' (H900351-10)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	87.5	% 73.3-12	9						
Chloride, SM4500Cl-B	mg/	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1120	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	92.0	% 41-142	,						
Surrogate: 1-Chlorooctadecane	93.7	% 37.6-14	7						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: S TT @ 2.5' (H900351-11)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	90.4	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	81.4	% 41-142	2						
Surrogate: 1-Chlorooctadecane	83.2	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: N TT @ 3' (H900351-12)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	95.3	73.3-12	9						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	95.5	% 41-142	,						
Surrogate: 1-Chlorooctadecane	95.2	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: W1 TT @ 3' (H900351-13)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	89.1	% 73.3-12	9						
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	768	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	93.9	% 41-142	,						
Surrogate: 1-Chlorooctadecane	95.7	% 37.6-14	7						

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: W2 TT @ 3' (H900351-14)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	88.5	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	91.0	% 41-142	2						
Surrogate: 1-Chlorooctadecane	91.4	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: E1 TT @ 3' (H900351-15)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	88.4	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	94.5	% 41-142	2						
Surrogate: 1-Chlorooctadecane	95.5	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: E2 TT @ 3' (H900351-16)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	93.7	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	92.0	% 41-142	2						
Surrogate: 1-Chlorooctadecane	92.5	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC BRIAN COOPER 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	01/30/2019	Sampling Date:	01/29/2019
Reported:	02/06/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: TT 2 @ 0-6" (H900351-17)

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	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	94.1	% 73.3-12	9						
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	02/04/2019	ND	400	100	400	3.92	
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	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					
Surrogate: 1-Chlorooctane	93.5	% 41-142	,						
Surrogate: 1-Chlorooctadecane	96.0	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



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.
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 SM4500CI-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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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1022

101 East Marland, Hobbs, NM 88240

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Pany Name:TRCPALL ICANALYSISct Manager: $b_{i,i,m}$ $b_{i,i,m}$ $P.0. #:$ $Cock$ ess:10 $b_{e,i,m}$ $h_{i,i,m}$ $P.0. #:$ $Cock$ ess:10 $b_{e,i,m}$ $h_{i,i,m}$ $Company:$ $Company:$ multimedState: TX $Zip:$ $Attn:$ e #:Fax #:Project Owner: $Atdress:$ $Atdress:$ ct #:Project Owner:City: $City:$ ct Name: $W_i l_{i,m}$ $UT S w_i l_{i,m}$ $State:$ $Zip:$ ct Location: $V_i l_{i,m}$ $Atdress:$ $Phone #:$ pler Name: $W_i l_{i,m}$ M_i $Fax #:$ $Fax #:$	MATRIX PRESERV.	
Dany Name: TRC BILL IO ANALYSIS ct Manager: Drive Company: P.O. #: Co& Company: State: TX State: TX Company: State: TX State: TX Company: State: TX State: T	Fax #:	141
Service Service Service Service ANALYSIS ct Manager: Do los per P.O. #: Code P.O. #: Company: sss: 10 Do for the 165 Company: P.O. #: Code P.O. #: Code sss: 10 Do for the 165 Company: Company: State: TX Zip: Image: Code	Phone #:	Project Location:
Destry Name: T/C Destry Control Destry Contrestry Contro </td <td></td> <td>Willow 17 S</td>		Willow 17 S
Service Service Service Service ANALYSIS ct Manager: b_{1an} c_{ope} P.O. #: Code P.O. #: P.O. #: Code P.O. #: P.O. #: P.O. #:	City:	
yany Name: TRC ANALYSIS ct Manager: O_{conc} $P.O. #: CoC$ $P.O. #: CoC$ ess: 10 O_{conc} $P.O. #: CoC$ O_{conc} ess: 10 O_{conc} $P.O. #: CoC$ O_{conc} ess: 10 O_{conc} $Company:$ O_{conc} ess: 10 O_{conc} O_{conc} O_{conc} ess: 10 O_{conc} O_{conc}	Address:	
Drian Cooper Drian Cooper Desta Dr Sorte 105 Company:		Midland State: TX
Drian Conter P.O. #: COG ANALYSIS	Company:	10 Desta Di Suite 10
TRC ANALYSIS	<mark>ر :</mark> #	0
	BILL TO ANALYSIS REQUEST	Company Name: TRC

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101 East Marland, Hobbs, NM 88240

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(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable analyses. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptors, loss of use, or loss of profits incurred by client, its subsidiaries, service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptors, loss of use, or loss of profits incurred by client, its subsidiaries, service. Relinquished By: **Relinquished By:** City: Project Manager: H900351 Sampler Name: Project Location: Project Name: Project #: Phone #: Address: Company Name: FOR LAB USE ONLY iates or successors arising out of or related to the performance of Lab I.D. 3 Ŧ S 2 Cr 1 6 0 3 W277 8117 STT 22 77 brain -277 7 P 100 65 ッ Sample I.D. 02.5 8 2 e 031 031 (2) 0 31 3 Una. 3 0 Der .6" Fax #: Date: Date: Swl Project Owner: Time: 35 services hereunder by V State: TX c 6-19 te Zip: 6 (G)RAB OR (C)OMP. Received By Received By . 0 # CONTAINERS 5 GROUNDWATER WASTEWATER MATRIX SOIL R 2 such claim OIL SLUDGE State: City: Attn: P.O. #: OTHER : Phone #: Fax #: Address: Company: ACID/BASE: PRESERV upon any of the above stated R X ICE / COOL X 8 × OTHER : BILL TO 06 Zip: -29-19 DATE SAMPLING Fax Result: REMARKS: asons or otherwise Phone Result: bcooper @ Kschmidt@ tre so lutions.com TIME R tresolutions. com □ Yes TEX II No Add'l Phone #: Add'l Fax #: ANALYSIS REQUEST

Sampler - UPS - Bus - Other:

-1.90

Lb#1

Sample Condition Cool_Intact TYes TYes No No No

CHECKED BY:

Time:

Delivered By: (Circle One)

Analytical Report 621815

for TRC Solutions, Inc

Project Manager: Jared Stoffel

Willow 17

24-APR-19

Collected By: Client





1211 W. Florida Ave Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122): Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab Code: TX01468): Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14) Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18) 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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757) Xenco-Atlanta (LELAP Lab ID #04176) Xenco-Tampa: Florida (E87429), North Carolina (483) Xenco-Lakeland: Florida (E84098)



