SITE INFORMATION

Report Type: Closure Request 1-RP 4265

General Site Information:						
Site:	**EOG Rattlesnake 28 Federal Com 703H**					
Company:	**EOG Resources**					
Section, Township and Range	**Sec 28**	**T26S**	**R33E**			
Lease Number:						
County:	**Lea County**					
GPS:	**32.0160° N**			**103.5844° W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:						

NMOCD APPROVED

Release Data:	
Date Released:	Unknown
Type Release:	Produced Water
Source of Contamination:	Lay Flat line leak
Fluid Released:	230 bbls water
Fluids Recovered:	15 bbls water

Official Communication:				
Name:	Zane Kurtz			James F. Kennedy
Company:	EOG Resources, Inc			Tetra Tech
Address:				1910 N. Big Spring
P.O. Box	2267			
City:	Midland Texas			Midland, Texas
Phone number:	(432) 6863667			(432) 682-4559
Fax:				
Email:				james.kennedy@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	**0**	
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	**0**	0
Total Ranking Score:	**20**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	10,000

TETRA TECH

August 29, 2016

Ms. Kristen Lynch
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for Crescent Services
EOG - Rattlesnake 28 Federal Com 703H
Section 28, Township 26 South, Range 33 East
Lea County, New Mexico
1RP - 4265

Ms. Lynch:

Tetra Tech, Inc. (Tetra Tech) was contacted by Crescent Services (Crescent) to assess a spill that occurred the EOG Rattlesnake 28 Federal Com 703H located in Section 28, Township 26 South, Range 33 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.0160º, W 103.5844º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on April 28, 2016 and released approximately 230 barrels of produced water from a lay flat water transfer line. Approximately 15 barrels of produced water was recovered, leaving 215 barrels unrecovered. The initial C-141 is enclosed in Appendix A.

On April 28, 2016, EOG Resources reported two spills from a lay flat line supplying produced water to the Ortanna location from a riser near the Rattlesnake location in Lea County, NM. The main release occurred in a dry creek bed/draw and spilled approximately 200 barrels of produced water with zero barrels recovered. The spill ran south in the creek bed for approximately 50 feet, all soaking into the ground. The second release occurred approximately 1/2 mile west along Battle Axe Road where the lay flat line ran under the road in a culvert, releasing approximately 30 barrels, of which approximately 15 barrels were recovered by a vacuum truck. The second release ran south into the pasture approximately 100' and measured 5' wide at its widest point. It was contained by filling up in the culvert under Battle Axe Road. Both spills were caused by failures near connections of two lines. The exact cause of the failure is still under investigation by Crescent Services who is the contracting company that manages the lay flat line. The spill locations are shown on Figure 3.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Groundwater

No water wells were listed within Section 28. According to the New Mexico State Engineers Well Report, one well located in Section 27 has a depth to ground water of 125' below ground surface, and one well located in Section 21 has a depth of 120' below ground surface. Based on these wells the depth to groundwater at the Site is estimated at greater than 100' below surface. The groundwater data is shown in Appendix B.

Regulatory

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

EOG - Excavation and Assessment

Due to the type of release, sensitive area and the chance of rain events, an emergency one call was performed for the spill area. On April 29, 2016 the one call was complete and EOG was given approval by the OCD to scrape the surface soils of the soil (staining) and transport the soil offsite for proper disposal. The excavation was done to minimize the vertical and horizontal impacts (rain spreading the chlorides farther down the creek bed/draw). EOG contractors scraped the visually stained soil no deeper than 24 inches from the main release spot, removing approximately 700 yards/tons of soil. The soil was disposed of at Sundance Disposal, Eunice, New Mexico.

On May 2, 2016, EOG's consultant, GHD Inc., Albuquerque, New Mexico, was onsite to perform an initial assessment and evaluation of the excavated spill area. The soil samples were submitted to Hall Laboratories, Albuquerque, NM, and analyzed for chlorides by EPA method 300.00, Benzene, Toluene, Ethyl-benzene and Xylene (BTEX) by EPA method 8021B, and Total Petroleum Hydrocarbons (TPH) by method SW8015 Modified. Based on the results, GHD prepared a report of the assessment. The GHD tables, figures and laboratory reports are included in Appendix C.

Referring to GHD's analytical table, none of the soil samples above the laboratory reporting limit for BTEX and TPH for both first and second release. The second release samples (050316-SP6 and SP7) were both below the laboratory reporting limit. However, on the first release area, the chloride results showed six (6) areas that were not vertically defined with elevated chlorides concentrations ranging from 1,500 mg/kg (050216-SP1) to 4,600 mg/kg (050216-SP5). All of the samples were collected in the center of the spill foot print, except for the area of 050216-SP2 which was installed along the edge of the spill area.

Tetra Tech - Onsite Meeting, Site Evaluation and Sampling

On July 12, 2016, Tetra Tech, NMOCD and BLM met onsite to discuss the assessment and path forward to closure. Based on the remediation activities, results and onsite inspection, the NMOCD and BLM requested that no further excavation or remediation be performed at the site due to the sensitive site setting. However, the NMOCD requested additional sampling to define the vertical extents in the areas that were not defined. In addition, Tetra Tech performed the evaluation on the shallow soils in the areas of (05316-SP3 and 05316-SP-3/SP-4), due to the previous samples collected at a depth of 10' to 12' below surface.

On August 9, 2016, Tetra Tech collected the soil samples using a backhoe to trench the areas of concern. A total of seven (7) trenches (T-1 through T-7) were installed at the site. The samples were submitted to Xenco Laboratories, Midland, Texas and analyzed for chlorides by EPA method 300.00. The sample locations are shown on Figure 4. The sampling analysis are summarized in Table 1. The analytical report are shown in Appendix D.

Referring to Table 1, chloride results showed decreasing concentrations with depth in the areas of T-1, T-2, T-5 and T-7 below 250 mg/kg at the bottom hole sample, with the exception of T-6. Trench (T-6) showed chloride concentrations of 406 mg/kg at 6.0' and then spiked to 1,820 mg/kg at 8.0' below surface.

Conclusion

Based on remedial and the assessment/delineation activities, Crescent requests closure of the spill site. The NMCOD and BLM requested for no further excavation or remediation be performed at the site due to the sensitive site setting. The Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment activities for this site, please call me at (432) 682-4559.

