		SIT		ATION				
	Repo	ort Type:	Deferment	Report	2RP-4	030		
General Site Info	mation:							
Site:		Marquardt 12	2H					
Company:		Cimarex Ene	rgy					
Section, Townshi	ip and Range	Unit P	Sec. 12	T 25S	R 26E			
Lease Number:		API No. 30-0	15-41850					
County:		Eddy County	/					
GPS:			32.137178º N			104.23	8935º W	
Surface Owner:		Federal						
Mineral Owner:								
Directions: From the in for 1.4 mi, to road.		From the inters for 1.4 mi, to no road.	ection of Lovingto	n Hwy and Gr ise road for 0.	R 211 in rura .45 mi to the	location on t	y, travel north on CK 211 he north side of the lease	
Release Data:								
Date Released:		10/12/2016						
Type Release:		Produced Wa	iter					
Source of Contam	ination:	Valve						
Fluid Released:		50 bbls						
Fluids Recovered:		35 bbls						
Official Communi	ication:							
Name:	Christine Alderman				Ike Tavarez	<u> </u>		
Company:	Cimarex Energy				Tetra Tech			
Address:	600 N. Marienfield S	st			4000 N. Bio	n Sprina		
100.000.	Ste 600				Ste 401	J Cp		
City	Midland Toyas 797	0.4			Midland Te	2200		
Dhana numbor:		J1			(400) 600 /	=Xa5		
	(432) 853-7059				(432) 002-4	(432) 062-4339		
Fax:					He Toyor	@totrotoo		
Emaii:	<u>calderman@cimai</u>	<u>ex.com</u>			IKe. Lavare	ez@tetrateo	<u>h.com</u>	
Penking Critoria								
Kaliking Criteria								
Denth to Groundwa	ater:		Ranking Score	T		Site Data		
<50 ft			20			010 2 414		
50-99 ft			10					
>100 ft.			0					
WellHead Protectio	n:		Ranking Score	_		Site Data		
Water Source <1,00)0 ft., Private <200 ft.		20			0		
Water Source >1,00	10 II., Plivale 200 II.		0			U		
Surface Body of W	ater:		Ranking Score	Τ		Site Data		
<200 ft.			20			_		
200 ft - 1,000 ft.			10					
>1,000 ft.			0			0		
Tota	Panking Score:		20					
	I Kanking Coolo.		20					
		Accepta	ble Soil RRAL (mg/kg)]			
		Benzene	Total BTEX	TPH				
	ļ	10	50	100	J			



September 29, 2017

Christine Alderman ESH Supervisor – Permian Basin Cimarex Energy 600 N. Marienfeld St. Midland, Texas 79701

Re: Deferment Report for the Cimarex Energy, Marquardt 12H, Unit P, Section 12, Township 25 South, Range 26 East, Eddy County, New Mexico. 2RP-4030

Ms. Alderman:

Tetra Tech, Inc. (Tetra Tech) was contacted by Cimarex Energy (Cimarex) to assess a spill that occurred at the Marquardt 12H, Unit P, Section 12, Township 25 South, Range 26 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.137178°, W 104.238935. The spill originated in Section 12, Township 25 South, Range 26 East, and migrated into Section 7, Township 25 South, Range 27 East. 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 October 12, 2016, and released approximately fifty (50) barrels of produced water due to a failed check valve on a poly flowline. Approximately thirty-five (35) barrels of produced water was recovered. Due to two (2) underground gas lines in the vicinity, Cimarex used a hydrovac truck to remove approximately 6" to 1.0' of the soil in selected areas of the release. The spill occurred along the south edge of the lease road and a pipeline right-of-way measuring approximately 10' x 1550'. The initial C-141 form is included in Appendix A. The release area is shown on Figure 3.

Groundwater

No water wells were listed within Section 12, Township 25 South, Range 26 East or in Section 7, Township 25 South, Range 27 East on the New Mexico Office of the State Engineer's website. However, one (1) well is listed in Section 22 and has a reported depth to groundwater of 118' below surface. Two (2) water wells in Section 3 and 9 reported a depth to water of 45'elow surface for both wells. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is less than 50' below surface. The groundwater data is shown in Appendix B.



Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 100 mg/kg.

Spill Inspection

Initial Sampling

On November 14, 2016, Tetra Tech was onsite to collect soil samples from the release area to evaluate the soils. A total of thirteen (13) auger holes (AH-1 through AH-13) were installed to depths of ranging from 6" to 2.5' in the release area, as well as one (1) background auger hole (Background), using a stainless steel hand auger. Deeper samples were not collected due to a dense caliche formation in the area. Cimarex performed an initial emergency response and removed the shallow impacted soils using a hydrovac truck, prior to the sampling event. The area of auger hole (AH-3) was hydrovaced to a depth of 6" below surface and the areas of auger holes (AH-1, AH-2, AH-4, AH-5, AH-6, AH-7, AH-9, and AH-11) was hydrovaced to 1.0' below surface. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, none of the samples analyzed for TPH, benzene or total BTEX showed concentrations above the RRAL's or above the laboratory reporting limits. Additionally, the samples collected at auger holes (AH-1, AH-2, AH-3, AH-9, AH-10, and AH-11) did not show any significant chloride impact to the shallow soils, with concentrations ranging from <104 mg/kg to 388 mg/kg.

However, the areas of auger holes (AH-4, AH-5, and AH-12) did show elevated chloride concentrations at 0-1', however the areas were vertically defined at 1-1.5', with concentrations of 680 mg/kg, 874 mg/kg, and 487 mg/kg, respectively. These areas declined with depth but were not defined below 250 mg/kg.

Auger holes (AH-8 and AH-13) showed elevated chlorides in the shallow soils at 0-1' of 4,330 mg/kg and 4,870 mg/kg, respectively. However, the chlorides declined with depth and vertically defined at 1-1.5' (146 mg/kg) and 2-.2.5' (<104 mg/kg). The areas of auger holes (AH-6 and AH-7) were not vertically defined showing bottom samples of 1,650 mg/kg (AH-6) and 1,660 mg/kg (AH-7) at 0-1'.



The background sample collected 0-1' below surface did not detect any TPH, benzene or BTEX above the laboratory reporting limits and showed a chloride concentration of 146 mg/kg in the soils.

Additional Sampling

Due to the recent heavy rains, Tetra Tech returned to the site on March 29, 2017, to collect additional samples to re-evaluate and attempt define the areas of auger holes (AH-4, AH-5, AH-6, AH-7, AH-8, AH-12, and AH-13). Selected samples were analyzed for chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Referring to Table 1, the samples collected at auger holes (AH-4, AH-8, and AH-13) showed concentrations that declined from the initial sampling results with concentrations from 3,200 mg/kg to 1,470 mg/kg, 4,330 mg/kg to 123 mg/kg, and 7,510 mg/kg to 4,870 mg/kg at 0-1', respectively. The sample collected at auger hole (AH-5) showed a slight increase with a concentration from 1,450 mg/kg to 2,060 mg/kg at 0-1' below excavation bottom. Additionally, the area of auger hole (AH-12) was resampled at 0-1' and 1-1.5' below surface, which showed a decline in chloride concentrations from 3,700 mg/kg to 3,040 mg/kg (0-1') and 3,600 mg/kg to 1,750 mg/kg (1-1.5').

The areas of auger holes (AH-6 and AH-7) were resampled to a total depth of 1-1.5' below surface to re-evaluate and define the impact in these areas. The area of auger hole (AH-7) showed a chloride spike of 5,110 mg/kg at 0-1' which then declined with depth to 497 mg/kg at 1-1.5' below the 1.0' excavation bottom, and the area was vertically defined. However, the samples collected at auger hole (AH-6) showed chloride concentrations of 1,420 mg/kg (0-1') and 3,330 mg/kg (1-1.5') and the area was not vertically defined.

Conclusion

The release areas showed shallow chloride impact to the soils. Majority of the impacted areas either declined significantly with depth or were vertically defined, with the exception of auger hole (AH-6). Deeper samples could not be collected due to a dense caliche formation in the release area. Two active underground lines run along the release area; one high pressure flex poly gas line and one low pressure steel gas line. Due to the proximity of the underground gas pipelines, which run along the length of the release, the impacted areas are not accessible and cannot be remediated or assessed safely using a backhoe or an air rotary rig.



Due to the safety issues and the limited chloride impact, Cimarex proposes to defer the impacted areas until abandonment. 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

hyth

Ike Tavarez, PG Senior Project Manager

un Clongalos

Clair Gonzales, Geologist I

Figures







Tables

Table 1

Cimarex

Marquardt 12H

Eddy County, New Mexico

Sample ID	Sample Date	Sample	BEB	Soil	Status	Т	PH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Depth (ft)	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	11/14/2016	0-0.5	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	<104
AH-2	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	388 J
	"	1-1.5	1	Х		-	-	-	-	-	-	-	-	146 J
	"	2-2.5	1	Х		-	-	-	-	-	-	-	-	146
AH-3	11/14/2016	0-0.5	0.5	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	291 J
		•					•						•	•
AH-4	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	3,200
	"	1-1.5	1	Х		-	-	-	-	-	-	-	-	680
Resampled	3/29/2017	0-1	1	Х		-	-	-	-	-	-	-	-	1,470
									1	1			1	1
AH-5	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	1,070
	"	1-1.5	1	Х		-	-	-	-	-	-	-	-	874
Resampled	3/29/2017	0-1	1	Х		-	-	-	-	-	-	-	-	2,060
AH-6	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	1,650
Resampled	3/29/2017	0-1	1	X		_	-	-	-	-	-	-	_	1 420
Rooumpiou	"	1-1.5	1	X		_	_	-	_	-	-	-	-	3.330
AH-7	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	1,660
Decempled	2/20/2047	0.1	1	V										E 110
Resampled	3/29/2017	1-1.5	1	X		-	-	-	-	-	-	-	-	5,110
		1-1.5	I	^		-	-	-	-	-	-	-	212C-N	497 MD-00659
	1													