24-APR-19



Project Manager: **Jared Stoffel TRC Solutions, Inc** 2057 Commerce Midland, TX 79703

Reference: XENCO Report No(s): 621815 Willow 17 Project Address: ---

Jared Stoffel:

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) 621815. 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. 621815 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,

Kalei Stout Midland Laboratory Director

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Sample Cross Reference 621815



TRC Solutions, Inc, Midland, TX

Willow 17

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
W1-TT @ 4'	S	04-18-19 10:25	4 ft	621815-001
W1-TT @ 5'	S	04-18-19 10:30	5 ft	621815-002
W1-TT @ 6'	S	04-18-19 10:35	6 ft	621815-003
W1-TT @ 7'	S	04-18-19 10:40	7 ft	621815-004
N-TT @ 4'	S	04-18-19 11:05	4 ft	621815-009
TT-1 @ 7'	S	04-18-19 11:30	7 ft	621815-014
TT-1 @ 8'	S	04-18-19 11:35	8 ft	621815-015
TT-2 @ 4'	S	04-18-19 11:40	4 ft	621815-016
TT-2 @ 5'	S	04-18-19 11:45	5 ft	621815-017
TT-3 @ 2'	S	04-18-19 12:10	2 ft	621815-022
E2-TT @ 4'	S	04-18-19 12:45	4 ft	621815-029
N2-TT @ 0-1'	S	04-18-19 14:30	0 - 1 ft	621815-031
S2-TT @ 0-1'	S	04-18-19 14:40	0 - 1 ft	621815-032
E3-TT @ 0-1'	S	04-18-19 14:50	0 - 1 ft	621815-033
E4-TT @ 0-1'	S	04-18-19 15:00	0 - 1 ft	621815-034
W3-TT @ 0-1'	S	04-18-19 15:10	0 - 1 ft	621815-035
W4-TT @ 0-1'	S	04-18-19 15:20	0 - 1 ft	621815-036
W5-TT @ 0-1'	S	04-18-19 15:30	0 - 1 ft	621815-037
W1-TT @ 8'	S	04-18-19 10:45	8 ft	Not Analyzed
W1-TT @ 9'	S	04-18-19 10:50	9 ft	Not Analyzed
W1-TT @ 10'	S	04-18-19 10:55	10 ft	Not Analyzed
W1-TT @ 11'	S	04-18-19 11:00	11 ft	Not Analyzed
N-TT @ 5'	S	04-18-19 11:10	5 ft	Not Analyzed
N-TT @ 6'	S	04-18-19 11:15	6 ft	Not Analyzed
N-TT @ 7'	S	04-18-19 11:20	7 ft	Not Analyzed
N-TT @ 8'	S	04-18-19 11:25	8 ft	Not Analyzed
TT-2 @ 6'	S	04-18-19 11:50	6 ft	Not Analyzed
TT-2 @ 7'	S	04-18-19 11:55	7 ft	Not Analyzed
TT-2 @ 8'	S	04-18-19 12:00	8 ft	Not Analyzed
TT-2 @ 9'	S	04-18-19 12:05	9 ft	Not Analyzed
TT-3 @ 3'	S	04-18-19 12:15	3 ft	Not Analyzed
TT-3 @ 4'	S	04-18-19 12:20	4 ft	Not Analyzed
TT-3 @ 5'	S	04-18-19 12:25	5 ft	Not Analyzed
TT-3 @ 6'	S	04-18-19 12:30	6 ft	Not Analyzed
TT-3 @ 7'	S	04-18-19 12:35	7 ft	Not Analyzed
TT-3 @ 8'	S	04-18-19 12:40	8 ft	Not Analyzed
E2-TT @ 5'	S	04-18-19 14:50	5 ft	Not Analyzed



CASE NARRATIVE

Client Name: TRC Solutions, Inc Project Name: Willow 17

Project ID: ---Work Order Number(s): 621815 Report Date: 24-APR-19 Date Received: 04/22/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3086557 Chloride by EPA 300

Lab Sample ID 621815-036 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 621815-002, -003, -004, -005, -009, -014, -015, -016, -017, -018, -022, -029, -031, -032, -033, -034, -035, -036.

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



Contact: Jared Stoffel

Project Location: ---

Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX Project Name: Willow 17



Date Received in Lab:Mon Apr-22-19 10:26 amReport Date:24-APR-19Project Manager:Kalei Stout

	Lab Id:	621815-0	621815-001		621815-002		621815-003		621815-004		621815-009		14						
Analysis Requested	Field Id:	W1-TT @ 4'		W1-TT @ 5'		4' W1-TT @		W1-TT @ 6'		W1-TT @ 7'		W1-TT @ 7'		N-TT @ 4'		N-TT @ 4'		TT-1 @ 7'	
Anulysis Kequesieu	Depth:	4- ft		5- ft		6- ft		5- ft 6- ft 7- ft 4- ft		7- ft		4- ft		7- ft					
	Matrix:	SOIL	SOIL		SOIL		SOIL			SOIL		SOIL							
	Sampled:	Apr-18-19	Apr-18-19 10:25		Apr-18-19 10:30		Apr-18-19 10:35		Apr-18-19 10:40		Apr-18-19 11:05		1:30						
Chloride by EPA 300	Extracted:	Apr-22-19	Apr-22-19 14:00		Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 16:00		6:00	Apr-22-19 1	6:00						
	Analyzed:	Apr-22-19	Apr-22-19 19:49		Apr-22-19 20:45		Apr-22-19 20:51		Apr-22-19 20:57		21:22	Apr-22-19 2	1:28						
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL						
Chloride		1360	99.0	1750	50.3	935	49.8	488	50.0	581	50.0	1010	50.0						

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

Kalei Stout Midland Laboratory Director



Contact: Jared Stoffel

Project Location: ---

Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX Project Name: Willow 17



Date Received in Lab:Mon Apr-22-19 10:26 amReport Date:24-APR-19Project Manager:Kalei Stout