Respectfully submitted,

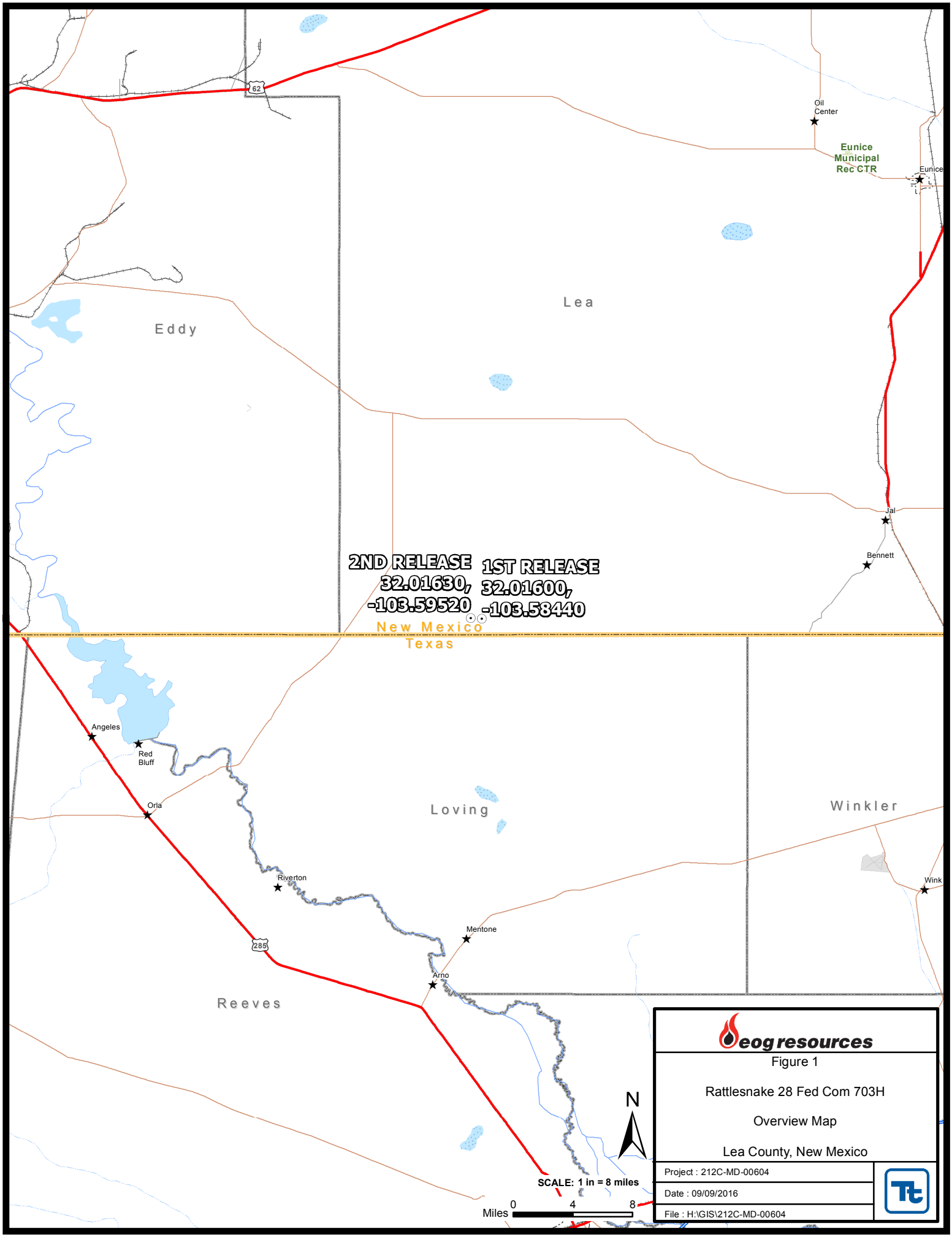
TETRA TECH

James F. Kennedy,
Project Manager

Ike Tavarez,
Senior Project Manager, P.G.