Table 1

Cimarex

Marquardt 12H

Eddy County, New Mexico

		Sample	BEB	Soil Status		Т	TPH (mg/kg)		Benzene Toluene		Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)) Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-8	11/14/2016	0-1	-	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	4,330
	"	1-1.5	-	Х		-	-	-	-	-	-	-	-	146 J
	·							-						
Resampled	3/29/2017	0-1	-	Х		-	-	-	-	-	-	-	-	123
		1	1		1		1		1	1		1		1
AH-9	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	146 J

Table 1

Cimarex

Marquardt 12H

Eddy County, New Mexico

Commits ID	Osmula Data	Sample	BEB	Soil	Status	т	PH (mg/kg	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Depth (ft)	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-10	11/14/2016	0-1	-	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	292
	"	1-1.5	-	Х		-	-	-	-	-	-	-	-	<104
								-			-			
AH-11	11/14/2016	0-1	1	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	341
AH-12	11/14/2016	0-1	-	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	3,700
	"	1-1.5	-	Х		-	-	-	-	-	-	-	-	3,600
	II	2-2.5	-	Х		-	-	-	-	-	-	-	-	487 J
Resampled	3/29/2017	0-1	-	Х		-	-	-	-	-	-	-	-	3,040
	"	1-1.5	-	Х		-	-	-	-	-	-	-	-	1,750
AH-13	11/14/2016	0-1	-	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	7,010
	"	1-1.5	-	Х		-	-	-	-	-	-	-	-	487 J
	II	2-2.5	-	Х		-	-	-	-	-	-	-	-	<104
Resampled	3/29/2017	0-1	-	Х		-	-	-	-	-	-	-	-	4,870
Background	11/14/2016	0-1	-	Х		<4.24	<50.0	<50.0	<0.0212	<0.0212	<0.0212	<0.0212	<0.0212	146 J

Areas Resampled and Results

(BEB) Below Excavation Bottom

(-) Not Analyzed

(J) Estimated Concentration

212C-MD-00659 Trace Analysis Xenco Labs

Photos



View West – Area of AH-1 and AH-2



View East – Area of AH-3



View East – Area of AH-4





View East – Area of AH-6





View East – Area of AH-8





View North – Area of AH-10





View West – Area of AH-12



Appendix A

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011

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

Release Notification and Corrective Action

	OPERATOR	Initial Report	Final Report
Name of Company Cimarex Energy	Contact Christine Alderman		
Address 600 N Marienfeld Ste 600 Midland TX	Telephone No. 432-853-7059		
Facility Name Marquardt 12H	Facility Type Production		

Surface Owner fed	Mineral Owner	API No. 30-015-41850

LOCATION	OF I	RELI	EASE
----------	------	------	------

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
Р	12	258	26E	330	S	400	Е	Eddy

Latitude_32.13807_Longitude-104.23923

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 50 bbls	Volume Re	ecovered 35 bbls
Source of Release valve	Date and Hour of Occurrence	Date and H	lour of Discovery
	10/12/2016	10/12/2016	Ĵ.
Was Immediate Notice Given?	If YES, To Whom?		
Yes D No D Not Required	Shelly Tucker/Heather Patterson		
By Whom? Christine Alderman	Date and Hour 10/13/201	6	
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	tercourse.	
🗌 Yes 🖾 No			
If a Watercourse was Impacted, Describe Fully.			
Describe Cause of Problem and Remedial Action Taken.			
A check valve failed on a poly water transfer line on the ROW. All stand	ing fluids were picked up with a vacu	um truck.	
Describe Area Affreded and Oleganna Action Talan			
Describe Area Affected and Cleanup Action Taken.	d one of an a thou was will on		
we will hydro vac the impacted area to try to get the heavily containinated	a areas removed and then we will san	lipie.	
I hereby certify that the information given above is true and complete to the	he best of my knowledge and underst	and that pursu	ant to NMOCD rules and
regulations all operators are required to report and/or file certain release n	otifications and perform corrective a	ctions for relea	ases which may endanger
public health or the environment. The acceptance of a C-141 report by the	e NMOCD marked as "Final Report"	does not relie	ve the operator of liability
should their operations have failed to adequately investigate and remediat	e contamination that pose a threat to	ground water,	surface water, human health
or the environment. In addition, NMOCD acceptance of a C-141 report d	oes not relieve the operator of respon	sibility for con	mpliance with any other
federal, state, or local laws and/or regulations.			
	OIL CONSER	VATION I	DIVISION
~			
Signature:			
	Approved by Environmental Speciali	st:	
Printed Name: Christine Alderman			
Tide, FOU Generation	Annual Defer	E	
The: ESH Supervisor	Approval Date:	Expiration D	ate:
E mail Addresses and arman @ aimaray aom	Conditions of Approval:		
E-man Address. calderman@cimarex.com	Conditions of Approval:		Attached
Date: 10/13/2016 Phone: 432-853-7059			

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data Average Depth to Groundwater (ft) Cimarex - Marquardt 12H Eddy County, New Mexico

	24 Sc	outh	25	East	
6	5 14	4 440	3	2	1
	209	44			
7	8	9	10	11	12
					27
18	17	16	15	14	13 7
					163
19	20	21	22	23	24
30	29	28	27	26	25 540
					57
31	32	33	34	35	36
			150	500	

	25 Sc	outh	25	East	
6	5 30	4 46	3	2	1
			20		
7	8	9	10	11	12
				43	39
18	17	16	15	14	13
19	20	21	22	23	24 70
30	29	28	27	26	25
31	32	33	34	35	36

	26 Sc	outh	25	East	
6	5	4	3	2	1
7	8	9	10	11	12 150
18 10	17 <mark>29</mark>	16 <mark>6</mark>	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

		24 Sc	outh	26	East	
6	63	5	4	3	2	1
7	250	8 450	9	10	11	12
18 <mark>65(</mark>)	17	16	15	14 30	13
19		20	21	22	23 <mark>38</mark> 37	24 <mark>28</mark> 30
30 70		29 46	28	27 <mark>30</mark>	26	25
31		32 111 109	33	34 52	35	36

	25 \$	South	26	6 East	
6	5	4	3	2	1
125			45		
7	8	9 45	10	11	<mark>12</mark>
60					SITE
18	17	16	15	14	13
19	20	21	22	23	24
70			118		
30	29	28	27	26	25
31	32	33	34	35	36

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

	24 S	outh	1	27 East	t
6	5	4	3	2	1
7	8 17 26	9 43	10	11	12 27
18 <mark>30</mark> 34	17	16	15	14	13 <mark>30</mark> 31
19	20	21	22 70	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	25 Sc	outh	27	East		
6	5	4	3	2	1	
7 SITE	8	9	10	11	12 92	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	12
31	32	33 19	34	35	36	

	26 So	outh	27	East	
6	5	4	3	2	1
	12				
7	8	9	10	11	12
18	17	16	15	14	13
					35
19	20	21	22	23	24
			50		
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

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD replaced, O=orphan C=the file closed)	has been ned, e is	ı (qu (qu	arte	ers a	are	1=NV small	V 2=N est to l	E 3=SW argest)	4=SE) (NAD8	3 UTM in meter	s) (.	In feet)	
		POD		•	0	0								
POD Number <u>C 01013</u>	Code	Sub- basin C	County ED	Q 64	Q 16	Q 4 4	Sec 25	Tws 25S	Rng 26E	X 571505	Y 3551456* 🛑	DepthWellDept 245	Water Co	vater olumn
<u>C 01089</u>		С	ED	3	4	1	03	25S	26E	567505	3558398* 🧉	96	45	51
<u>C 01368</u>		С	ED		1	1	22	25S	26E	567261	3554059* 🌍	143	118	25
<u>C 02220</u>		CUB	ED	3	1	2	26	25S	26E	569598	3552352* 🌍	35		
<u>C 02221</u>		CUB	ED	4	3	2	25	25S	26E	571412	3551961* 🌍	35		
<u>C 02675</u>		С	ED	1	4	1	09	25S	26E	565907	3556978* 🍯	180	45	135
<u>C 03285</u>		С	ED	4	4	2	07	25S	26E	563713	3556658 🌍	84	60	24
<u>C 03569 POD1</u>		CUB	ED	2	1	1	14	25S	26E	568862	3555746 🌍	30	0	30
<u>C 03654 POD1</u>		CUB	ED	2	3	1	24	25S	26E	570654	3553773 🌍			
C 03654 POD2		CUB	ED	2	3	1	24	25S	26E	554766	3562304 🌍			
<u>C 03655 POD1</u>		CUB	ED			4	22	25S	26E	550692	3561324 🌍			
C 03655 POD2		CUB	ED			4	22	25S	26E	550732	3561337 🌍			
C 03655 POD3		CUB	ED	1	4	4	22	25S	26E	568458	3553019 🌍			
<u>C 03655 POD4</u>		CUB	ED			4	22	25S	26E	550684	3561362 🌍			
<u>C 04036 POD1</u>		С	ED	1	4	3	06	25S	26E	562745	3557733 🌍	160	125	35
<u>C 04049 POD1</u>			ED	3	2	3	06	25S	26E	562592	3557864 🌍	165		
<u>C 04050 POD1</u>		CUB	ED	1	4	3	06	25S	26E	562695	3557776 🌍	165		
											Average Depth t	o Water:	65 fee	•t
											Minimu Maximu	ım Depth: m Depth:	0 fee 125 fee	st et

*UTM location was derived from PLSS - see Help

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

5/17/17 8:28 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD replaced, O=orpha C=the file closed)	has beer ned, e is	1 (qu (qu	iarte	ers a ers a	are	1=NV small	W 2=N est to 1	E 3=SW argest)	4=SE) (NAD8	33 UTM in mete	ers) (In	feet)	
		POD Sub-		0	0	0							Wa	
POD Number	Code	basin	County	64	16	4	Sec	Tws	Rng	Х	Y	DepthWellDepth	wa Water Colı	umn
<u>C 02588</u>		С	ED	3	4	3	33	25S	27E	575645	3549575* 🧲	81	19	62
<u>C 03261 POD1</u>			ED	3	2	1	20	25S	27E	574007	3554006* 🧧	351		
<u>C 03262 POD1</u>		С	ED	2	1	2	22	25S	27E	577837	3554244* 🧧	75		
<u>C 03264 POD1</u>		С	ED	2	1	2	02	25S	27E	579391	3559099* 🧧			
C 03938 POD1		CUB	ED	2	2	2	25	25S	27E	581482	3552616 🍯	21	12	9
											Average Depth	to Water:	15 feet	
											Minim	um Depth:	12 feet	
											Maxim	um Depth:	19 feet	
Decord County 5														