	Lab Id:	621815-0	621815-015		621815-016		621815-017		621815-022		621815-029		31		
Analysis Requested	Field Id:	TT-1 @	TT-1 @ 8'		TT-2 @ 4'		TT-2 @ 5'		TT-3 @ 2'		TT-3 @ 2' E2-TT @ 4' N		E2-TT @ 4'		0-1'
Anulysis Kequesieu	Depth:	8- ft		4- ft		5- ft		2- ft		4- ft		0-1 ft			
	Matrix:	SOIL	SOIL		SOIL		SOIL			SOIL		SOIL			
	Sampled:	Apr-18-19	Apr-18-19 11:35		Apr-18-19 11:40		Apr-18-19 11:45		Apr-18-19 12:10		Apr-18-19 12:45		4:30		
Chloride by EPA 300	Extracted:	Apr-22-19	16:00	Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 1	6:00		
	Analyzed:	Apr-22-192	Apr-22-19 21:34		Apr-22-19 21:40		Apr-22-19 21:46		Apr-22-19 22:17		08:48	Apr-23-19 0	8:53		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		400	50.0	1710	99.6	129	49.8	584	25.1	69.0	24.9	98.2	25.0		

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

Kalei Stout Midland Laboratory Director



Contact: Jared Stoffel

Project Location: ---

Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX Project Name: Willow 17



Date Received in Lab:Mon Apr-22-19 10:26 amReport Date:24-APR-19Project Manager:Kalei Stout

	Lab Id:	621815-032		621815-0	621815-033		621815-034		621815-035		621815-036		37		
Analysis Requested	Field Id:	S2-TT @	S2-TT @ 0-1'		E3-TT @ 0-1'		E4-TT @ 0-1'		E4-TT @ 0-1' W3-TT @ 0-1' W4-TT @ 0-1'		W3-TT @ 0-1'		W4-TT @ 0-1'		0-1'
Anulysis Kequesieu	Depth:	0-1 ft		0-1 ft		0-1 ft		0-1 ft		0-1 ft		0-1 ft 0-1 ft			
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL			
	Sampled:	Apr-18-19	Apr-18-19 14:40		Apr-18-19 14:50		Apr-18-19 15:00		Apr-18-19 15:10		Apr-18-19 15:20		15:30		
Chloride by EPA 300	Extracted:	Apr-22-19	Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 16:00		Apr-22-19 16:00		16:00	Apr-23-19 1	16:00		
	Analyzed:	Apr-23-19	Apr-23-19 08:59		Apr-23-19 09:04		Apr-23-19 09:09		Apr-23-19 09:14		21:52	Apr-23-19 2	22:10		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		413	50.0	167	25.2	220	50.2	714	24.9	142	5.03	137	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.

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Kalei Stout Midland Laboratory Director



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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clie	ent Sample	BLK	Method Blank	
BKS/LCS	S Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labo	ratory 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



BS / BSD Recoveries



Project Name: Willow 17

Work Order	r #: 621815, 621815							Pro	ject ID:					
Analyst:	CHE	D	ate Prepai	ed: 04/22/20	19			Date A	nalyzed: (04/22/2019				
Lab Batch ID	Sample: 7676296-1	-BKS	Batc	h #: 1					Matrix: S	Solid				
Units:	mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK	K SPIKE DUPLICATE RECOVERY STUDY							
Analy	Chloride by EPA 300	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	<5.00	250	251	100	250	248	99	1	90-110	20			
Analyst:	CHE	D	ate Prepai	red: 04/22/20	19	-	1	Date A	nalyzed: (04/22/2019	1	ļ		
Lab Batch ID	Sample: 7676298-1	-BKS	Bate	h #: 1					Matrix:	Solid				
Units:	mg/kg		BLAN	K /BLANK	SPIKE /]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY			
		Blank	Spike	Blank	Blank	Spike	Blank	Blk. Spk		Control	Control			
Analy	Chloride by EPA 300	Sample Result [A]	Added	Spike Result [C]	Spike %R [D]	Added [E]	Spike Duplicate Result [F]	Dup. %R [G]	RPD %	Limits %R	Limits %RPD	Flag		
Chloride	·	Sample Result	Added	Spike Result	Spike %R	Added	Spike Duplicate	Dup. %R		Limits	Limits	Flag		
	·	Sample Result [A] <0.858	Added [B] 250	Spike Result [C]	Spike %R [D] 101	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 102	%	Limits %R	Limits %RPD	Flag		
Chloride	ytes CHE	Sample Result [A] <0.858 D	Added [B] 250 ate Prepar	Spike Result [C] 252	Spike %R [D] 101	Added [E]	Spike Duplicate Result [F]	Dup. %R [G] 102	%	Limits %R 90-110 04/23/2019	Limits %RPD	Flag		
Chloride Analyst:	ytes CHE	Sample Result [A] <0.858 D	Added [B] 250 ate Prepar Batc	Spike Result [C] 252 red: 04/23/202	Spike % R [D] 101	Added [E] 250	Spike Duplicate Result [F] 254	Dup. %R [G] 102 Date A	% 1 nalyzed: (Matrix: S	Limits %R 90-110 04/23/2019 Solid	Limits %RPD 20	Flag		
Chloride Analyst: Lab Batch ID	ytes CHE 3086701 Sample: 7676388-1 mg/kg Chloride by EPA 300	Sample Result [A] <0.858 D	Added [B] 250 ate Prepar Batc	Spike Result [C] 252 red: 04/23/20 h #: 1	Spike % R [D] 101	Added [E] 250	Spike Duplicate Result [F] 254	Dup. %R [G] 102 Date A	% 1 nalyzed: (Matrix: S	Limits %R 90-110 04/23/2019 Solid	Limits %RPD 20	Flag		

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: Willow 17



Work Order # :	621815						Project II):				
Lab Batch ID:	3086555	QC- Sample ID:	621249	-004 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	04/22/2019	Date Prepared:	04/22/2	019	Ar	nalyst: (CHE					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	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]	Kesut [F]	[G]		701		
Chloride		791	250	1020	92	250	1010	88	1	90-110	20	X
Lab Batch ID:	3086555	QC- Sample ID:	621249	-008 S	Batch #: 1 Matrix: Soil							
Date Analyzed:	04/22/2019	Date Prepared:04/22/2019Analyst:CHE										
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]	[C]	50K [D]	E]	Kesult [F]	56K [G]	70	70K	70KFD	
Chloride		457	250	713	102	250	697	96	2	90-110	20	
Lab Batch ID:	3086557	QC- Sample ID:	621156	-014 S	Ba	tch #:	1 Matrix: Soil					
Date Analyzed:	04/22/2019	Date Prepared:	04/22/2	019	Ar	nalyst: (CHE					
Reporting Units:	mg/kg		N	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	TE REC	OVERY	STUDY		
	Chloride by EPA 300	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		9.98	248	176	67	248	244	94	32	90-110	20	XF