BLM – Shelly Tucker
Crescent - Deren Boyd
EOG – Zane Kurtz

Figures



eog resources

Figure 1

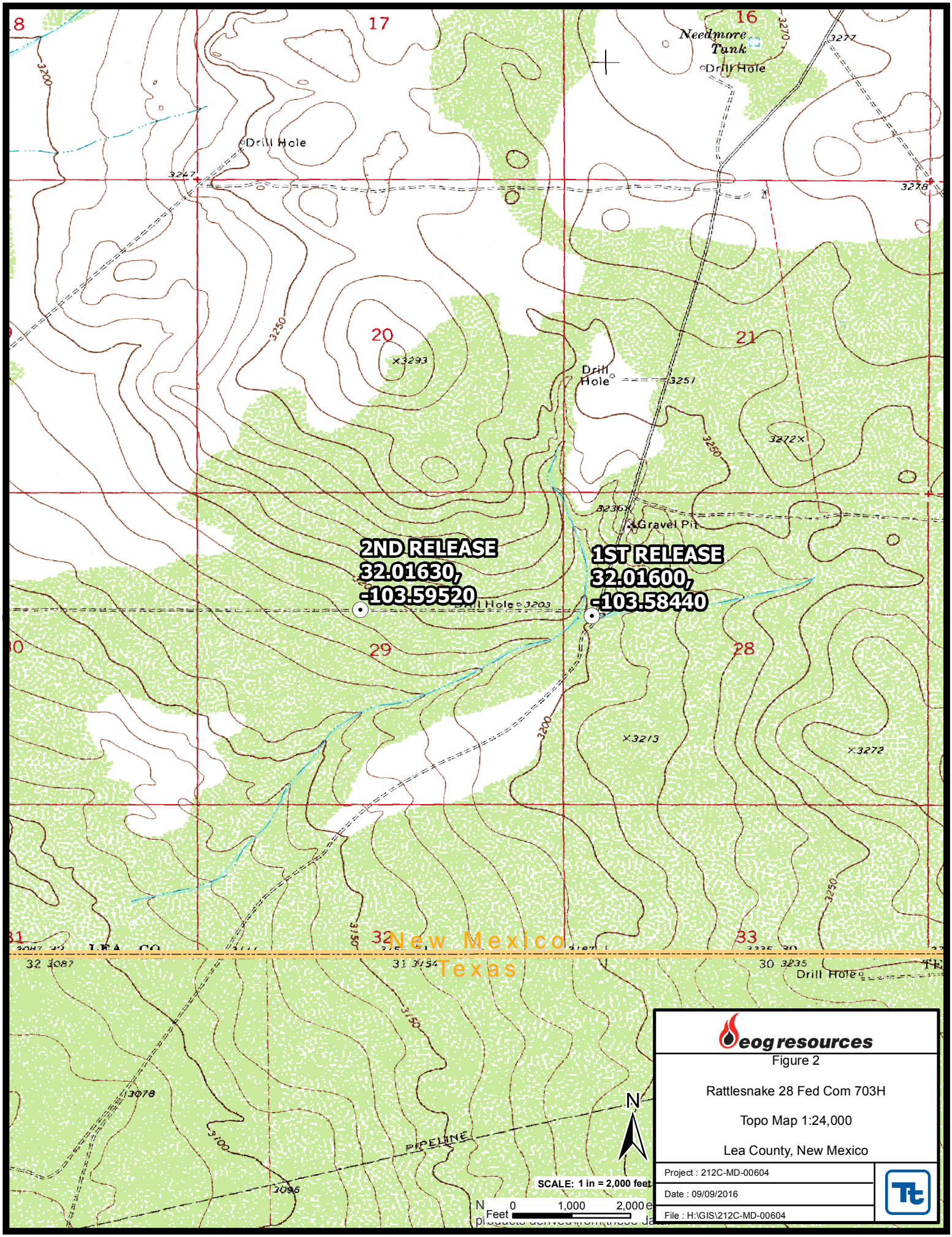
Rattlesnake 28 Fed Com 703H

Overview Map

Lea County, New Mexico

Project : 212C-MD-00604	
Date : 09/09/2016	
File : H:\GIS\212C-MD-00604	

Mapped By: Isabel Marmolejo



eog resources

Figure 2

Rattlesnake 28 Fed Com 703H

Topo Map 1:24,000

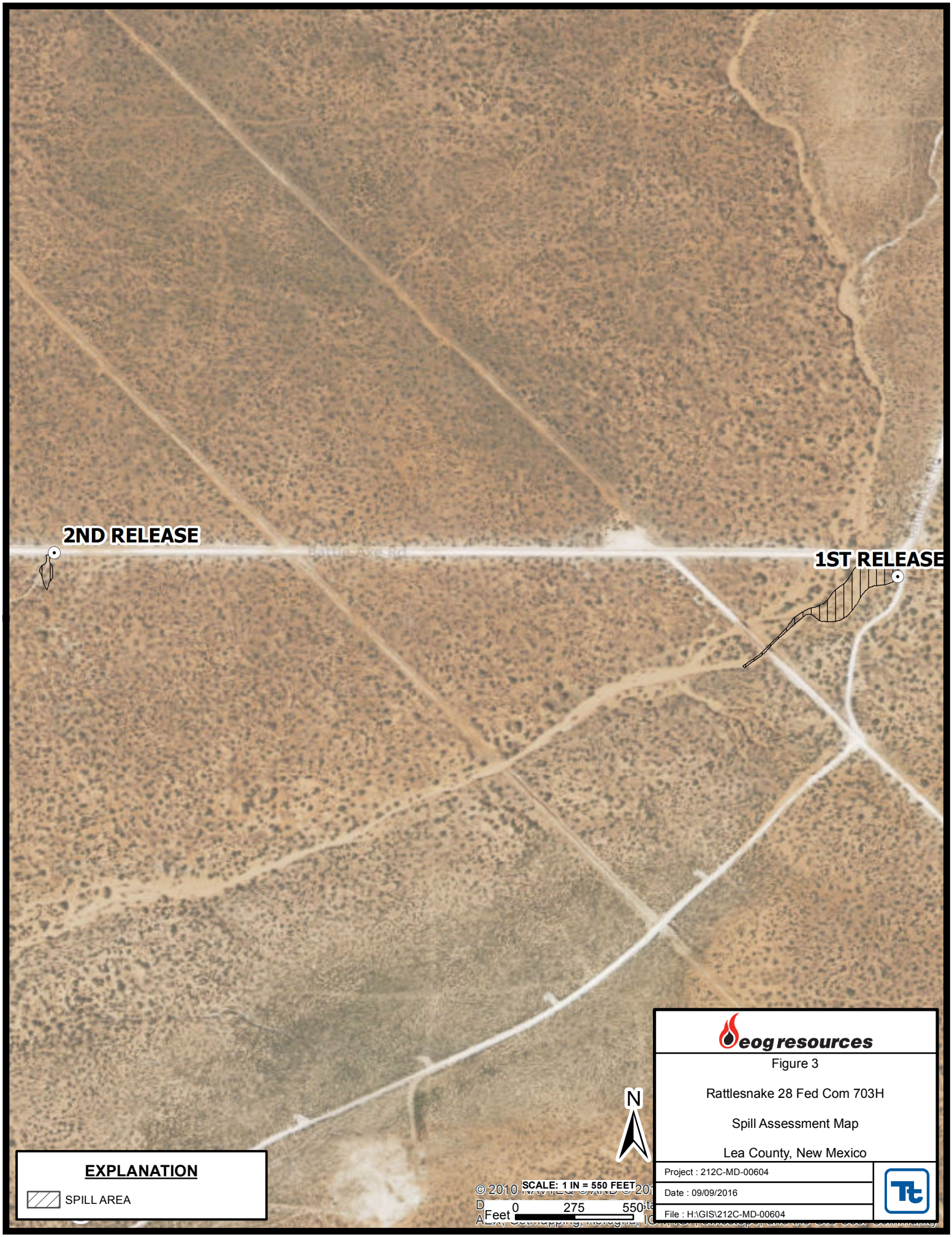
Lea County, New Mexico

Project : 212C-MD-00604

Date : 09/09/2016

File : H:\GIS\212C-MD-00604

Mapped By: Isabel Marmolejo



eog resources

Figure 3

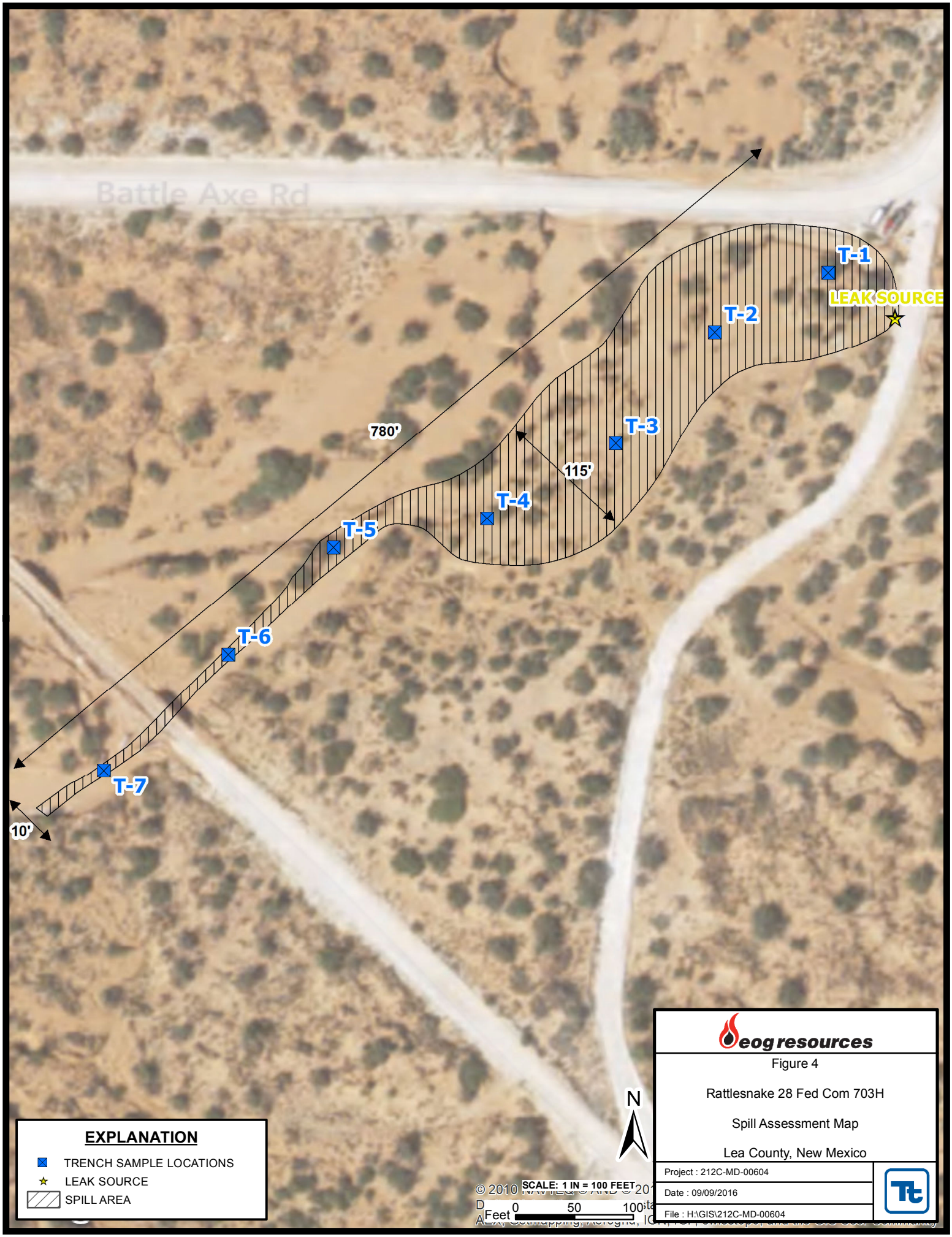
Rattlesnake 28 Fed Com 703H

Spill Assessment Map

Lea County, New Mexico

Project : 212C-MD-00604	
Date : 09/09/2016	
File : H:\GIS\212C-MD-00604	

Mapped By: Isabel Marmolejo



eog resources

Figure 4

Rattlesnake 28 Fed Com 703H

Spill Assessment Map

Lea County, New Mexico

Project : 212C-MD-00604

Date : 09/09/2016

File : H:\GIS\212C-MD-00604

Mapped By: Isabel Marmolejo

Tables

Table 1
Crescent Services
Rattlesnake 28 Federal Commingle 703
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft) BEB	Soil Status		GHD Samples	Tetra Tech Samples
			In-Situ	Removed	Chlorides (mg/kg)	Chlorides (mg/kg)
Trench 1	8/9/2016	0-1	X		-	60.3
05216- SP1	"	4	X		1,500	810
	"	6	X		-	15.8
	"	8	X		-	12.6
Trench 2	8/9/2016	0-1	X		-	<10.0
05216- SP2	"	4	X		2,600	<10.0
	"	6	X		-	<10.0
	"	8	X		-	<10.0
Trench 3	8/9/2016	0-1	X		-	<10.0
05316- SP3/SP4	"	2	X		-	653
	"	4	X		-	1,490
	"	6	X		-	12.8
	"	8	X		-	189
	"	10	X		-	70.7
		12	X		550	-
		14	X		68	-
Trench 4	8/9/2016	0-1	X		-	25.1
05316- SP5	"	2	X		-	269
	"	4	X		-	279
	"	6	X		-	2,000
	"	8	X		-	62.0
	"	10	X		46	-
Trench 5	8/9/2016	0-1	X		-	12.6
05216- SP5	"	4	X		4,600	28.3
	"	6	X		-	1,350
	"	8	X		-	4,950
	"	10	X		-	60.8

Table 1
Crescent Services
Rattlesnake 28 Federal Commingle 703
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft) BEB	Soil Status		GHD Samples	Tetra Tech Samples
			In-Situ	Removed	Chlorides (mg/kg)	Chlorides (mg/kg)
Trench 6	8/9/2016	0-1	X		-	15.7
05216- SP6	"	4	X		3,200	103
	"	6	X		-	406
	"	8	X		-	1,820
Trench 7	8/9/2016	0-1	X		-	<10.0
05216- SP7	"	4	X		2,000	53.7
	"	6	X		-	921
	"	8	X		-	<10.0
	"	10	X		-	29.1

-	Not Analyzed
BEB	Below Excavation Bottom
05216- SP5	Sample ID - Prevoius Sampling Performed by GHD

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company EOG Resources, Inc.	Contact Zane Kurtz
Address 5509 Champions Drive, Midland, TX 79706	Telephone No. 432-425-2023
Facility Name Rattlesnake 28 Fed Com 703H	Facility Type CTB - Lay Flat Water Transfer Line

Surface Owner BLM	Mineral Owner BLM	API No. 30-0254-2875

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	28	26S	33E	230'	S	1766'	E	Lea

Latitude 32.0160 **Longitude** -103.5844

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 230	Volume Recovered 15
Source of Release Lay Flat Water Line	Date and Hour of Occurrence April 28, 2016	Date and Hour of Discovery 0900
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Shelly Tucker, BLM	
By Whom? Zane Kurtz	Date and Hour April 28, 2016 @ 1300	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
NA

Describe Cause of Problem and Remedial Action Taken.*