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

5/17/17 8:37 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C



Texas 79424 Lubbock, 800-378-1296 806-794-1296 6701 Aberdeen Avenue, Suite 9 FAX 806 • 794 • 1298 200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915 • 585 • 4944 Texas 79703 5002 Basin Street, Suite A1 Midland, 432-689-6301 FAX 432.689.6313 (BioAquatic) 2501 Mayes Rd., Suite 100 Texas 75006 972-242 -7750 Carroliton, E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP Kansas Oklahoma

Analytical and Quality Control Report

Ike Tavarez Tetra Tech 4000 N. Big Spring Ste. 401 Midland, TX, 79705

Report Date: November 28, 2016

Work Order: 16111601

Project Location:Eddy Co, NMProject Name:Cimarex- Marquardt 12HProject Number:212C-MD-00659

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Lime	Date
Sample	Description	Matrix	Taken	Taken	Received
432013	AH-1 (0-6")	soil	2016-11-14	00:00	2016-11-15
432014	AH-2 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432015	AH-2 (1-1.5') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432016	AH-2 (2-2.5') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432017	AH-3 (0-1') (6" BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432018	AH-4 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432019	AH-4 (0-1.5') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432020	AH-5 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432021	AH-5 (1-1.5') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432022	AH-6 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432023	AH-7(0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432024	AH-8 (0-1')	soil	2016-11-14	00:00	2016 - 11 - 15
432025	AH-8 (1-1.5')	soil	2016-11-14	00:00	2016 - 11 - 15
432026	AH-9 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432027	AH-10 (0-1')	soil	2016-11-14	00:00	2016 - 11 - 15
432028	AH-10 (1-1.5')	soil	2016-11-14	00:00	2016 - 11 - 15
432029	AH-11 (0-1') (1' BEB)	soil	2016-11-14	00:00	2016 - 11 - 15
432030	AH-12 (0-1')	soil	2016-11-14	00:00	2016 - 11 - 15
432031	AH-12 (1-1.5')	soil	2016-11-14	00:00	2016-11-15

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
432032	AH-12 (2-2.5')	soil	2016-11-14	00:00	2016-11-15
432033	AH-13 (0-1')	soil	2016-11-14	00:00	2016 - 11 - 15
432034	AH-13 (1-1.5')	soil	2016-11-14	00:00	2016 - 11 - 15
432035	AH-13 (2-2.5')	soil	2016-11-14	00:00	2016 - 11 - 15
432036	Background (0-1)	soil	2016-11-14	00:00	2016-11-15

Notes

• Work Order 16111601: Run deeper samples if benzene exceeds 10mg/kg, total BTEX exceeds 50mg/kg, or TPH exceeds 100mg/kg. Shipping 11/16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 43 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Notes:

 $For \ inorganic \ analyses, \ the \ term \ MQL \ should \ actually \ read \ PQL.$

Dr. Blair Leftwich, Director James Taylor, Assistant Director Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Cimarex- Marquardt 12H were received by TraceAnalysis, Inc. on 2016-11-15 and assigned to work order 16111601. Samples for work order 16111601 were received intact at a temperature of 4.4 C.

Samples were analyzed for the following tests using their respective methods.

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	113525	2016-11-16 at 08:09	133915	2016-11-18 at 08:09
Chloride (Titration)	SM 4500-Cl B $$	113592	2016-11-20 at $10:50$	133991	2016-11-22 at $12:00$
Chloride (Titration)	SM 4500-Cl B $$	113596	2016-11-20 at $10:50$	133996	2016-11-22 at $12:30$
Chloride (Titration)	SM 4500-Cl B $$	113598	2016-11-20 at $10:50$	133999	2016-11-22 at $13:00$
TPH DRO	S 8015 D	113536	2016-11-17 at $16:00$	133927	2016-11-18 at 11:21
TPH GRO	S 8015 D	113525	2016-11-16 at $08:09$	133916	2016-11-18 at $08:12$

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16111601 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 432013 - AH-1 (0-6")

Laboratory:	Midland	1									
Analysis:	BTEX			A	Analyt	ical Metho	d: S 802	1B		Prep Meth	nod: S 5035
QC Batch:	133915			Ι	Date A	nalyzed:	2016-		Analyzed 1	By: AK	
Prep Batch:	113525			S	Sample	e Preparatio	on: 2016-		Prepared 1	By: AK	
			SDL	I	MQL	Method					
			Based	Е	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene	U	3	< 0.00456	< 0.	0212	< 0.00456	$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)						1.93	mg/Kg	1.06	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)						2.01	$\mathrm{mg/Kg}$	1.06	2.00	100	70 - 130

Sample: 432013 - AH-1 (0-6")

Laboratory:	Lubbocl	ĸ									
Analysis:	Chloride	e (Tit	ration)		Analytical	Method:	SM 4500-Cl	lΒ	Prep M	Prep Method:	
QC Batch:	133991				Date Analy	zed:	2016-11-22		Analyze	Analyzed By:	
Prep Batch:	113592				Sample Pre	paration:	2016-11-20		Prepare	ed By:	RL
			SDL	MQL	Method						
			Based	Based	Blank				MQL	M	DL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unad	justed)
Chloride	U		<104	<250	<104	mg/Kg	5	104	50	20).8

Sample: 432013 - AH-1 (0-6")

Laboratory:	Lubbock	ζ.								
Analysis:	TPH DI	RO		An	alytical Met	thod:	S 8015 D		Prep M	ethod: N/A
QC Batch:	133927			Da	te Analyzed	l:	2016-11-18		Analyze	ed By: HJ
Prep Batch:	113536			Sar	nple Prepar	ration:	2016-11-17		Prepare	ed By: HJ
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	$<\!\!8.47$	$<\!50.0$	< 8.47	mg/K	g 1	8.47	50	8.47

Report Date 212C-MD-00	: Novemb 659	er 28,	2016		Work Cimare	Order: 16 x- Marqua		Page Nur H	mber: 7 of 43 Eddy Co, NM	
Surrogate		F	С	Result	Units	Dilu	ition	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				18.9	mg/Kg		1	20.0	94	70 - 130
Sample: 43	2013 - A	H-1 ((0-6")							
Laboratory:	Midland			Anal	rtical Math	od. Co	015 D		Duon Moti	ad. S 5025
OC Batch	133916	10		Date	Analyzed	00: 5 c 201	6-11-18		Analyzed	R_{V} AK
Prep Batch:	113525			Sam	ple Prepara	tion: 201	6-11-16		Prepared 1	By: AK
			SDL	MQL	Method					
-	-	~	Based	Based	Blank			CDT	MQL	MDL
Parameter	F	С	Result	Result	Result	Units	Dilutio	n SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	$<\!\!4.24$	<1.86	mg/Kg	1.06	1.86	4	1.76
								Spike	Percent	Recovery

						Spike	Percent	Recovery
Surrogate	F	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	J		2.09	mg/Kg	1.06	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)	J		1.89	m mg/Kg	1.06	2.00	94	70 - 130

Sample: 432014 - AH-2 (0-1') (1' BEB)

Laboratory:	Midland	l											
Analysis:	BTEX			Analytical Method: S 8021B							Prep Method: S 5035		
QC Batch:	133915			Ι	Date A	nalyzed:	2016-	11-18		Analyzed By: AK			
Prep Batch:	113525			S	Sample	e Preparatio	on: 2016-1	Prepared By: AK					
			SDL	1	MQL	Method							
			Based	В	ased	Blank				MQL	MDL		
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)		
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01		
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156		
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151		
Xylene	U	3	$<\!0.00456$	< 0.	0212	< 0.00456	m mg/Kg	1.06	0.00456	0.02	0.0043		
									Spike	Percent	Recovery		
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits		
Trifluorotoluene (TFT)						1.98	mg/Kg	1.06	2.00	99	70 - 130		
4-Bromofluorobenzene (4-BFB)						2.03	$\mathrm{mg/Kg}$	1.06	2.00	102	70 - 130		

Sample: 432014 - AH-2 (0-1') (1' BEB)

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B $$	Prep Method:	N/A

Report Date 212C-MD-00	: Novemb)659	er 28	, 2016		Work Cimare	Order: 10 ex- Marqu	6111601 ardt 12H		Page Number: 8 Eddy Co			
QC Batch: Prep Batch:	$133991 \\ 113592$			Date Analyzed: Sample Preparatio			2016-11-22 2016-11-20		Analyzed By: RL Prepared By: RL			
			SDL Based	MQL Based	Method Blank				MQL	MDL		
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)		
Chloride	J		388	<500	<208	mg/Kg	10	208	50	20.8		

Sample: 432014 - AH-2 (0-1') (1' BEB)

n-Tricosane				19.7	mg/Kg		1	20.0	98	70 - 130
Surrogate		F	С	Result	Units	Dilı	ution	Amount	Recovery	Limits
								Spike	Percent	Recovery
DRO	U	1,2	< 8.47	$<\!50.0$	<8.47	mg/Kg	1	8.47	50	8.47
Parameter	\mathbf{F}	С	Result	Result	Result	Units	Dilution	n SDL	(Unadjusted)	(Unadjusted)
			Based	Based	Blank				MQL	MDL
			SDL	MQL	Method					
Prep Batch:	113536			Sar	nple Prepara	ation: 20)16-11-17		Prepare	ed By: HJ
QC Batch:	133927			Dat	te Analyzed:	20	016-11-18		Analyz	ed By: HJ
Analysis:	TPH D	RO		An	alytical Met	hod: S	8015 D		Prep M	lethod: N/A
Laboratory:	Lubboc	k								

Sample: 432014 - AH-2 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525		Prep Method: S 5035 Analyzed By: AK Prepared By: AK								
			SDL	М	[QL	Method				MOI	MDI
			Based	Ba	ised	Blank				MQL	MDL
Parameter	\mathbf{F}	С	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	<1.86	<4	4.24	$<\!1.86$	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amoun	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.07	mg/Kg	1.06	2.00	104	70 - 130
4-Bromofluor	obenzene	(4-BF	̈́Β)	J		1.86	mg/Kg	1.06	2.00	93	70 - 130