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

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



Form 3 - MS / MSD Recoveries

Project Name: Willow 17



Work Order # :	621815						Project ID):				
Lab Batch ID:	3086557	QC- Sample ID:	621815	-036 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	04/22/2019	Date Prepared:	04/22/2	019	Ar	alyst: (CHE					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	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]	incount [1]	[G]				
Chloride		142	252	320	71	252	381	95	17	90-110	20	x
Lab Batch ID:	3086701	QC- Sample ID:	619598	-024 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	04/24/2019	Date Prepared:04/23/2019Analyst:CHE										
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]	[C]	/0K [D]	[E]	Kesult [F]	/0K [G]	70	70K	70KI D	
Chloride		338	250	578	96	250	565	91	2	90-110	20	
Lab Batch ID:	3086701	QC- Sample ID:	620657	-024 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed:	04/24/2019	Date Prepared:	04/23/2	019	Ar	alyst: (CHE					
Reporting Units:	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	Chloride by EPA 300	Parent Sample Result	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Chloride		7800	248	10100	NC	248	10100	NC	0	90-110	20	X

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

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

Revised Date 051418 Rev. 2018.	σ				5
	11000				
	1122-114 2	6	Z	M2 CM	10
nature) Received by: (Signature) Date/Time	Date Relinquished by: (Signature)	ture)	Received by: (Signature)	Relinquished by Signature	Relinquisber
nforced unless previously negotiated.	of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the citent if such losses are due to unconsistence by one construction of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the citent if such losses are due to unconstruction of service. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.	responsibility for any f \$5 for each sample s	es and shall not assume any each project and a charge o	ill be liable only for the cost of samp m charge of \$75.00 will be applied to	of service. Xenco wi of Xenco. A minimu
It assigns standard terms and conditions	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	purchase order from	f samples constitutes a valic	this document and relinquishment o	Notice: Signature of
1631 / 245.1 / 7470	Sb As Ba Be D cd ca ci co cu ie Sb As Ba Be Cd Cr Co Cu Pb Mn	1exas 11 6010: 8RC	8RCRA 13PPM alyzed TCLP / SPLF	otal 200.7 / 6010 200.8 / 6020: Circle Method(s) and Metal(s) to be analyzed TC	Total 200.7 / 6010 Circle Method(s) a
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	×	5	05~1	0,5,0	W1 170
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Sample Comments	Ch H	Depth	Date Time Sampled Sampled	Sample Identification Matrix	Sample Id
	<u>ار ار ا</u>		Total Containers:	Seals: Yes (No NA)	Sample Custody Seals:
TAT starts the day received by the lab. if received by 4:30pm	12 12		Correction Factor:	Yes No	Cooler Custody Seals:
	<u>.</u>		V	(Yes) No	Received Intact:
	<i>d</i> .	No No	Thermomelarth	CAN.4	SAMPLE RECEIPT
	3		┦		
		Due Date: 4/23/m	Due [5. Stopper	Sampler's Name:
)	24 hc.	Rush:		Project Number
			Routi	. 20.000	
JEST Work Order Notes	ANALYSIS REQUEST	Turn Around	Tu	They IT	Dmient Name:
Deliverables: EDD ADaPT D Other:	@tresolutions, com	1220105	Email	(432) 238-3000	Phone:
Level III		City, State ZIP:	20 FM	MILLINNE TX	City, State ZIP:
State of Project:		Address:	STE ISOE	10 Deste Dr	Address:
Program: UST/PST PRP Brownfields RRC Superfund	(6G	Company Name:		TRC	Company Name:
Work Order Comments	Becky Hastell	Bill to: (if different)	el	Jack Staffe	Project Manager:
13-620-2000) www.xenco.com Page of of	Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)	50) Phoenix,AZ (48)	Hobbs,NM (575-392-75		
	Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334 Mirdand TX (432-704-5440) FI Pase TX (915)585-3443 Lubbock.TX (806)794-1296	(281) 240-4200 Da x (432-704-5440) F	Mouston,TX		×
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Jnature) Received by: (Signature) Date/Time	Date/Time Relinquished by: (Signature)	Received by: (Signature)	In Receive	Relinquished by: (Signature)	Rejipquis
are due to circumstances beyond the control anforced unless previously negotiated.	Notice: Signature of this document and reiniquishment of samples constitutes a valid purchase order from chert company to Ashod, its annuaces and subcontractors. It assumes and source or an order common of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Service. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.	nstututes a valio purchase order from on not assume any responsibility for any t and a charge of \$5 for each sample su	st of samples co applied to each project	re of this document and relinqu co will be liable only for the cos nimum charge of \$75.00 will be	Notice: Signatu of service. Xen of Xenco. A min
	in the addition of the addition and subcontractors				
Pb Mn Mo Ni Se Ag Ti U 1631/245.1/7470/7471:Hg	Cd Ca Cr Co Cd Cr Co Cu	8RCRA 13PPM Texas 11 A TCLP / SPLP 6010: 8RCR		Circle Method(s) and Metal(s) to be	Circle A
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Sample Comments	Ho	Time Depth E	Matrix Date Sampled	Sample Identification	Samp
	<u>.).</u>	Iotal Containers:	N/A Iota	ody Seals: Yes Alor	Sample Custody Seals:
TAT starts the day received by the lab if received by 4:30pm	>``j ~	<u>(</u> ,)		Yes	Cooler Custody Seals:
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	(Thermometer/			Temperature (°C):
	E	Wet Ice: (Yes) No	Temp Blank: Yes No	×	SAMPLE RECEIPT
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	0)	2	101	7	P.O. Number:
				JC.	Project Number:
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Deliverables: EDD ADaPT D Other:	a tri continus com	Email	2005	132 326-	
Reporting:Level II Level III PST/UST TRRP Level IV		a service of the serv	SOLUE X1	Miria	City. State ZIP:
State of Project:		ISO E Address:	Dr STE	10 Destr	Address:
Program: UST/PST PRP Brownfields RRC Superfund	(06)	Company Name:		ne: TRC	Company Name:
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www.xenco.com Page	Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)	VM (575-392-7550) Phoenix,AZ (480	Hobbs,N		
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by: (Signature) Received by: (Signature) Date/Time	Date(Time Relinquished by: (Sig	Received by: (Signature)	B	Relinquished by-(Signature)
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	ND AS DA DE UCI UCI UCI PU	CLP / SPLP 6010: 8KCKA	Circle Method(s) and Metal(s) to be analyzed e: Signature of this document and relinguishment of samples	Circle Method(s
Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr TI Sn U V Zn	Shi As Ba Be B Cd Ca Cr Co Cu	BRCRA 13PPM Texas 11 A	10 200.8 / 6020:	Total 200.7 / 6010
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		Thermometer	the second	Temperature (°C):
	£3	Wet Ice: Yes No	T Tremp Blank: Yes No	SAMPLE RECEIPT
	300	Due Date: 4/23/m	5. Stoffel	Sampler's Name:
		Rush: 24 hc.	f ^{an} inas	P.O. Number:
		Routine		Project Number:
QUEST Work Order Notes	ANALYSIS REQUEST	Turn Around	Willar 17	Project Name:
Deliverables: EDD ADaPT Other:	@tresolutions, com	Email JSTOREN	4321-238-3005	
		05 City, State ZIP:	E P	City, State ZIP:
State of Project:		ISO E	10 Dost. Dr STE	Address:
Program: UST/PST PRP Brownfields RRC Superfund	(0G	Company Name:	TRC	Company Name:
Work Order Comments	Buchy Hastell	Bill to: (if different)	Jack Staffel	Project Manager:
813-620-2000) <u>www.xenco.com</u> Page of	Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)	s,NM (575-392-7550) Phoenix,AZ (480		
	Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334 Midland TX (432-704-5440) EL Paso TX (915)585-3443 Lubbock.TX (806)794-1296	Houston,TX (281) 240-4200 Dat Midland TX (432-704-5440) Et		
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Project Manager: Jack Staffel	Bill to: (Ir different) RCCLY HASEE V	Work Order Cor
TRC	, COG	Program: UST/PST PRP Brownfields RRC Superfund
Address: 10 Deste Dr STE 150	M	State of Project:
10 ZIP: MURIANE, TX FA	City, State ZIP:	Reporting:Level II Level III PST/UST TRRP Level IV
(432) 238-3005	Email: sotoffer @ fecsalutions, com	Deliverables: EDD ADaPT C Other:
Project Name: W.J. New 17	Turn Around ANALYSIS RE	IS REQUEST Work Order Notes
5	Routine	
P.O. Number:	Mnc.	
Sampler's Name: 5.5toffel	Due Date: 4/23/n	
SAMPLE RECEIPT Temp Blank: Yes No W		
Temperature (°C):	• • •	
Cooler Custody Seals: Yes No N/A Correction Factor:	Ś	TAT starts the day received by the
: Yes No NIA		lab, if received by 4:30pm
Sample Identification Matrix Sampled Sar	Sampled Depth Depth H	Sample Comments
N2-TT @ O-1 Soin 4/1/1/1/14	1/30 D-1, 1 K / 100 02 HI	
- TT @ 0-1	r44s / X	
E3-TT @ 0-1'	1450 ×	
E4-TT @ 0-1 / / / / /	×	
	510	
W4-TT 0.0-1 15	270 x 1 x 1 x 1 x 1 x 1 x 1 x 1 x 1 x 1 x	CAN SO INTERPORT SCALE
WS-TT@D-1 + + 15	X X Y Y CSSI	
Total 200.7 / 6010 200.8 / 6020: 8RCRA Circle Method(s) and Metal(s) to be analyzed TCL	13PPM Texas 11 AI Sb As Ba Be B Cd Ca Cr Co Ci P / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb	u Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr TI Sn U V Zn Mn Mo Ni Se Ag TI U 1631/245.1/7470/7471:Hg
Notice: Signature of this document and relinquishment of samples constitute of service. Xenco will be liable only for the cost of samples and shall not ass of Xenco. A minimum charge of \$75.00 will be applied to each project and a	nt company to Xenco, its affiliates and subcontr sses or expenses incurred by the client if such it mitted to Xenco, but not analyzed. These terms v	rs. It assigns standard terms and conditions s are due to circumstances beyond the control e enforced unless previously negotiated.
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5	0)	Deviced Date OR1418 Bev 2018