We had 2 releases from a lay flat water line moving produced water from a CTB to a drill rig. Both releases were from connection failures. First release was 200bbls with no recovery in a dry creek bed and ran 1/8 mile. Second release was ½ mile down line and released 30 bbls and was able to recover 15 bbls. Consultant will delineate the spill area and prepare work plan to address the impacted areas. 2nd release is located at 32.0163, -103.5952.

Describe Area Affected and Cleanup Action Taken.*

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Zane Kurtz	Approved by Environmental Specialist:	
Title: Sr. Environmental Rep., EOG Resources, Inc.	Approval Date:	Expiration Date:
E-mail Address: zane_kurtz@eogresources.com	Conditions of Approval:	Attached ☐
Date: April 28, 2016 Phone: 432-425-2023		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **EOG Resources, Inc**	Contact **Zane Kurtz**
Address **5509 Champions Drive Midland, Texas 79706**	Telephone No. **(432) 425-2023**
Facility Name **Rattlesnake 28 Fed Com 703H**	Facility Type **CTB – Lay Flat Water Transfer Line**

Surface Owner **BLM**	Mineral Owner **BLM**	Lease No. 30-0254-2875

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	28	26S	33E	230’	South	1766’	East	Lea

Latitude N 32.0160 **Longitude** W 103.5844

NATURE OF RELEASE

Type of Release produced water	Volume of Release **230 bbls**	Volume Recovered 15 **bbls**
Source of Release **Lay Flat Water Line**	Date and Hour of Occurrence April 28, 2016	Date and Hour of Discovery **0900**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Shelly Tucker, BLM**	
By Whom?	Date and Hour **10/1/09 9:10 am**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

2 Releases from a la flat water line, both releases were connection failures. First release was 200 bbls, with no recovery in a dry creek bed and ran 1/8 mile. Second release was ½ mile west and released 30 bbls, with 15 bbls recovered. Consultant assessed, delineated and remediated spill sites.

Describe Area Affected and Cleanup Action Taken.*
Leak was contained to the Dry creek bed. Emergency scrapping of approximately 1’ of soil from spill was removed and transported to a licensed disposal facility. GHD and Tetra Tech collected samples and defined extents. Tetra Tech prepared and submitted to NMOCD for review.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: James Kennedy	Approved by District Supervisor:
Title: Project Manager	Approval Date: 10/3/2016 Expiration Date: N/A
E-mail Address: james.kennedy@tetratech.com	Conditions of Approval: N/A Attached ☐ 1RP 4265
Date: Phone: (432) 682-4559	

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
EOG Resources - RattleSnake 28Federal Com 703H
Lea County, New Mexico

25 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32 **290**	33	34	35	36

25 South 33 East

6	5	4	3 172	2	1
7	8	9	10	11 140	12 200
18	17	16	15	14	13
19	20 **200**	21 120	22	23	24
30	29	28	27 125	26	25
31 **257**	32	33	34	35	36

25 South 34 East

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

26 South 32 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **333** **180**	22	23	24
30	29	28	27	26	25
31 **295**	32	33	34	35	36

26 South 33 East

6	5	4	3 **175**	2	1
7	8	9	10	11 **145**	12 **200**
18	17	16	15	14 **135**	13
19	20	21 **120**	22	23	24
30	29	28	27 **125**	26	25
31	32	33	34	35	36