Sample: 432015 - AH-2 (1-1.5') (1' BEB)

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B $$	Prep Method:	N/A

Report Date 212C-MD-00	er 28	, 2016		Work Cimar	a Order: 10 ex- Marqu	Page Number: 9 of 43 Eddy Co, NM				
QC Batch: Prep Batch:	133991 113592				Date Analy Sample Pre	2016-11-22 2016-11-20		Analyzed By: RL Prepared By: RL		
D	F	C	SDL Based	MQL Based	Method Blank	T	Dilation	CDI	MQL	MDL
Parameter	F	C	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride	J		146	<250	<104	mg/Kg	5	104	50	20.8

Sample: 432016 - AH-2 (2-2.5') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133991 113592	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	l B	Prep Method: N/A Analyzed By: RL Prepared By: RL		
			SDL	MQL	Method						
			Based	Based	Blank				MQL	MI	DL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadj	justed)
Chloride	J		146	$<\!250$	<104	mg/Kg	5	104	50	20).8

Sample: 432017 - AH-3 (0-1') (6" BEB)

Laboratory:	Midland	1									
Analysis:	BTEX			A	Analyt	ical Metho	d: S 802	1B		Prep Meth	nod: S 5035
QC Batch:	C Batch: 133915				Date A	analyzed:	2016-	11-18		Analyzed 1	By: AK
Prep Batch:	113525			S	Sample Preparation: 2016-11-16				Prepared By: AK		
			SDL	I	MQL	Method					
			Based	Е	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	< 0.0212		< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.0212		< 0.0165	mg/Kg	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.0212		< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	$<\!0.00456$	< 0.	< 0.0212 < 0.00456 m		$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	.)				2.02	mg/Kg	1.06	2.00	101	70 - 130	
4-Bromofluor	e (4-]	BFB)			2.00	mg/Kg	1.06	2.00	100	70 - 130	

Sample: 432017 - AH-3 (0-1') (6" BEB)

Laboratory: Lubbock
Report Date 212C-MD-00	: Novemb 659	per 28	, 2016		Work Cimare	Order: 16 ex- Marqua	111601 ardt 12H		Page Number: 10 of 43 Eddy Co, NM		
Analysis: QC Batch: Prep Batch:	Chloride 133991 113592	e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyz Prepare	ethod: N/A ed By: RL ed By: RL	
Parameter	F	С	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)	
Chloride J 291 <500				<208	mg/Kg	10	208	50	20.8		

Sample: 432017 - AH-3 (0-1') (6" BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		Ana Dat Sar	alytical Met te Analyzed: nple Prepara	hod: S 20 ation: 20	8015 D 016-11-18 016-11-17		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ
			SDL Pagad	MQL Pagad	Method				MOI	MDI
Parameter	F	\mathbf{C}	Besult	Besult	Besult	Units	Dilutio	n SDL	(Unadjusted)	MDL (Unadjusted)
DRO	U	1,2	<8.47	<50.0	<8.47	mg/Kg	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dil	ution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		-		19.2	mg/Kg		1	20.0	96	70 - 130

Sample: 432017 - AH-3 (0-1') (6" BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	0			Anal Date Samp	ytical Meth Analyzed: ple Prepara	nod: S 80 2016 tion: 2016	015 D 3-11-18 3-11-16		Prep Meth Analyzed I Prepared I	nod: S 5035 By: AK By: AK
			SDL	Μ	[QL	Method					
			Based	Bε	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	<1.86	<4	1.24	<1.86	m mg/Kg	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amoun	Percent t Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.14	mg/Kg	1.06	2.00	107	70 - 130
4-Bromofluor	obenzene	(4 - BF	'B)	J		1.89	mg/Kg	1.06	2.00	94	70 - 130

Sample: 432018 - AH-4 (0-1') (1' BEB)

Laboratory: Midland

Report Date: 212C-MD-000	Novemb 659	per 2	8, 2016			Work (Cimarex		Page Number: 11 of 43 Eddy Co, NM			
Analysis: QC Batch: Prep Batch:	BTEX 133915 113525			A I S	analyt Date A ample	ical Methoo nalyzed: e Preparatio	Prep Meth Analyzed Prepared 1	nod: S 5035 By: AK By: AK			
			SDL	Ν	MQL	Method					
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	mg/Kg	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	<0.	0212	< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	$<\!0.00456$	< 0.	0212	$<\!0.00456$	$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				F	С	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ne (TFT)				2.05	mg/Kg	1.06	2.00	102	70 - 130
4-Bromofluor	obenzene	(4-H)	BFB)			2.08	$\mathrm{mg/Kg}$	1.06	2.00	104	70 - 130

Sample: 432018 - AH-4 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133991 113592	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride			3200	3200	<208	mg/Kg	10	208	50	20.8

Sample: 432018 - AH-4 (0-1') (1' BEB)

Laboratory:	Lubboc	K								
Analysis:	TPH D	RO		An	alytical Metl	hod: S	8015 D		Prep M	ethod: N/A
QC Batch:	133927			Da	te Analyzed:	2	016-11-18		Analyze	ed By: HJ
Prep Batch:	113536			Sar	nple Prepara	ation: 2	016-11-17		Prepare	ed By: HJ
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	n SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	<8.47	$<\!50.0$	<8.47	$\mathrm{mg/Kg}$	1	8.47	50	8.47
								Spike	Percent	Recovery
Surrogate		\mathbf{F}	\mathbf{C}	Result	Units	Dil	ution	Amount	Recovery	Limits
n-Tricosane				21.3	mg/Kg		1	20.0	106	70 - 130

Sample: 432018 - AH-4 (0-1') (1' BEB)

Report Date 212C-MD-00	: Novembe 659	er 28,	2016			Work Cimarez	Order: 161 <- Marquar		Page Number: 12 of 43 Eddy Co, NM		
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	ΰO			Anal Date Samp	ytical Meth Analyzed: ble Prepara	od: S 80 2016 tion: 2016)15 D 3-11-18 3-11-16		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK By: AK
			SDL	Ν	IQL	Method					
			Based	Bε	ased	Blank				MQL	MDL
Parameter	F	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\mathrm{Qr,U}}$	3	<1.86	<4	4.24	$<\!\!1.86$	mg/Kg	1.06	1.86	4	1.76
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	С	Result	Units	Dilution	Amour	nt Recovery	Limits
Trifluorotolue	ene (TFT)			J		2.14	mg/Kg	1.06	2.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)						1.89	$\mathrm{mg/Kg}$	1.06	2.00	94	70 - 130

Sample: 432019 - AH-4 (0-1.5') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133991 113592	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: ed By: ed By:	N/A RL RL
			SDL	MQL	Method				MOI	M	T
Parameter	\mathbf{F}	С	Based Result	Result	Blank Result	Units	Dilution	SDL	MQL (Unadiusted)	ML (Unadi	JL usted)
Chloride			680	680	<208	mg/Kg	10	208	50	20	.8

Sample: 432020 - AH-5 (0-1') (1' BEB)

Laboratory:	Midland									
Analysis:	BTEX			Analyt	ical Method	: S 802	1B		Prep Metl	nod: S 5035
QC Batch:	133915			Date A	nalyzed:	2016-1	11-18		Analyzed	By: AK
Prep Batch:	113525			Sample	e Preparatio	n: 2016-1	11-16		Prepared	By: AK
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	С	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	< 0.0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.0212	< 0.0165	mg/Kg	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.0212	< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	< 0.00456	< 0.0212	$<\!0.00456$	$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043

Report Date: November 28, 2016 212C-MD-00659			Work Cimare	Order: 161 ex- Marquar	l11601 rdt 12H		Page Numb Ec	ber: 13 of 43 ldy Co, NM
Surrogate	F	С	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1.06	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1.06	2.00	98	70 - 130

Sample: 432020 - AH-5 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133991 113592	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride			1070	1070	<208	mg/Kg	10	208	50	20.8

Sample: 432020 - AH-5 (0-1') (1' BEB)

Laboratory:	Lubboc	ĸ								
Analysis:	TPH D	RO		An	alytical Metl	hod: S	8015 D		Prep M	lethod: N/A
QC Batch:	133927			Da	te Analyzed:	2	016-11-18		Analyze	ed By: HJ
Prep Batch:	113536			Sar	nple Prepara	ation: 2	016-11-17		Prepare	ed By: HJ
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	n SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	$<\!8.47$	$<\!50.0$	<8.47	$\mathrm{mg/Kg}$	1	8.47	50	8.47
								Spike	Percent	Recovery
Surrogate		\mathbf{F}	\mathbf{C}	Result	Units	Dil	ution	Amount	Recovery	Limits
n-Tricosane				19.1	mg/Kg		1	20.0	96	70 - 130

Sample: 432020 - AH-5 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR0 133916 113525	О		Anal Date Samp	ytical Meth Analyzed: ple Prepara	od: S 80 2010 tion: 2010	015 D 6-11-18 6-11-16		Prep Met Analyzed Prepared	hod: S 5035 By: AK By: AK
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	<4.24	< 1.86	mg/Kg	1.06	1.86	4	1.76

Report Date: November 28, 2016 212C-MD-00659			Work Cimare	Page Number: 14 of 43 Eddy Co, NM				
Surrogate	F	С	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	J		2.01	mg/Kg	1.06	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)	J		1.78	mg/Kg	1.06	2.00	89	70 - 130

Sample: 432021 - AH-5 (1-1.5') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc Chloride 133991 113592	Lubbock Chloride (Titration) 133991 113592				Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride			874	874	<208	mg/Kg	10	208	50	20.8

Sample: 432022 - AH-6 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 133915 113525	l		A L S	analyt Date A ample	ical Methoo nalyzed: e Preparatio	l: S 802 2016-2 on: 2016-2	1B 11-18 11-16		Prep Meth Analyzed Prepared 1	nod: S 5035 By: AK By: AK
			SDL	ľ	AQL	Method					
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	< 0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	$<\!0.0165$	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene	U	3	$<\!0.00456$	< 0.	0212	< 0.00456	m mg/Kg	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	С	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ne (TFT)				1.96	mg/Kg	1.06	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)						1.95	m mg/Kg	1.06	2.00	98	70 - 130