XENCO Laboratories



Prelogin/Nonconformance Report- Sample Log-In

Client: TRC Solutions, Inc	Acceptable Temperature Range: 0 - 6 degC
Date/ Time Received: 04/22/2019 10:26:00 AM	Air and Metal samples Acceptable Range: Ambient
Work Order #: 621815	Temperature Measuring device used : R8
Sample Recei	pt 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?	Yes
#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

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

Analyst:

PH Device/Lot#:

Checklist completed by: Bitter Tal Brianna Teel

#18 Water VOC samples have zero headspace?

Date: 04/22/2019

N/A

Checklist reviewed by: Kalei Stout

Date: 04/22/2019



June 18, 2019

JARED STOFFEL TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/17/19 15:30.

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 www.tceq.texas.gov/field/ga/lab_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.

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. Keine

Celey D. Keene Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/13/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: SW - W1 - 1 (H902082-01)

Chloride, SM4500Cl-B	Chloride, SM4500Cl-B mg/kg		Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	06/18/2019	ND	400	100	400	18.2	

Sample ID: SW - W2 - 0.25 (H902082-02)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	06/18/2019	ND	400	100	400	18.2	

Sample ID: SW - E2 - 1.5 (H902082-03)

Chloride, SM4500Cl-B	mg/	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	06/18/2019	ND	400	100	400	18.2	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the sample identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/11/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: SW - N1 - 1.5 (H902082-04)

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	105	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	′kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/18/2019	ND	400	100	400	18.2	
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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					
Surrogate: 1-Chlorooctane	88.7	% 41-142	,						
Surrogate: 1-Chlorooctadecane	77.8	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/11/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: FL - 1-3 (H902082-05)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/18/2019	ND	400	100	400	18.2	