26 South 34 East

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

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

Appendix C

ENVIRO CLEAN CARDINAL

Soil Analytical Summary

Crescent Services Battle Axe Rd.
CSBHBATT01

Sample ID	Date	Depth ft.	Chlorides	GRO C6 - C10	DRO >C10 - C28	Total TPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX	Location Description (from release source)	Excavated to depth?
S-088210-26-050216-SP-01	5/2/2016	4	**1,500**	<4.8	<9.7	<9.7	<0.024	<0.048	<0.048	<0.096	<0.096	Near source	Yes
S-088210-26-050216-SP-02	5/2/2016	4	**1,800**	<4.8	<9.4	<9.4	<0.024	<0.048	<0.048	<0.095	<0.095	75'	Yes
S-088210-26-050216-SP-03	5/2/2016	4	<30	<4.9	<9.5	<9.5	<0.024	<0.049	<0.049	<0.098	<0.098	260'	No
S-088210-26-050216-SP-04	5/2/2016	6	<30	<4.9	<10	<10	<0.025	<0.049	<0.049	<0.099	<0.099	260'	No
S-088210-26-050216-SP-05	5/2/2016	4	**4,600**	<4.9	<10	<10	<0.024	<0.049	<0.049	<0.098	<0.098	450'	No
S-088210-26-050216-SP-06	5/2/2016	4	**3,200**	<4.8	<10	<10	<0.024	<0.048	<0.048	<0.097	<0.097	625'	No
S-088210-26-050216-SP-07	5/2/2016	4	**2,000**	<4.6	<9.9	<9.9	<0.023	<0.046	<0.046	<0.093	<0.093	675' (South of culvert)	No
S-088210-26-050316-SP-01	5/3/2016	4	**64**	<4.8	<9.8	<9.8	<0.024	<0.048	<0.048	<0.097	<0.097	Source Area	No
S-088210-26-050316-SP-02	5/3/2016	6	**190**	<4.7	<10	<10	<0.023	<0.047	<0.047	<0.094	<0.094	100'	No
S-088210-26-050316-SP-03	5/3/2016	12	**550**	<4.8	<9.9	<9.9	<0.024	<0.048	<0.048	<0.095	<0.095	200'	No
S-088210-26-050316-SP-04	5/3/2016	14	**68**	<4.7	<9.7	<9.7	<0.023	<0.047	<0.047	<0.094	<0.094	200'	No
S-088210-26-050316-SP-05	5/3/2016	10	**46**	<4.8	<9.1	<9.1	<0.024	<0.048	<0.048	<0.097	<0.097	300'	No
S-088210-26-050316-SP-06	5/3/2016	4	<7.5	<4.7	<10	<10	<0.023	<0.047	<0.047	<0.094	<0.094	30 bbl spill 1/2-mile west	Yes
S-088210-26-050316-SP-07	5/3/2016	4	<7.5	<4.8	<9.8	<9.8	<0.024	<0.048	<0.048	<0.095	<0.095	30 bbl spill 1/2-mile west	Yes
S-088210-26-050416-SP-01	5/4/2016	4	**47**	<5.0	<9.9	<9.9	<0.025	<0.050	<0.050	<0.099	<0.099	400' Center	No
S-088210-26-050416-SP-02	5/4/2016	4	**45**	<4.6	<9.8	<9.8	<0.023	<0.046	<0.046	<0.093	<0.093	500' Center	No
S-088210-26-050416-SP-03	5/4/2016	4	**26**	<4.9	<9.4	<9.4	<0.024	<0.049	<0.049	<0.098	<0.098	600' Center	No
S-088210-26-050416-SP-04	5/4/2016	4	**18**	<4.9	<9.6	<9.6	<0.024	<0.049	<0.049	<0.097	<0.097	700' Center	No
S-088210-26-050416-SP-05	5/4/2016	4	<1.5	<4.8	<9.9	<9.9	<0.024	<0.048	<0.048	<0.097	<0.097	675' West	No
S-088210-26-050416-SP-06	5/4/2016	4	<1.5	<4.8	<9.9	<9.9	<0.024	<0.048	<0.048	<0.096	<0.096	675' East	No
S-088210-26-050416-SP-07	5/4/2016	4	<1.5	<4.6	<10	<10	<0.023	<0.046	<0.046	<0.091	<0.091	625' East	No
S-088210-26-050416-SP-08	5/4/2016	4	**3**	<5.0	<9.7	<9.7	<0.025	<0.050	<0.050	<0.10	<0.10	625' West	No
S-088210-26-050516-SP-01	5/5/2016	4	<30	<4.7	<9.9	<9.9	<0.023	<0.047	<0.047	<0.094	<0.094	25' South	No
S-088210-26-050516-SP-02	5/5/2016	4	**2,600**	<4.6	<10	<10	<0.023	<0.046	<0.046	<0.093	<0.093	25' North (vegetation)	No
S-088210-26-050516-SP-03	5/5/2016	4	**150**	<4.9	<9.3	<9.3	<0.024	<0.049	<0.049	<0.098	<0.098	75' South	No
S-088210-26-050516-SP-04	5/5/2016	4	<30	<4.9	<9.8	<9.8	<0.025	<0.049	<0.049	<0.098	<0.098	75' North	No
S-088210-26-050516-SP-05	5/5/2016	4	<30	<4.7	<10	<10	<0.024	<0.047	<0.047	<0.095	<0.095	125' North	No
S-088210-26-050516-SP-06	5/5/2016	4	<30	<4.8	<9.9	<9.9	<0.024	<0.048	<0.048	<0.096	<0.096	125' South	No
S-088210-26-050916-SP-01	5/9/2016	4.5	<30	---	---	---	---	---	---	---	---	175' South	No
S-088210-26-050916-SP-02	5/9/2016	4.5	<30	---	---	---	---	---	---	---	---	175' North	No
S-088210-26-050916-SP-03	5/9/2016	4.5	<30	---	---	---	---	---	---	---	---	225' South	No
S-088210-26-050916-SP-04	5/9/2016	4.5	<30	---	---	---	---	---	---	---	---	225' Center	No
S-088210-26-050916-SP-05	5/9/2016	4.5	**47**	---	---	---	---	---	---	---	---	225' North	No
S-088210-26-050916-SP-06	5/9/2016	4.5	<30	---	---	---	---	---	---	---	---	275' South	No
S-088210-26-050916-SP-07	5/9/2016	4	<30	---	---	---	---	---	---	---	---	275' Center	No
S-088210-26-050916-SP-08	5/9/2016	4	**31**	---	---	---	---	---	---	---	---	275' North	No
S-088210-26-050916-SP-09	5/9/2016	4	<30	---	---	---	---	---	---	---	---	325' South	No
S-088210-26-050916-SP-10	5/9/2016	4	**77**	---	---	---	---	---	---	---	---	325' North	No
S-088210-26-050916-SP-11	5/9/2016	4	<30	---	---	---	---	---	---	---	---	375' South	No
S-088210-26-050916-SP-12	5/9/2016	4	**220**	---	---	---	---	---	---	---	---	375' North	No
S-088210-26-050916-SP-13	5/9/2016	4	**41**	---	---	---	---	---	---	---	---	425' East	No
S-088210-26-050916-SP-14	5/9/2016	4	<30	---	---	---	---	---	---	---	---	425' West	No
S-088210-26-050916-SP-15	5/9/2016	4	<30	---	---	---	---	---	---	---	---	475' East	No

ENVIRO CLEAN CARDINAL

Soil Analytical Summary

Crescent Services Battle Axe Rd.
CSBHBATT01

Sample ID	Date	Depth ft.	Chlorides	GRO C6 - C10	DRO >C10 - C28	Total TPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX	Location Description (from release source)	Excavated to depth?
S-088210-26-050916-SP-16	5/9/2016	4	**130**	---	---	---	---	---	---	---	---	475' West	No
S-088210-26-050916-SP-18	5/9/2016	4	<30	---	---	---	---	---	---	---	---	525' West	No
S-088210-26-050916-SP-19	5/9/2016	4	<30	---	---	---	---	---	---	---	---	525' East	No
S-088210-26-050916-SP-20	5/9/2016	4	<30	---	---	---	---	---	---	---	---	575' East	No
S-088210-26-050916-SP-21	5/9/2016	4	<30	---	---	---	---	---	---	---	---	575' West	No
S-088210-26-051016-SP-01	5/10/2016	4	<30	---	---	---	---	---	---	---	---	95'-100' West of Access Rd, parallel to Battle Axe	No
S-088210-26-051016-SP-02	5/10/2016	4	<30	---	---	---	---	---	---	---	---	37' West of Access Road, South-end, parallel to Battle Axe Rd	No
S-088210-26-051016-SP-03	5/10/2016	4	**85**	---	---	---	---	---	---	---	---	37' West of Access Road, North-end, parallel to Battle Axe Rd	No
S-088210-26-051016-SP-04	5/10/2016	4	<30	---	---	---	---	---	---	---	---	East end near Access Road, 5' West, 17' North of Lay-Flat crossing	No
S-088210-26-051016-SP-05	5/10/2016	4	**93**	---	---	---	---	---	---	---	---	East end near Access Rd, parallel to previous and 15' west	No
S-088210-26-051016-SP-06	5/10/2016	4	<30	---	---	---	---	---	---	---	---	177' West of inital release point along north-meander	No

All values presented in mg/kg, parts per million.
Bolding indicates analyte detection.
Green highlighting indicates the value exceeds the WQCC standard.
Blue highlighting indicates samples from the west release.