Sample: 432022 - AH-6 (0-1') (1' BEB)

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	133991	Date Analyzed:	2016-11-22	Analyzed By:	RL
Prep Batch:	113592	Sample Preparation:	2016-11-20	Prepared By:	RL

Report Date: 212C-MD-0065	Report Date: November 28, 2016 212C-MD-00659					Order: 161 x- Marqua	Page Number: 15 of 43 Eddy Co, NM			
Parameter	F	С	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
Chloride			1650	1650	$<\!208$	m mg/Kg	10	208	50	20.8

Sample: 432022 - AH-6 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		Ana Dav Sar	alytical Metl te Analyzed: nple Prepara	hod: S 2 ation: 2	8015 D 016-11-18 016-11-17		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ
			SDL Based	MQL Based	Method Blank				MOL	MDL
Parameter	\mathbf{F}	С	Result	Result	Result	Units	Dilutio	on SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	<8.47	$<\!50.0$	<8.47	mg/Kg	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dil	ution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				18.8	mg/Kg		1	20.0	94	70 - 130

Sample: 432022 - AH-6 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR/ 133916 113525	0			Anal Date Samj	ytical Meth Analyzed: ple Prepara	od: S 80 2016 tion: 2016)15 D 3-11-18 3-11-16		Prep Meth Analyzed 1 Prepared 1	od: S 5035 By: AK By: AK
			SDL	Μ	QL	Method					
			Based	Ba	sed	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	<4	1.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amoun	Percent t Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.03	mg/Kg	1.06	2.00	102	70 - 130
4-Bromofluorobenzene (4-BFB)						1.78	mg/Kg	1.06	2.00	89	70 - 130

Sample: 432023 - AH-7(0-1') (1' BEB)

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	133915	Date Analyzed:	2016-11-18	Analyzed By:	AK
Prep Batch:	113525	Sample Preparation:	2016-11-16	Prepared By:	AK

Report Date: N 212C-MD-00659	ovemb)	per 2	8, 2016			Work C Cimarex	Order: 161 - Marquar		Page Number: 16 of 43 Eddy Co, NM		
			SDL	l	MQL	Method					
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	mg/Kg	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	< 0.00456	<0.	0212	< 0.00456	mg/Kg	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	С	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)						1.95	mg/Kg	1.06	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)						1.93	$\mathrm{mg/Kg}$	1.06	2.00	96	70 - 130

Sample: 432023 - AH-7(0-1') (1' BEB)

-			~ / `	,						
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133996 113596	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL Based	MQL Based	Method Blank				MOL	MDL
Parameter	\mathbf{F}	С	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride			1660	1660	<208	mg/Kg	10	208	50	20.8

Sample: 432023 - AH-7(0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboo TPH D 133927 113536	k RO		Ana Dat Sar	alytical Metl te Analyzed: nple Prepara	Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ			
Parameter	F	С	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	n SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO	U	1,2	$<\!\!8.47$	$<\!50.0$	<8.47	$\mathrm{mg/Kg}$	1	8.47	50	8.47
Surrogate n-Tricosane		F	С	Result 18.1	Units mg/Kg	Dilu	tion l	Spike Amount 20.0	Percent Recovery 90	Recovery Limits 70 - 130

Sample: 432023 - AH-7(0-1') (1' BEB)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	133916	Date Analyzed:	2016-11-18	Analyzed By:	AK

Report Date 212C-MD-00	: Novembe 659	er 28,	2016			Work Cimarez	Order: 161 x- Marquar	11601 dt 12H		Page Number: 17 of 43 Eddy Co, NM		
Prep Batch:	113525				Samp	ole Prepara	tion: 2016	3-11-16		Prepared I	By: AK	
			SDL	М	QL	Method						
			Based	Ba	sed	Blank				MQL	MDL	
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)	
GRO	$_{\rm Qr,U}$	3	< 1.86	<4	1.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76	
Surrogate				F	С	Result	Units	Dilution	Spike Amour	Percent nt Recovery	Recovery Limits	
Trifluorotolue	ene (TFT)			J		2.04	mg/Kg	1.06	2.00	102	70 - 130	
4-Bromofluor	obenzene ((4 - BF	B)	J		1.77	$\mathrm{mg/Kg}$	1.06	2.00	88	70 - 130	

Sample: 432024 - AH-8 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 133915 113525			A I S	analyt Date A ample	ical Method .nalyzed: e Preparatio	d: S 802 2016-1 on: 2016-1	1B 11-18 11-16		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK 3y: AK
-			SDL	ľ	AQL	Method				1	U
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	mg/Kg	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	<0.	0212	< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	< 0.00456	<0.	0212	< 0.00456	mg/Kg	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ne (TFT)				1.95	mg/Kg	1.06	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)						1.96	mg/Kg	1.06	2.00	98	70 - 130

Sample: 432024 - AH-8 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133996 113596	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	l B	Prep M Analyze Prepare	ethod: ed By: ed By:	N/A RL RL
			SDL	MQL	Method						
			Based	Based	Blank				MQL	MI	DL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadj	usted)
Chloride			4430	4430	<104	mg/Kg	5	104	50	20	.8

Sample: 432024 - AH-8 (0-1')

Report Date 212C-MD-00	: Novem 0659	ber 28	8, 2016		Work (Cimarex	Order: 161 - Marqua		Page Number: 18 of 43 Eddy Co, NM		
Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		An Da Sar	alytical Metl te Analyzed: nple Prepara	hod: S 8 20 ation: 20		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ	
	_		SDL Based	MQL Based	Method Blank				MQL	MDL
Parameter	F	С	Result	Result	Result	Units	Dilution	$\frac{n SDL}{2.47}$	(Unadjusted)	(Unadjusted)
DRO	U	1,2	<8.47	<50.0	<8.47	mg/Kg	1	8.47 Spike	50 Percent	8.47 Becovery
Surrogate		F	\mathbf{C}	Result	Units	Dilu	tion	Amount	Recovery	Limits
n-Tricosane				19.0 mg/Kg 1 20.0			20.0	95 70 - 130		

Sample: 432024 - AH-8 (0-1')

Laboratory:	Midland										
Analysis:	TPH GR	0			Anal	ytical Meth	nod: S 80)15 D		Prep Meth	nod: S 5035
QC Batch:	133916				Date	Analyzed:	2010	6-11-18		Analyzed 1	By: AK
Prep Batch:	113525				Sam	ple Prepara	tion: 2010	6-11-16		Prepared I	By: AK
			SDL	N	ÍQL	Method					
			Based	Ba	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	С	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\mathrm{Qr,U}}$	3	< 1.86	<	4.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amoun	t Recovery	Limits
Trifluorotolu	ene (TFT)			J		2.02	mg/Kg	1.06	2.00	101	70 - 130
4-Bromofluor	obenzene	(4-BF)	FB)	J		1.79	$\mathrm{mg/Kg}$	1.06	2.00	90	70 - 130

Sample: 432025 - AH-8 (1-1.5')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133996 113596	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	l B	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride	J		146	$<\!\!250$	<104	mg/Kg	5	104	50	20.8

Sample: 432026 - AH-9 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midla BTE 13391 11352	and X 15 25	l		A I S	Analyt Date A Cample	ical Methoo nalyzed: e Preparatio	l: S 802 2016- on: 2016-	1B 11-18 11-16		Prep Meth Analyzed Prepared 1	nod: S 5035 By: AK By: AK
				SDL	1	AQL	Method					
				Based	В	ased	Blank				MQL	MDL
Parameter		F	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene		U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene		U	3	$<\!0.0165$	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene		U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene		U	3	$<\!0.00456$	< 0.	0212	< 0.00456	m mg/Kg	1.06	0.00456	0.02	0.0043
					F	G		TT •		Spike	Percent	Recovery
Surrogate						С	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)							2.01	m mg/Kg	1.06	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)							1.97	m mg/Kg	1.06	2.00	98	70 - 130

Sample: 432026 - AH-9 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbocl Chloride 133996 113596	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: ed By: ed By:	N/A RL RL
			SDL	MQL	Method						
			Based	Based	Blank				MQL	MI	DL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadj	justed)
Chloride	J		146	$<\!\!250$	<104	mg/Kg	5	104	50	20	.8

Sample: 432026 - AH-9 (0-1') (1' BEB)

Laboratory:	Lubboc	k										
Analysis:	TPH D	RO		An	alytical Metl	hod: S	S 8015 D			Prep M	lethod:	N/A
QC Batch:	133927			Da	te Analyzed:	6 2	2016-11-18	3		Analyze	ed By:	НJ
Prep Batch:	113536			Sar	nple Prepara	ation: 2	2016-11-17	7		Prepare	ed By:	HJ
			SDL	MQL	Method							
			Based	Based	Blank					MQL	Μ	DL
Parameter	\mathbf{F}	С	Result	Result	Result	Units	Diluti	on SI	DL	(Unadjusted)	(Unad	ljusted)
DRO	U	1,2	$<\!\!8.47$	$<\!50.0$	$<\!\!8.47$	mg/Kg	g 1	8.	47	50	8.	.47
								Spike	Э	Percent	Ree	covery
Surrogate		\mathbf{F}	\mathbf{C}	Result	Units	Di	lution	Amou	nt	Recovery	Li	$_{ m imits}$
n-Tricosane				19.3	mg/Kg		1	20.0		96	70	- 130

Report Date 212C-MD-00	: Novembe 659	er 28,	2016		Work Cimares	Order: 161 x- Marquar	11601 dt 12H		Page Nur	nber: 20 of 43 Eddy Co, NM
Sample: 43	2026 - Al	H-9 (0-1') (1'	BEB)						
Laboratory:	Midland									
Analysis:	TPH GR	0		Anal	vtical Meth	od: S 80		Prep Met	hod: S 5035	
QC Batch:	133916			Date	Analyzed:	2016	6-11-18		Analyzed	By: AK
Prep Batch:	113525			Samj	ple Prepara	tion: 2016		Prepared	By: AK	
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	lt Result Result Units Dilution SD				SDL	(Unadjusted)	(Unadjusted)
GRO	Qr,U	3	<1.86	<4.24	<1.86	mg/Kg	1.06	1.86	4	1.76