Sample ID: FL - 2-3 (H902082-06)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	06/18/2019	ND	400	100	400	18.2	

Sample ID: FL - 3-3 (H902082-07)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	06/18/2019	ND	400	100	400	18.2	

Sample ID: FL - 5-7 (H902082-08)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	624	16.0	06/18/2019	ND	400	100	400	18.2	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/17/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: FL - 7-3 (H902082-09)

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 9	73.3-12	9						
Chloride, SM4500Cl-B	mg/	'kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	06/18/2019	ND	400	100	400	18.2	
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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					
Surrogate: 1-Chlorooctane	98.0	% 41-142							
Surrogate: 1-Chlorooctadecane	84.1	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/17/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: FL - 8-1.5 (H902082-10)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	880	16.0	06/18/2019	ND	400	100	400	18.2	

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/17/2019	Sampling Date:	06/17/2019
Reported:	06/18/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: FL - 9-3 (H902082-11)

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					
Surrogate: 4-Bromofluorobenzene (PID	105	% 73.3-12	9						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	06/18/2019	ND	400	100	400	18.2	
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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					
Surrogate: 1-Chlorooctane	101	% 41-142	2						
Surrogate: 1-Chlorooctadecane	93.0	% 37.6-14	7						

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

- 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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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

			CHAIN-OF	-CUSTO	CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	'SIS REQUES	-1
101 East Marland, Hobbs, NM 88240	240						
(575) 393-2326 FAX (575) 393-2476	6						
Company Name: TRC		BILL TO			ANALYSIS REC	REQUEST	
Project Manager: Jack Staffel		P.O. #:				-	-
	E	Company: 06					
	Zip: 79705	Attn: Recky Hastel	-				
Phone #: (432) 238-2005 Fax #:							
Project #: Project Owner:	r: (06	City:					
Project Name: Willow 17 State		State: Zip:)			
Project Location: Malasa, NM		Phone #:					
Sampler Name: D. St St Ct		Fax #:)	18)			
FOR LAB USE ONLY	P. MATRIX	PRESERV. SAMPLING		502			
Lab I.D. Sample I.D.		SE: OL	H(80	Ex (8			
H902082	# CONT	OTHER ACID/B. ICE / CO OTHER DATE	TIME	B			
1 - 1 M - M - 1	1 4	×	05.51	×			
SW-1		1 6/13/19	1535	-			
3 SW - E2 - 1.5		1 yrala	1300				
4 SM- NI- 1 S		P(1/1)	K SH	×			
		C/11/19	1430				
- 2 -		61/11/10	5841				
7 FL- 3-3		1 0/11/19	chhl				
FL-5-		1 6/12/6	1245				
FL-		6/17/19	X 5001	X			
10 FL- 8- 1.5	A L	6/1	1330	L			
PLEASE NV IE: Labuity and Jampags. Cardinal's abality and client's exclusive remark to any client's tasked in contract or tort, shall be limited to the amount paid by the client's tribe analyses. All claims including those for negligence and any other cause whatsbeaver shall be deemed waived unless made in writing and received by Cardinal whith 30 days after completion of the applical service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its building and service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its building and any client damages.	any claim arising whether based in contract deemed waived unless made in writing and g without limitation, business interruptions, l	or tort, shall be limited to the amount pair I received by Cardinal within 30 days afte loss of use, or loss of profits incurred by c	nount paid by the client for the days after completion of the applica arred by client, its subsidiaries.	ble			
Relipquished By: Date: 6/2/6	Received By:	By:	Phone Result:		Add'l Phone #:		
J & Time: 1530	Jamara .	(Molastry C					
Reinquished By: Date:	Received By:	C	*Ku	*4sr			
Time:						Freults bas	7
Delivered By: (Circle One)	Sample Condition	- CH	Ver	101 001 2 000		100000	0
Sampler - UPS - Bus - Other:	Han Fres Fres		No	at to	oon of possible		
	#97 No No	1.9.		0			

Laboratories

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Project Manager: Jack Stoffci		P.O. #:			
l					
Dr STE	150E	Company: LOG			
	TX Zip: 71705	Attn: Becky Huskell	cu		
Phone #: (492) 238-300 3 Fax #:	(Address:			
Project #: Project Owner:	Dwner: CoG	City:	>)		
Project Name: Willow 17 State		State: Zip:	5) B) 60		
Project Location: Malaga, NM		Phone #:	019 021 45		
Sampler Name: J. Stopen		Fax #:	(8)		
	MATRIX	PRESERV. SAMPLING	((
Lab I.D. Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL	SLUDGE OTHER : ACID/BASE: ICE / COOL OTHER : DA E	TPH		
· 11 FL-3-3	C 1 X	51/21/5 ×	× × × × ×		
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Relinquished By: Date	17/17 Received By:	CONT IN Fax	Phone Result: Yes No Fax Result: Yes No	Add'I Phone #: Add'I Fax #:	
Refinquished By: Time: 1535 Date: Time:	Received By:	Ellabyc RE	Ru	. ~	
Delivered By: (Circle One)	Sample Condition Cool Intact	Ition CHECKED BY: (Initials)			
Sampler - UPS - Bus - Other:	5 8 4	- <u></u> % ₀			



July 24, 2019

JARED STOFFEL TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/19/19 16:20.

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 www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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. Keine

Celey D. Keene Lab Director/Quality Manager



19-Jun-19 16:20

19-Jun-19 00:00

Analytical Results For:

TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705		Project: WIL roject Number: NOf oject Manager: JAR Fax To:		Reported: 24-Jul-19 15:51
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW - E1 - 3.5 SW - S1 - 0.75'	H902116-01 H902116-02	Soil Soil	17-Jun-19 00:00 18-Jun-19 00:00	19-Jun-19 16:20 19-Jun-19 16:20

FL - 5-8'	H902116-04	Soil	19-Jun-19 00:00	19-Jun-19 16:20
FL - 6-6'	H902116-05	Soil	19-Jun-19 00:00	19-Jun-19 16:20

Soil

H902116-03

07/24/19- The client brought to our attention that the wrong COC was attached to the original report sent on 06/20/19. This is the revised report with the correct COC attached. This report will replace the one sent on 06/20/19.