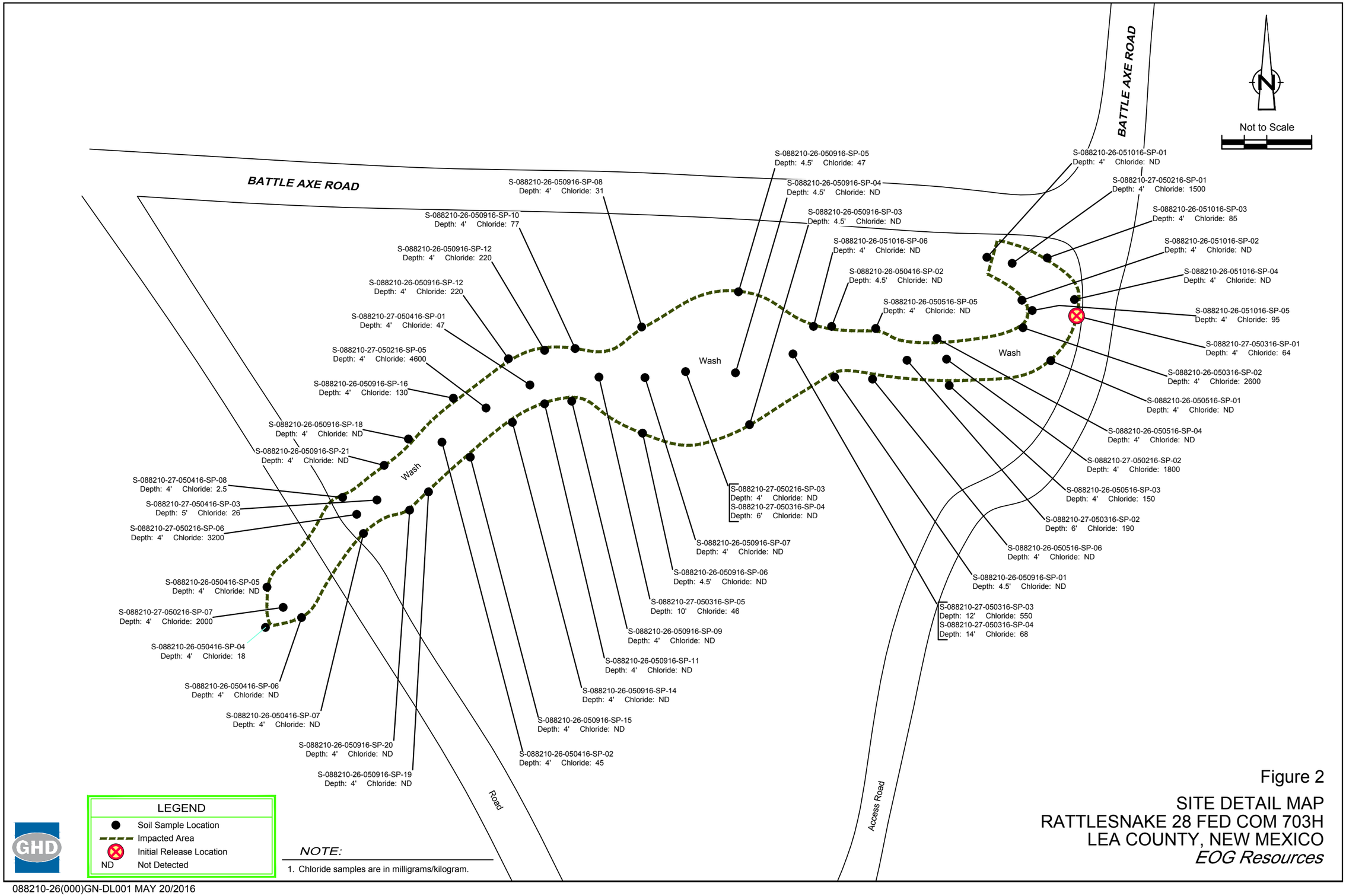
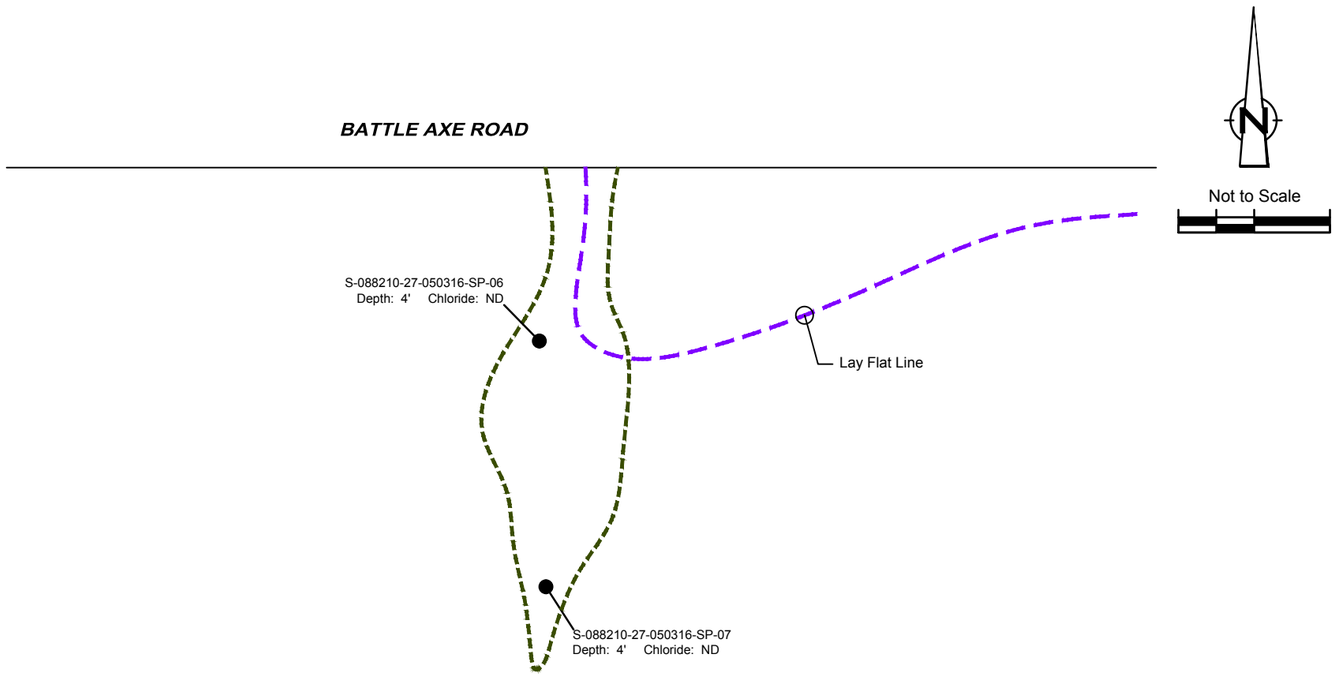