GRU	Qr,U 3		< 1.80	<4	1.24	<1.60	mg/ ng	1.00	1.80	4	1.70
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene	e (TFT)			J		2.07	mg/Kg	1.06	2.00	104	70 - 130
4-Bromofluorob	enzene (4-E	BFB)		J		1.80	$\mathrm{mg/Kg}$	1.06	2.00	90	70 - 130

Sample: 432027 - AH-10 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midla BTE2 13391 11352	and X 15 25	l		Analytical Method:S 8021BDate Analyzed:2016-11-18Sample Preparation:2016-11-16						Prep Method: S 5035 Analyzed By: AK Prepared By: AK		
				SDL	l	AQL	Method						
				Based	В	ased	Blank				MQL	MDL	
Parameter		F	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)	
Benzene		U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01	
Toluene		U	3	$<\!0.0165$	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156	
Ethylbenzene		U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151	
Xylene		U	3	$<\!0.00456$	< 0.	0212	< 0.00456	$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043	
Surrogate					F	С	Result	Units	Dilution	Spike Amount	Percent Recoverv	Recovery Limits	
Trifluorotolue	ene (T	FΤ)		-	Ũ	1.96	mg/Kg	1.06	2.00	98	70 - 130	
4-Bromofluorobenzene (4-BFB)						1.97	mg/Kg	1.06	2.00	98	70 - 130		

Sample: 432027 - AH-10 (0-1')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	133996	Date Analyzed:	2016-11-22	Analyzed By:	\mathbf{RL}
Prep Batch:	113596	Sample Preparation:	2016-11-20	Prepared By:	RL

Report Date: N 212C-MD-00659	ber 28	, 2016	Work Order: 16111601 Cimarex- Marquardt 12H					Page Number: 21 of 43 Eddy Co, NM		
Parameter Chloride	F	С	SDL Based Result 292	MQL Based Result 292	Method Blank Result <104	Units mg/Kg	Dilution	SDL 104	MQL (Unadjusted) 50	MDL (Unadjusted) 20.8

Sample: 432027 - AH-10 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		Ana Dat Sar	alytical Metl te Analyzed: nple Prepara	Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ			
			SDL	MQL	Method				MOI	MDI
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilutio	n SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	<8.47	$<\!50.0$	<8.47	$\mathrm{mg/Kg}$	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dil	ution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				20.2	mg/Kg		1	20.0	101	70 - 130

Sample: 432027 - AH-10 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	0		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK By: AK						
			SDL	Μ	QL	Method					
			Based	Bε	sed	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	<4	1.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amoun	Percent t Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.05	mg/Kg	1.06	2.00	102	70 - 130
4-Bromofluor	obenzene	(4-BF	B)	J		1.80	mg/Kg	1.06	2.00	90	70 - 130

Sample: 432028 - AH-10 (1-1.5')

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B $$	Prep Method:	N/A
QC Batch:	133996	Date Analyzed:	2016-11-22	Analyzed By:	\mathbf{RL}
Prep Batch:	113596	Sample Preparation:	2016-11-20	Prepared By:	RL

Report Date: 212C-MD-006	per 28	3, 2016		Work Order: 16111601 Cimarex- Marquardt 12H					nber: 22 of 43 Eddy Co, NM	
			SDL Based	MQL Based	Method Blank				MQL	MDL
Parameter F C Result				Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride u <104				$<\!250$	<104	mg/Kg	5	104	50	20.8

Sample: 432029 - AH-11 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Midl BTE 1339 1135	lanc 2X 15 25	1		Analytical Method:S 8021BDate Analyzed:2016-11-18Sample Preparation:2016-11-16						Prep Meth Analyzed Prepared	nod: S 5035 By: AK By: AK
				SDL	l	MQL	Method					
				Based	В	ased	Blank				MQL	MDL
Parameter		\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene		U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene		U	3	< 0.0165	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene		U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene		U	3	$<\!0.00456$	< 0.	0212	< 0.00456	m mg/Kg	1.06	0.00456	0.02	0.0043
Sumogata					F	C	Decult	Unita	Dilution	Spike	Percent	Recovery
Surrogate	/7				Г	U	Result	Units	Dilution	Amount	Recovery	Limits
Triffuorotolue	ene ('I	. F ″I)				1.95	mg/Kg	1.06	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)							1.94	m mg/Kg	1.06	2.00	97	70 - 130

Sample: 432029 - AH-11 (0-1') (1' BEB)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride 133996 113596	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	l B	Prep M Analyze Prepare	Prep Method: Analyzed By: Prepared By:	
			SDL	MQL	Method						
			Based	Based	Blank				MQL	MD)L
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadju	isted)
Chloride			341	341	<104	mg/Kg	5	104	50	20.	8

Sample: 432029 - AH-11 (0-1') (1' BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	133927	Date Analyzed:	2016-11-18	Analyzed By:	ΗJ
Prep Batch:	113536	Sample Preparation:	2016-11-17	Prepared By:	HJ

Report Date: N 212C-MD-0065	Novem 9	ber 28	, 2016		Work C Cimarex	Page Number: 23 of 43 Eddy Co, NM				
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter F C Result				Result	Result	Units	Dilution	ion SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	$<\!\!8.47$	$<\!50.0$	$<\!\!8.47$	mg/Kg	1	8.47	50	8.47
								Spike	Percent	Recovery
Surrogate F C				Result	Units	Units Dilution Amount		Amount	Recovery	Limits
n-Tricosane				21.5	mg/Kg	1	_	20.0	108	70 - 130

Sample: 432029 - AH-11 (0-1') (1' BEB)

Laboratory:	Midland										
Analysis:	TPH GR	0			Anal	ytical Meth	nod: S 80	15 D		Prep Meth	od: S 5035
QC Batch:	133916				Date	Analyzed:	2016	6-11-18		Analyzed 1	By: AK
Prep Batch:	113525				Prepared I	By: AK					
			SDL	Ν	[QL	Method					
			Based	Bε	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	<1.86	<4	4.24	<1.86	mg/Kg	1.06	1.86	4	1.76
						_			Spike	Percent	Recovery
Surrogate				F	С	Result	Units	Dilution	Amour	nt Recovery	Limits
Trifluorotolue	ene (TFT)			J		2.06	m mg/Kg	1.06	2.00	103	70 - 130
4-Bromofluor	obenzene	(4-BF)	Έ)	J		1.80	$\mathrm{mg/Kg}$	1.06	2.00	90	70 - 130

Sample: 432030 - AH-12 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 133915 113525			A I S	analyt Date A ample	ical Methoo .nalyzed: e Preparatio	d: S 802 2016- pn: 2016-	1B 11-18 11-16		Prep Meth Analyzed Prepared I	od: S 5035 By: AK By: AK
			SDL	ľ	ЛQL	Method					
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	$<\!0.0165$	< 0.	0212	$<\!0.0165$	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	mg/Kg	1.06	0.0160	0.02	0.0151
Xylene	U	3	$<\!0.00456$	< 0.	0212	< 0.00456	m mg/Kg	1.06	0.00456	0.02	0.0043
Surrogate				F	С	Result	Units	Dilution	Spike	Percent	Recovery Limits
Triffugate	no (TTT			г	U	2.04	mg/Kg	1.06	2.00	102	70 120
4 Bromofluor) (4 e	REB)			2.04	mg/Kg	1.00	2.00 2.00	102	70 - 130 70 - 130
-Diomonuor	DOUIZEIIE	(- T -T	<u>, , , , , , , , , , , , , , , , , , , </u>			1.33	$m_{g/} m_{g}$	1.00	2.00	100	10 - 130

Novemł 659	ber 28	, 2016		Work Cimare	Order: 16 x- Marqua	111601 ardt 12H		Page Number: 24 of 43 Eddy Co, NM		
2030 - A	AH-12	2 (0-1')								
Laboratory: Lubbock Analysis: Chloride (Titration) QC Batch: 133996 Prep Batch: 113596					Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	lethod: N/A ed By: RL ed By: RL	
		SDL Based	MQL Based	Method Blank				MQL	MDL	
ParameterFCResultResultChloride37003700					Units mg/Kg	Dilution 10	$\frac{\text{SDL}}{208}$	(Unadjusted) 50	(Unadjusted) 20.8	
	Noveml 659 2030 - A Lubboc Chlorid 133996 113596 F	November 28 659 2030 - AH-12 Lubbock Chloride (Tit 133996 113596 F C	November 28, 2016 659 2030 - AH-12 (0-1') Lubbock Chloride (Titration) 133996 113596 SDL Based F C Result 3700	November 28, 2016 659 2030 - AH-12 (0-1') Lubbock Chloride (Titration) 133996 113596 SDL MQL Based Based F C Result Result 3700 3700	November 28, 2016 Work 659 Cimare 2030 - AH-12 (0-1') Cimare Lubbock Analytical 1 Chloride (Titration) Analytical 1 133996 Date Analy 113596 Sample Pre SDL <mql< td=""> Method Based Based F C 3700 3700</mql<>	November 28, 2016 Work Order: 16 659 Cimarex- Marqua 2030 - AH-12 (0-1') Image: Comparison of the state of t	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Work Order: 16111601 Cimarex- Marquardt $12H$ Cost Constant of Cimare Cimare Constant of Cimare Cimar	November 28, 2016 Work Order: 16111601 Page Nur 659 Cimarex- Marquardt 12H Page Nur 2030 - AH-12 (0-1') Analytical Method: SM 4500-Cl B Prep M Lubbock Analytical Method: SM 4500-Cl B Prep M 133996 Date Analyzed: 2016-11-22 Analyzz 113596 Sample Preparation: 2016-11-20 Prepare SDL MQL Method MQL F C Result Result Units Dilution SDL (Unadjusted) 3700 3700 <208	

Sample: 432030 - AH-12 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		Ana Dat Sar	alytical Metl te Analyzed: nple Prepara	hod: S 20 ation: 20	8015 D 916-11-18 916-11-17		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ
			SDL Based	MQL Based	Method Blank				MOL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilutior	n SDL	\sim (Unadjusted)	(Unadjusted)
DRO	U	1,2	< 8.47	$<\!50.0$	<8.47	$\mathrm{mg/Kg}$	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dilu	ition	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				20.2	mg/Kg	-	1	20.0	101	70 - 130