Cardinal Laboratories

FL - 4-8.5'

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Nun Project Mana	nber: N	NILLOW 17 S ⁻ NONE GIVEN ARED STOFFE			2	Reported: 24-Jul-19 15:5	51
				/ - E1 - 2116-01						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	al Labo	ratories					
Inorganic Compounds										
Chloride	576		16.0	mg/kg	g 4	9062002	AC	20-Jun-19	4500-Cl-B	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Num Project Mana	nber: N	VILLOW 17 ST ONE GIVEN ARED STOFFE			2	Reported: 24-Jul-19 15:5	51
				- S1 - 0 116-02 (
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laboi	ratories					
Inorganic Compounds										
Chloride	432		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	

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Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Num Project Mana	ber: NO				:	Reported: 24-Jul-19 15:6	51
				- 4-8.5'	.:1)					
			H902	116-03 (So))))					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Inorganic Compounds										
Chloride	704		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
Volatile Organic Compounds b	oy EPA Method 8	8021								
Benzene*	< 0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Surrogate: 4-Bromofluorobenzene (PID)	1		106 %	73.3	-129	9062003	BF	20-Jun-19	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctane			86.9 %	41-	142	9061915	MS	19-Jun-19	8015B	
Surrogate: 1-Chlorooctadecane			89.4 %	37.6	-147	9061915	MS	19-Jun-19	8015B	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Num Project Mana	ber: I	WILLOW 17 ST NONE GIVEN JARED STOFFE			2	Reported: 24-Jul-19 15:5	51
			F H9021	L - 5-8 16-04	•					
Analyte	Result	MDL	Reporting Limit	Units	s Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Labo	oratories					
Inorganic Compounds										
Chloride	640		16.0	mg/kg	g 4	9062002	AC	20-Jun-19	4500-Cl-B	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705			Project Num Project Mana	ber: N	Willow 17 S ⁻ None Given Jared Stoffe			2	Reported: 24-Jul-19 15:5	51
FL - 6-6' H902116-05 (Soil)										
Analyte	Result	MDL	Reporting Limit	Units	s Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	ıl Labo	oratories					
Inorganic Compounds										
Chloride	656		16.0	mg/kg	g 4	9062002	AC	20-Jun-19	4500-Cl-B	

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TRC 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705	Project: WILLOW 17 STATE Project Number: NONE GIVEN Project Manager: JARED STOFFEL Fax To:	Reported: 24-Jul-19 15:51
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Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9062002 - 1:4 DI Water										
Blank (9062002-BLK1)				Prepared &	analyzed:	20-Jun-19				
Chloride	ND	16.0	mg/kg							
LCS (9062002-BS1)				Prepared &	analyzed:	20-Jun-19				
Chloride	400	16.0	mg/kg	400		100	80-120			
LCS Dup (9062002-BSD1)				Prepared &	Analyzed:	20-Jun-19				
Chloride	400	16.0	mg/kg	400		100	80-120	0.00	20	

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Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 9062003 - Volatiles										
Blank (9062003-BLK1)				Prepared &	z Analyzed:	20-Jun-19				
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.105		mg/kg	0.100		105	73.3-129			
LCS (9062003-BS1)				Prepared &	Analyzed:	20-Jun-19				
Benzene	1.53	0.050	mg/kg	2.00		76.7	72.2-131			
Toluene	1.82	0.050	mg/kg	2.00		90.8	71.7-126			
Ethylbenzene	1.75	0.050	mg/kg	2.00		87.7	68.9-126			
Total Xylenes	5.37	0.150	mg/kg	6.00		89.5	71.4-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.103		mg/kg	0.100		103	73.3-129			
LCS Dup (9062003-BSD1)				Prepared &	Analyzed:	20-Jun-19				
Benzene	1.78	0.050	mg/kg	2.00		88.8	72.2-131	14.6	6.91	QR-02
Toluene	1.75	0.050	mg/kg	2.00		87.7	71.7-126	3.49	7.12	
Ethylbenzene	1.71	0.050	mg/kg	2.00		85.4	68.9-126	2.61	7.88	
Total Xylenes	5.23	0.150	mg/kg	6.00		87.1	71.4-125	2.72	7.46	
Surrogate: 4-Bromofluorobenzene (PID)	0.102		mg/kg	0.100		102	73.3-129			

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Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 9061915 - General Prep - Organics										
Blank (9061915-BLK1)				Prepared &	Analyzed:	19-Jun-19				
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	42.3		mg/kg	50.0		84.5	41-142			
Surrogate: 1-Chlorooctadecane	43.0		mg/kg	50.0		86.1	37.6-147			
LCS (9061915-BS1)				Prepared &	z Analyzed:	19-Jun-19				
GRO C6-C10	194	10.0	mg/kg	200		97.0	76.5-133			
DRO >C10-C28	183	10.0	mg/kg	200		91.4	72.9-138			
Total TPH C6-C28	377	10.0	mg/kg	400		94.2	78-132			
Surrogate: 1-Chlorooctane	45.2		mg/kg	50.0		90.4	41-142			
Surrogate: 1-Chlorooctadecane	45.1		mg/kg	50.0		90.1	37.6-147			
LCS Dup (9061915-BSD1)				Prepared &	Analyzed:	19-Jun-19				
GRO C6-C10	204	10.0	mg/kg	200		102	76.5-133	5.17	20.6	
DRO >C10-C28	189	10.0	mg/kg	200		94.6	72.9-138	3.53	20.6	
Total TPH C6-C28	394	10.0	mg/kg	400		98.4	78-132	4.38	18	
Surrogate: 1-Chlorooctane	48.0		mg/kg	50.0		95.9	41-142			
Surrogate: 1-Chlorooctadecane	46.2		mg/kg	50.0		92.3	37.6-147			

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Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

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.
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 SM4500CI-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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RUSH X X on CI- PL2 X-