Figure 2

SITE DETAIL MAP
RATTLESNAKE 28 FED COM 703H
LEA COUNTY, NEW MEXICO
EOG Resources

088210-26(000)GN-DL001 MAY 20/2016



LEGEND

●	Soil Sample Location
- - - -	Release Flow Path (Salt Stained)
— —	Produced Water Lay Flat Line
ND	Not Detected

NOTE:

1. Chloride samples are in milligrams/kilogram.

Figure 3

SITE DETAIL MAP (2)
RATTLESNAKE 28 FED COM 703H
LEA COUNTY, NEW MEXICO
EOG Resources

088210-26(000)GN-DL001 MAY 20/2016

Appendix D

Analytical Report 534728

for

Tetra Tech- Midland

Project Manager: Adrian Garcia

Crescent Services-Rattlesnake 28 Fed Com 703

212C-MD-00604

15-AUG-16

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Table of Contents

15-AUG-16

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

Reference: XENCO Report No(s): **534728**
Crescent Services-Rattlesnake 28 Fed Com 703
Project Address: Lea Co. NM

Adrian Garcia:

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) 534728. 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. 534728 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 534728

Tetra Tech- Midland, Midland, TX

Crescent Services-Rattlesnake 28 Fed Com 703

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Trench 1 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-001
Trench 1 @ 4'	S	08-09-16 00:00	- 4 ft	534728-002
Trench 1 @ 6'	S	08-09-16 00:00	- 6 ft	534728-003
Trench 1 @ 8'	S	08-09-16 00:00	- 8 ft	534728-004
Trench 2 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-005
Trench 2 @ 4'	S	08-09-16 00:00	- 4 ft	534728-006
Trench 2 @ 6'	S	08-09-16 00:00	- 6 ft	534728-007
Trench 2 @ 8'	S	08-09-16 00:00	- 8 ft	534728-008
Trench 3 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-009
Trench 3 @ 2'	S	08-09-16 00:00	- 2 ft	534728-010
Trench 3 @ 4'	S	08-09-16 00:00	- 4 ft	534728-011
Trench 3 @ 6'	S	08-09-16 00:00	- 6 ft	534728-012
Trench 3 @ 8'	S	08-09-16 00:00	- 8 ft	534728-013
Trench 3 @ 10'	S	08-09-16 00:00	- 10 ft	534728-014
Trench 4 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-015
Trench 4 @ 2'	S	08-09-16 00:00	- 2 ft	534728-016
Trench 4 @ 4'	S	08-09-16 00:00	- 4 ft	534728-017
Trench 4 @ 6'	S	08-09-16 00:00	- 6 ft	534728-018
Trench 4 @ 8'	S	08-09-16 00:00	- 8 ft	534728-019
Trench 5 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-020
Trench 5 @ 4'	S	08-09-16 00:00	- 4 ft	534728-021
Trench 5 @ 6'	S	08-09-16 00:00	- 6 ft	534728-022
Trench 5 @ 8'	S	08-09-16 00:00	- 8 ft	534728-023
Trench 5 @ 10'	S	08-09-16 00:00	- 10 ft	534728-024
Trench 6 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-025
Trench 6 @ 4'	S	08-09-16 00:00	- 4 ft	534728-026
Trench 6 @ 6'	S	08-09-16 00:00	- 6 ft	534728-027
Trench 6 @ 8'	S	08-09-16 00:00	- 8 ft	534728-028
Trench 7 @ 0-1'	S	08-09-16 00:00	0 - 1 ft	534728-029
Trench 7 @ 4'	S	08-09-16 00:00	- 4 ft	534728-030
Trench 7 @ 6'	S	08-09-16 00:00	- 6 ft	534728-031
Trench 7 @ 8'	S	08-09-16 00:00	- 8 ft	534728-032
Trench 7 @ 10'	S	08-09-16 00:00	- 10 ft	534728-033

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-999804 Inorganic Anions by EPA 300/300.1

Lab Sample ID 534728-027 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 534728-017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031, -032, -033.

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

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	534728-001		534728-002		534728-003		534728-004		534728-005		534728-006	
	Field Id:	Trench 1 @ 0-1'		Trench 1 @ 4'		Trench 1 @ 6'		Trench 1 @ 8'		Trench 2 @ 0-1'		Trench 2 @ 4'	
	Depth:	0-1 ft		4 ft		6 ft		8 ft		0-1 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00	
	Analyzed:	Aug-11-16 17:19		Aug-11-16 17:42		Aug-11-16 17:50		Aug-11-16 17:58		Aug-11-16 18:06		Aug-11-16 18:13	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		60.3	10.0	810	10.0	15.8	10.0	12.6	10.0	ND	10.0	ND	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	534728-007		534728-008		534728-009		534728-010		534728-011		534728-012	
	Field Id:	Trench 2 @ 6'		Trench 2 @ 8'		Trench 3 @ 0-1'		Trench 3 @ 2'		Trench 3 @ 4'		Trench 3 @ 6'	
	Depth:	6 ft		8 ft		0-1 ft		2 ft		4 ft		6 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00	
	Analyzed:	Aug-11-16 18:21		Aug-11-16 18:45		Aug-11-16 18:52		Aug-11-16 19:16		Aug-11-16 19:24		Aug-11-16 19:31	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		ND	10.0	ND	10.0	ND	10.0	653	10.0	1490	10.0	12.8	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	534728-013		534728-014		534728-015		534728-016		534728-017		534728-018	
	Field Id:	Trench 3 @ 8'		Trench 3 @ 10'		Trench 4 @ 0-1'		Trench 4 @ 2'		Trench 4 @ 4'		Trench 4 @ 6'	
	Depth:	8 ft		10 ft		0-1 ft		2 ft		4 ft		6 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-11-16 14:00		Aug-12-16 10:00		Aug-12-16 10:00	
	Analyzed:	Aug-11-16 19:39		Aug-11-16 19:47		Aug-11-16 19:55		Aug-11-16 20:03		Aug-12-16 12:05		Aug-12-16 12:28	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		189	10.0	70.7	10.0	25.1	10.0	269	10.0	279	10.0	2000	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	534728-019		534728-020		534728-021		534728-022		534728-023		534728-024	
	Field Id:	Trench 4 @ 8'		Trench 5 @ 0-1'		Trench 5 @ 4'		Trench 5 @ 6'		Trench 5 @ 8'		Trench 5 @ 10'	
	Depth:	8 ft		0-1 ft		4 ft		6 ft		8 ft		10 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00	
	Analyzed:	Aug-12-16 12:36		Aug-12-16 12:44		Aug-12-16 13:21		Aug-12-16 13:44		Aug-12-16 13:52		Aug-12-16 14:08	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		62.0	10.0	12.6	10.0	28.3	10.0	1350	10.0	4950 D	50.0	60.8	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	534728-025		534728-026		534728-027		534728-028		534728-029		534728-030	
	Field Id:	Trench 6 @ 0-1'		Trench 6 @ 4'		Trench 6 @ 6'		Trench 6 @ 8'		Trench 7 @ 0-1'		Trench 7 @ 4'	
	Depth:	0-1 ft		4 ft		6 ft		8 ft		0-1 ft		4 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00	
	Analyzed:	Aug-12-16 14:16		Aug-12-16 14:23		Aug-12-16 14:31		Aug-12-16 14:55		Aug-12-16 15:18		Aug-12-16 15:26	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		15.7	10.0	103	10.0	406	10.0	1820	10.0	ND	10.0	53.7	10.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 534728