Sample: 432030 - AH-12 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	0			Anal Date Samp	ytical Meth Analyzed: ple Prepara	od: S 80 2016 tion: 2016	015 D 3-11-18 3-11-16		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK By: AK
			SDL	Μ	QL	Method					
			Based	Bε	sed	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	<4	1.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amour	Percent at Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.10	mg/Kg	1.06	2.00	105	70 - 130
4-Bromofluor	obenzene ((4 - BF	B)	J		1.83	mg/Kg	1.06	2.00	92	70 - 130

Report Date 212C-MD-00	: Novem 659	ber 28	3, 2016		Work Cimare	Order: 16 ex- Marqua		Page Number: 25 of 43 Eddy Co, NM		
Sample: 43	2031 - A	AH-12	2 (1-1.5')							
Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc Chlorid 133996 113596	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
Parameter	F	С	SDL Based Besult	MQL Based Besult	Method Blank Besult	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
Internet in the stateInternet in the stateChloride36003600					<208	mg/Kg	10	208	50	20.8

Sample: 432032 - AH-12 (2-2.5')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbocl Chloride 133996 113596	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	ΙB	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride	J		487	<500	<208	mg/Kg	10	208	50	20.8

Sample: 432033 - AH-13 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 133915 113525	l		A I S	Analyt Date A Sample	ical Methoo analyzed: e Preparatio	l: S 802 2016- on: 2016-	1B 11-18 11-16		Prep Meth Analyzed Prepared	nod: S 5035 By: AK By: AK
			SDL	l	MQL	Method					
			Based	В	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	<0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene	U	3	$<\!0.00456$	< 0.	0212	$<\!0.00456$	mg/Kg	1.06	0.00456	0.02	0.0043
Surrogato				F	C	Bosult	Unite	Dilution	Spike	Percent	Recovery
Tu:Auratalia	(TET	1)		Г	U	1 oc			Amount		$\frac{1111110}{70, 120}$
1rinuorotolue	ene (IFI)				1.86	mg/Kg	1.06	2.00	93	70 - 130
4-Bromofluor	obenzene	(4-l	SFB)			1.88	mg/Kg	1.06	2.00	94	70 - 130

Report Date 212C-MD-00	: Noveml 659	ber 28	3, 2016		Work Cimare	Order: 16 x- Marqua	111601 urdt 12H		Page Number: 26 of 43 Eddy Co, NM		
Sample: 43	2033 - A	AH-13	3 (0-1')								
Laboratory: Lubbock Analysis: Chloride (Titration) QC Batch: 133999 Prep Batch: 113598					Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	В	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL	
			SDL Based	MQL Based	Method Blank				MQL	MDL	
Parameter F C Result Result					Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)	
Chloride 7010 7010					<208	mg/Kg	10	208	50	20.8	

Sample: 432033 - AH-13 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboo TPH D 133927 113536	k RO		Ana Dat Sar	alytical Metl te Analyzed: nple Prepara	hod: S 20 ation: 20	8015 D 16-11-18 16-11-17		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ
			SDL Based	MQL Based	Method Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	n SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	< 8.47	<50.0	<8.47	mg/Kg	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dilu	ition	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				20.3	mg/Kg		1	20.0	102	70 - 130

Sample: 432033 - AH-13 (0-1')

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	0			Anal Date Samp	ytical Meth Analyzed: ple Prepara	od: S 80 2016 tion: 2016	015 D 3-11-18 3-11-16		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK By: AK
			SDL	Μ	QL	Method					
			Based	Bε	sed	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	< 1.86	<4	1.24	<1.86	mg/Kg	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amour	Percent at Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		1.96	mg/Kg	1.06	2.00	98	70 - 130
4-Bromofluor	obenzene ((4 - BF	B)	J		1.74	mg/Kg	1.06	2.00	87	70 - 130

Report Date 212C-MD-00	: Novem 659	ber 28	3, 2016		Work Cimare	Order: 16 ex- Marqua		Page Number: 27 of 43 Eddy Co, NM		
Sample: 43	2034 - A	AH-1 :	3 (1-1.5')							
Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc Chlorid 133999 113598	k e (Tit	ration)		Analytical Date Analy Sample Pre	Method: zed: paration:	SM 4500-Cl 2016-11-22 2016-11-20	ΙB	Prep M Analyz Prepare	ethod: N/A ed By: RL ed By: RL
Parameter	F	С	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
Chloride	J		487	<500	<208	mg/Kg	10	208	50	20.8

Sample: 432035 - AH-13 (2-2.5')

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc Chloride 133999 113598	k e (Tit	ration)		Analytical I Date Analy Sample Pre	Method: zed: paration:	SM 4500-C 2016-11-22 2016-11-20	l B	Prep M Analyze Prepare	ethod: N/A ed By: RL ed By: RL
			SDL	MQL	Method					
			Based	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Chloride	U		<104	<250	<104	mg/Kg	5	104	50	20.8

Sample: 432036 - Background (0-1)

Laboratory: Analysis: QC Batch: Prep Batch:	atory: Midland is: BTEX Analytical Method: S 8021B Atch: 133915 Date Analyzed: 2016-11-18 Batch: 113525 Sample Preparation: 2016-11-16								Prep Meth Analyzed Prepared I	nod: S 5035 By: AK By: AK	
			SDL]	MQL	Method					
			Based	E	Based	Blank				MQL	MDL
Parameter	\mathbf{F}	С	Result	R	esult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
Benzene	U	3	< 0.0106	< 0.	0212	< 0.0106	mg/Kg	1.06	0.0106	0.02	0.01
Toluene	U	3	< 0.0165	< 0.	0212	< 0.0165	$\mathrm{mg/Kg}$	1.06	0.0165	0.02	0.0156
Ethylbenzene	U	3	< 0.0160	< 0.	0212	< 0.0160	$\mathrm{mg/Kg}$	1.06	0.0160	0.02	0.0151
Xylene	U	3	< 0.00456	< 0.	0212	< 0.00456	$\mathrm{mg/Kg}$	1.06	0.00456	0.02	0.0043
									Spike	Percent	Recovery
Surrogate				\mathbf{F}	\mathbf{C}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TF	<u>Γ)</u>				1.98	mg/Kg	1.06	2.00	99	70 - 130
4-Bromofluor	obenzen	e (4	-BFB)			1.96	$\mathrm{mg/Kg}$	1.06	2.00	98	70 - 130

t 12H Eddy Co, NM
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Sample: 432036 - Background (0-1)

Laboratory:	Lubbocl	k									
Analysis:	Chloride	e (Tit	ration)		Analytical 1	Method:	SM 4500-C	lΒ	Prep M	ethod:	N/A
QC Batch:	133999				Date Analy	zed:	2016-11-22		Analyze	ed By:	RL
Prep Batch:	113598				Sample Pre	paration:	2016-11-20		Prepare	ed By:	RL
			SDL	MQL	Method						
			Based	Based	Blank				MQL	M	DL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilution	SDL	(Unadjusted)	(Unad	justed)
Chloride	J		146	$<\!\!250$	<104	m mg/Kg	5	104	50	20).8

Sample: 432036 - Background (0-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubboc TPH D 133927 113536	k RO		Ana Dat Sar	alytical Metl te Analyzed: nple Prepara	hod: S 2 ation: 2	8015 D 016-11-18 016-11-17		Prep M Analyze Prepare	ethod: N/A ed By: HJ ed By: HJ
			SDL Based	MQL Based	Method Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Result	Result	Units	Dilutio	on SDL	(Unadjusted)	(Unadjusted)
DRO	U	1,2	$<\!\!8.47$	$<\!50.0$	$<\!\!8.47$	mg/Kg	1	8.47	50	8.47
Surrogate		F	С	Result	Units	Dil	ution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				20.4	mg/Kg		1	20.0	102	70 - 130

Sample: 432036 - Background (0-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR 133916 113525	0			Anal Date Samp	ytical Meth Analyzed: ple Prepara	nod: S 80 2016 tion: 2016)15 D 5-11-18 5-11-16		Prep Meth Analyzed I Prepared I	od: S 5035 By: AK By: AK
			SDL	Μ	[QL	Method					
			Based	Bε	ased	Blank				MQL	MDL
Parameter	\mathbf{F}	\mathbf{C}	Result	Re	sult	Result	Units	Dilution	SDL	(Unadjusted)	(Unadjusted)
GRO	$_{\rm Qr,U}$	3	<1.86	<4	4.24	<1.86	$\mathrm{mg/Kg}$	1.06	1.86	4	1.76
Surrogate				F	С	Result	Units	Dilution	Spike Amour	Percent t Recovery	Recovery Limits
Trifluorotolue	ene (TFT)			J		2.08	mg/Kg	1.06	2.00	104	70 - 130
4-Bromofluor	obenzene ((4 - BF	Έ)	J		1.80	$\mathrm{mg/Kg}$	1.06	2.00	90	70 - 130

Method Blanks

Method Blank (1)

QC Batch: 133915		Dat	e Analyzed:	2016-11-18			Analyzed By: AK		
Prep Batch: 113525		QC	Preparation	: 2016-1	11-16		Prepared	l By: AK	
								Reporting	
Parameter	\mathbf{F}		\mathbf{C}		Result	Unit	s	Limits	
Benzene			3	<	< 0.0106	mg/ŀ	Хg	0.01	
Toluene			3	<	< 0.0165	mg/Kg		0.0156	
Ethylbenzene			3	<	< 0.0160	mg/F	Kg	0.0151	
Xylene			3	<	0.00456	mg/ł	Kg	0.0043	
						Spike	Percent	Recovery	
Surrogate	\mathbf{F}	С	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotoluene (TFT)			2.04	mg/Kg	1.06	2.00	102	70 - 130	
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1.06	2.00	94	70 - 130	

Method Blank (1)