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Sampler - UPS	Delivered By: (Circle One)	2	Rélinquished By	AN	Relinquished By:	analyses. All claims includir service. In no event shall Cr affiliates or successors arisin	PLEASE NOTE: Liability an			S	4	CI	2	-	H902114		Lab I.D.		FOR LAB USE ONLY	Sampler Name:	Project Location: W; 1/o	Project Name:	Project #:	Phone #:	City: VI.J	Address: / C	Project Manager:	Company Name:
Sampler - UPS - Bus - Other:	(Circle One)		mall	to the		ig those for negligence and any other ca ardinal be liable for incidental or consequing out of or related to the performance o	d Damages. Cardinal's liability and clien			FL-6-6	FL-5-8	FL-4-8.5'	5v - SI - 0.	SW-E1-3.5			Sample I.D.			Kyle Schnoid	1: W: 1/0 W 17 54	•			land	pasta Di	Jared Sto	IRC.
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	CH	1	Carlor of	My Lall	1111	anayses. All claims including those for negligence and any other cause whatsover shall be dened waived unless made in writing and received by Cardinal within 30 days after completion of the applica service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardess of whether such claim is based upon any of the above stated reasons or otherwise.	PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or fort, shall be limited to the amount paid by the client for the			b1-61-9	61-61-9	b1-b1-9 x	6-18-19	6-17-19	OT AC ICE	HER : ID/BAS I / COO HER :	SE:		PRESERV. SAMPLING	Fax #:	Phone #:	State: Zip:	City:	Address:	Attn:	Company: COG	P.O. #:	BILL TO
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	e																											REQUEST



June 21, 2019

JARED STOFFEL TRC 10 DESTA DR. SUITE 150 E MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/20/19 16:35.

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 www.tceq.texas.gov/field/ga/lab_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.

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. Keine

Celey D. Keene Lab Director/Quality Manager



TRC JARED STOFFEL 10 DESTA DR. SUITE 150 E MIDLAND TX, 79705 Fax To:

Received:	06/20/2019	Sampling Date:	06/20/2019
Reported:	06/21/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG- MALAGA NM		

Sample ID: FL - 8-3.5 (H902135-01)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	06/21/2019	ND	416	104	400	3.92	

Sample ID: FL - 4-9 (H902135-02)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	06/21/2019	ND	416	104	400	3.92	

Sample ID: FL - 5-8.5 (H902135-03)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	06/21/2019	ND	416	104	400	0.00	

Sample ID: FL - 6-6.5 (H902135-04)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	592	16.0	06/21/2019	ND	416	104	400	0.00	

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Notes and Definitions

- 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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	Page 4 of 4
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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

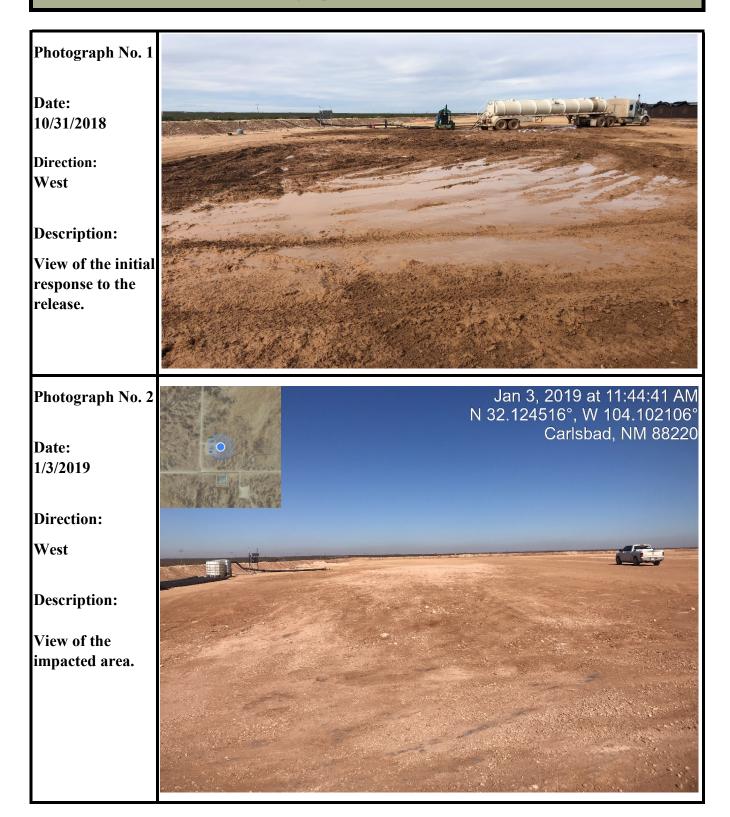
101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476



Appendix B: Photographic Documentation

COG- Willow 17 State SWD #001 Date: 7/25/19

Photographic Documentation



COG- Willow 17 State SWD #001 Date: 7/25/19

Photographic Documentation



COG- Willow 17 State SWD #001 Date: 7/25/2019

Photographic Documentation





Appendix C: Release Notification and Corrective Action (Form C-141)

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

)

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: State Federal Tribal Private (Name: _

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	Yes No
Condensate	Volume Released (bbls)	Volume Recovered (bbls)
Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release	-	

Page 2

State of New Mexico Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by	If YES, for what reason(s) does the responsible party consider this a major release?	
19.15.29.7(A) NMAC?		
🗌 Yes 🗌 No		
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?		

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

The source of the release has been stopped.

The impacted area has been secured to protect human health and the environment.

Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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:	Title:
Signature:	Date:
email:	Telephone:
OCD Only	
Received by:	Date:

Form C-141 Page 3 State of New Mexico Oil Conservation Division

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?	(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 not 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 vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

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 wells.
Field data
Data table of soil contaminant concentration data
Depth to water determination
Determination of water sources and significant watercourses within 1/2-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.

Form C-141	State of New Mexico		Incident ID	
Page 4	Oil Conservation Division	Dil Conservation Division		
			District RP Facility ID	
			Application ID	
regulations all operators are required public health or the environment. The failed to adequately investigate and readdition, OCD acceptance of a C-14 and/or regulations.		cations and perform co CD does not relieve the t to groundwater, surfac esponsibility for comple Title: Date:	rrective actions for rele operator of liability sho ce water, human health iance with any other feo	ases which may endanger ould their operations have or the environment. In deral, state, or local laws
OCD Only				
Received by:		Date:		

State of New Mexico Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: Each of the following items must be included in the closure report.		
A scaled site and sampling diagram as described in 19.15.29.1	1 NMAC	
Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)		
Laboratory analyses of final sampling (Note: appropriate ODC	C District office must be notified 2 days prior to final sampling)	
Description of remediation activities		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete. Printed Name:		
OCD Only		
OCD Only Received by:	Date:	
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.		
Closure Approved by:	Date:	
Printed Name:	Title:	



Appendix D: Depth to Groundwater Data