Tetra Tech- Midland, Midland, TX

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Project Id: 212C-MD-00604
Contact: Adrian Garcia
Project Location: Lea Co. NM

Date Received in Lab: Wed Aug-10-16 08:40 am
Report Date: 15-AUG-16
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	534728-031		534728-032		534728-033					
	Field Id:	Trench 7 @ 6'		Trench 7 @ 8'		Trench 7 @ 10'					
	Depth:	6 ft		8 ft		10 ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Aug-09-16 00:00		Aug-09-16 00:00		Aug-09-16 00:00					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Aug-12-16 10:00		Aug-12-16 10:00		Aug-12-16 10:00					
	Analyzed:	Aug-12-16 15:34		Aug-12-16 15:41		Aug-12-16 15:49					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		921	10.0	ND	10.0	29.1	10.0				

Kelsey Brooks
Project Manager

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Work Order #: 534728 **Project ID:** 212C-MD-00604

Analyst: JUM **Date Prepared:** 08/11/2016 **Date Analyzed:** 08/11/2016

Lab Batch ID: 999730 **Sample:** 712011-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	244	98	250	242	97	1	90-110	20	

Analyst: JUM **Date Prepared:** 08/12/2016 **Date Analyzed:** 08/12/2016

Lab Batch ID: 999804 **Sample:** 712059-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	249	100	250	244	98	2	90-110	20	

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

Form 3 - MS / MSD Recoveries

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Work Order # : 534728 **Project ID:** 212C-MD-00604

Lab Batch ID: 999730 **QC- Sample ID:** 534728-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/11/2016 **Date Prepared:** 08/11/2016 **Analyst:** JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	269	108	250	264	106	2	90-110	20	

Lab Batch ID: 999730 **QC- Sample ID:** 534808-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/11/2016 **Date Prepared:** 08/11/2016 **Analyst:** JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	250	273	109	250	270	108	1	90-110	20	

Lab Batch ID: 999804 **QC- Sample ID:** 534728-017 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/12/2016 **Date Prepared:** 08/12/2016 **Analyst:** JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	279	250	529	100	250	514	94	3	90-110	20	

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

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

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

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

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

Form 3 - MS / MSD Recoveries

Project Name: Crescent Services-Rattlesnake 28 Fed Com 703

Work Order # : 534728 **Project ID:** 212C-MD-00604

Lab Batch ID: 999804 **QC- Sample ID:** 534728-027 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/12/2016 **Date Prepared:** 08/12/2016 **Analyst:** JUM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	406	250	652	98	250	626	88	4	90-110	20	X

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

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

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

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

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

534728

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 4

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: Crescent Services

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: Crescent Services- Rattlesnake 28 Fed Com 703 Lea Co NM

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	8/9		S		X	Trench 1 @ 0-1'	1	N			X														X				
						4'																							
						6'																							
						8'																							
						Trench 2 @ 0-1'																							
						4'																							
						6'																							
						8'																							
						Trench 3 @ 0-1'																							
						2'																							

RELINQUISHED BY: (Signature) Adrian Garcia Date: 8/9/16 Time: 1700
RECEIVED BY: (Signature) Date: 8-9-16 Time: 1700
SAMPLED BY: (Print & Initial) AG Adrian Garcia Date: 8/9/16 Time:

RELINQUISHED BY: (Signature) Date: 8-9-16 Time: 2340
RECEIVED BY: (Signature) Date: 8-9-16 Time: 0840
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL #:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
OTHER:

RECEIVING LABORATORY: XENCO
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Adrian Garcia

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Temp: IR ID:R-8
C/F:0 4.0°C
Corrected Temp: 4.0°C

4.0°C

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Gold copy.

Final 1.000

534728

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 4

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: Crescent Services

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: Crescent Services Rattlesnake 28 Federal Com 708H Lea Co. NM

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	8/9		S		X	Trench 3 @ 4'	1	N			X														X				
						6'																							
						8'																							
						10'																							
						Trench 4 @ 0-1'																							
						2'																							
						4'																							
						6'																							
						8'																							
						Trench 5 @ 0-1'																							

RELINQUISHED BY: (Signature) Adriana Garcia	Date: 8/9/16 Time: 1700	RECEIVED BY: (Signature)	Date: 8-9-16 Time: 1700
RELINQUISHED BY: (Signature)	Date: 8-10-16 Time: 840	RECEIVED BY: (Signature)	Date: 8-10-16 Time: 0840
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) AG Adrian Garcia — Date: 8/9/16 Time:

SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS — AIRBILL #: — OTHER:

TETRA TECH CONTACT PERSON: Adrian Garcia

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: XENCO

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE: DATE: TIME: RECEIVED BY: (Signature)

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

4.0°C

Final 1.000

534728

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 4

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: Crescent Services

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: Crescent Services - Rattlesnake 28 Fed Com 703 Lea Co. TX

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
	8/9		S		X	Trench 5 @ 4'	1	N			Y	
						6'						
						8'						
						10'						
						Trench 6 @ 0-1'						
						4'						
						6'						
						8'						
						Trench 7 @ 0-1'						
						4'						

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
												X				

RELINQUISHED BY: (Signature) Adrian Garcia — Date: 8/9/16 Time: 1700
RECEIVED BY: (Signature) Cole — Date: 8-9-16 Time: 1700

RELINQUISHED BY: (Signature) — Date: 8-10-16 Time: 840
RECEIVED BY: (Signature) Maza — Date: 8-10-16 Time: 0840

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) AG Adrian Garcia — Date: 8/9/16 Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS
AIRBILL #:
OTHER:

TETRA TECH CONTACT PERSON: Adrian Garcia

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: XENCO
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

4.0 °C

534728

Analysis Request of Chain of Custody Record

PAGE: 4 OF: 4

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: Crescent Services

SITE MANAGER: Adrian Garcia

PROJECT NO.:

PROJECT NAME: Crescent Services · Rattlesnake 28 Fed Com 703 Lea Co. TX

LAB I.D. NUMBER	DATE 2016	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	8/9		S		X	Trench 7 @ 6'	1	N			X														X				
	8/9		S		X	8'	1	N			X														X				
	8/9		S		X	10'	1	N			X														X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Adrian Garcia	Date: 8/9/16 Time: 1700	RECEIVED BY: (Signature)	Date: 8-9-16 Time: 1700	SAMPLED BY: (Print & Initial) AG Adrian Garcia	Date: 8/9/16 Time:
RELINQUISHED BY: (Signature)	Date: 8-10-16 Time: 0840	RECEIVED BY: (Signature)	Date: 8-10-16 Time: 0840	SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS	AIRBILL #:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:		OTHER:

RECEIVING LABORATORY: XENCO
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE: DATE: TIME:
RECEIVED BY: (Signature)

TETRA TECH CONTACT PERSON: Adrian Garcia

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

4.0°C

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 08/10/2016 08:40:00 AM

Work Order #: 534728

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4
#2 *Shipping container in good condition?	**N/A**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**N/A**
#5 *Custody Seals intact on shipping container/ cooler?	**N/A**
#6 Custody Seals intact on sample bottles?	**N/A**
#7 *Custody Seals Signed and dated?	**N/A**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**No**
#21 VOC samples have zero headspace (less than 1/4 inch bubble)?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mary Alexis Negron
Mary Negron
Date: 08/10/2016

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 08/10/2016

Photos