Prep Batch: 113525			Dat QC	e Analyzeo Preparatio	$\begin{array}{llllllllllllllllllllllllllllllllllll$	11-18 11-16	Analyzed By: A Prepared By: A			
Parameter	F			С		Result	Unit	cs	Reporting Limits	
GRO			3			<1.86	mg/I	Кg	1.76	
Surrogate		F	С	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)				2.17	mg/Kg	1.06	2.00	108	70 - 130	
4-Bromofluorobenzene (4-BFB)				1.79	$\mathrm{mg/Kg}$	1.06	2.00	90	70 - 130	

Method Blank (1)

QC Batch:	133927		Date Analyzed:	2016-11-18		Analyzed By: HJ
Prep Batch:	113536		QC Preparation:	2016 - 11 - 17		Prepared By: HJ
						Reporting
Parameter		\mathbf{F}	\mathbf{C}	Result	Units	Limits
DRO			1,2	<8.47	m mg/Kg	8.47

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Surrogate n-Tricosane	F	С	Result 16.6	Units mg/Kg	Dilution 1	Spike Amount 20.0	Pe Ree	ercent covery 83	Rec Lin 70 -	overy nits - 130
Method Blank (1)										
QC Batch: 133991 Prep Batch: 113592			Date QC 1	Analyzed: Preparation:	2016-11-22 2016-11-20			Analyzed Prepared	l By: l By:	RL RL
Parameter		F	(C	Result		Units		Repo Lin	orting nits
Chloride					<20.8		mg/Kg		20	0.8
Method Blank (1)										
QC Batch: 133996 Prep Batch: 113596			Date QC 1	Analyzed: Preparation:	2016-11-22 2016-11-20			Analyzed Prepared	l By: l By:	RL RL
Parameter		F	(C	Result		Units		Repo Lin	orting nits
Chioride					<20.8		mg/Kg		20	0.8
Method Blank (1)										
QC Batch: 133999 Prep Batch: 113598			Date QC 1	Analyzed: Preparation:	2016-11-22 2016-11-20			Analyzed Prepared	l By: l By:	RL RL
Parameter		F	(0	Result		Units		Repo Lin	orting nits
Unionae					<20.8		mg/ ng		20	

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:	133915		Γ	Date Analy	A	Analyzed By: AK							
Prep Batch:	113525		Ç	QC Prepara	ation: 201	6-11-16		P	Prepared By: AK				
				LCS			Spike	Matrix		Rec.			
Param		\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit			
Benzene			3	1.86	mg/Kg	1.06	2.00	< 0.0106	93	70 - 130			
Toluene			3	1.95	m mg/Kg	1.06	2.00	$<\!0.0165$	98	70 - 130			
Ethylbenzene			3	1.99	m mg/Kg	1.06	2.00	< 0.0160	100	70 - 130			
Xylene			3	6.00	m mg/Kg	1.06	6.00	$<\!0.00456$	100	70 - 130			

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		3	1.98	mg/Kg	1.06	2.00	< 0.0106	99	70 - 130	6	20
Toluene		3	1.86	$\mathrm{mg/Kg}$	1.06	2.00	$<\!0.0165$	93	70 - 130	5	20
Ethylbenzene		3	1.85	mg/Kg	1.06	2.00	< 0.0160	92	70 - 130	7	20
Xylene		3	5.57	mg/Kg	1.06	6.00	< 0.00456	93	70 - 130	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

			LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	\mathbf{F}	\mathbf{C}	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)			2.02	1.92	mg/Kg	1.06	2.00	101	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	1.96	$\mathrm{mg/Kg}$	1.06	2.00	102	98	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	atch: 133916 Batch: 113525			ate Analyz C Preparat	ed: 2016 tion: 2016	Analyzed By: AK Prepared By: AK				
Param		F	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO			3	20.7	mg/Kg	1	20.0	< 1.76	104	70 - 130
Percent recov	very is based on the	spike res	ult. F	RPD is bas	ed on the s	pike and	l spike dupli	cate result.		

			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		3	22.0	$\mathrm{mg/Kg}$	1	20.0	$<\!\!1.76$	110	70 - 130	6	20

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Surrogate	F	С	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			$2.05 \\ 1.86$	2.03 1.88	mg/Kg mg/Kg	1 1	$2.00 \\ 2.00$	102 93	102 94	70 - 130 70 - 130
Laboratory Control Spike (L	CS- 1)									
QC Batch: 133927 Prep Batch: 113536			Date Ana QC Prep	alyzed: 2 aration: 2	2016-11-18 2016-11-17				Analyze Preparec	d By: HJ d By: HJ
Param	F	С	LCS Resul	t Units	s Dil.	Spil Amou	xe M unt Re	atrix esult	Rec.	Rec. Limit
DRO		1,2	116	mg/K	g 1	100) <	8.47	116	68.5 - 136
Percent recovery is based on the	spike re	sult.	RPD is	based on the	he spike ai	nd spike	duplicate	e result		
Param	F C	LO Re	CSD esult U	nits Dil.	Spike Amount	Matri Resul	ix lt Rec.	Re Lin	c. nit R	RPD PD Limit
DRO	1,2	1	.09 mg	m g/Kg = 1	100	<8.4	7 109	68.5 -	· 136	6 20
Percent recovery is based on the	spike re	sult.	RPD is	based on the	he spike ai	nd spike	duplicate	e result		
	TOP		LCED			Cm:1	ю Т	CC	LCCD	Dee
Surrogate F C	Result	t.	Result	Units	Dil	Ато	int B	CS ec	Rec	Limit
n-Tricosane	20.9		20.0	mg/Kg	1	20.0	$\frac{10}{10}$ 1	04	100	70 - 130
Laboratory Control Spike (L QC Batch: 133991 Prep Batch: 113592	CS-1)		Date Ana QC Prep	alyzed: 2 aration: 2	2016-11-22 2016-11-20				Analyzec Preparec	l By: RL l By: RL
Param	F	С	LCS Resu	S lt Unit	s Dil.	Sp: Ame	ike M ount H	/latrix Result	Rec.	Rec. Limit
Chloride			2720) mg/ł	(g 5	25	00	<104	109	85 - 115
Percent recovery is based on the	spike re	sult.	RPD is	based on the	he spike ai	nd spike	duplicate	e result		
Param	F C	L0 Re	CSDesult U	nits Dil	Spike . Amoun	Mat t Resi	rix ult Rec.	Re Lir	ec. nit R	RPD PD Limit

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

mg/Kg

5

2500

 $<\!104$

105

85 - 115

4

20

2620

Chloride

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Laboratory Control Spike (L	CS-	1)									
QC Batch: 133996			Date	e Analyze	d: 201	6-11-22			Ana	lyzed B	y: RL
Prep Batch: 113596			QC I	Preparati	on: 201	6-11-20			Prep	pared By	y: RL
				LCS			Spike	M	atrix		Rec.
Param		F	C I	Result	Units	Dil.	Amount	Re	esult I	lec.	Limit
Chloride				2630	mg/Kg	5	2500	<	104	105 8	85 - 115
Percent recovery is based on the s	spike	e res	ult. RP	D is base	d on the	spike and	spike dup	olicate	result.		
			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2630	mg/Kg	5 5	2500	<104	105	85 - 115	0	20
Laboratory Control Spike (L	CS-3	1)									
				A 1	1 001	C 11 00			٨	1 1 D	DI
QC Batch: 133999 Prop Batch: 113508			Date	e Analyze Proparati	d: 201 on: 201	6 11 20			Ana Pror	lyzed By	y: RL
11ep Daten. 115596			QU .	гераган	011. 201	10-11-20			TIE	Jared Dy	y. ILL
				LCS			Spike	M	atrix		Rec.
Param		F	C I	Result	Units	Dil.	Amount	Re	esult I	lec.	Limit
Chloride				2680	mg/Kg	5	2500	<	104	107 8	85 - 115
Percent recovery is based on the s	e res	ult. RP	D is base	d on the	spike and	spike dup	olicate	result.			
			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2680	mg/Kg	<u>5</u>	2500	<104	107	85 - 115	0	20

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 432013

QC Batch:	133915	Date Analyzed:	2016-11-18	Analyzed By:	$\mathbf{A}\mathbf{K}$
Prep Batch:	113525	QC Preparation:	2016-11-16	Prepared By:	AK

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		3	1.81	mg/Kg	1.06	2.00	< 0.0106	90	70 - 130
Toluene		3	1.80	m mg/Kg	1.06	2.00	< 0.0165	90	70 - 130
Ethylbenzene		3	1.88	m mg/Kg	1.06	2.00	< 0.0160	94	70 - 130
Xylene		3	5.63	m mg/Kg	1.06	6.00	$<\!0.00456$	94	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

			MSD			Spike	Matrix		RPD		
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		3	1.75	mg/Kg	1.06	2.00	< 0.0106	88	70 - 130	3	20
Toluene		3	1.76	$\mathrm{mg/Kg}$	1.06	2.00	< 0.0165	88	70 - 130	2	20
Ethylbenzene		3	1.91	$\mathrm{mg/Kg}$	1.06	2.00	< 0.0160	96	70 - 130	2	20
Xylene		3	5.84	$\mathrm{mg/Kg}$	1.06	6.00	< 0.00456	97	70 - 130	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

			MS	MSD			Spike	MS	MSD	Rec.
Surrogate	\mathbf{F}	\mathbf{C}	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)			2.09	1.99	mg/Kg	1.06	2	104	100	70 - 130
4-Bromofluorobenzene (4-BFB)			2.01	2.08	m mg/Kg	1.06	2	100	104	70 - 130

Matrix Spike (MS-1) Spiked Sample: 432013

QC Batch:	133916	Date Analyzed:	2016-11-18	Analyzed By:	AK
Prep Batch:	113525	QC Preparation:	2016-11-16	Prepared By:	AK

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		3	17.0	m mg/Kg	1	20.0	$<\!\!1.76$	85	70 - 130
Percent recovery is based on the spik	ke res	sult. F	RPD is bas	ed on the s	pike and	l spike dupli	cate result.		

			MSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	\mathbf{Qr}	3	20.8	$\mathrm{mg/Kg}$	1	20.0	<1.76	104	70 - 130	20	20

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			011		iquarut 12	211			Eu	uy 00, 1111
			MS	MSD			Spike	MS	MSD	Rec.
Surrogate	F	С	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)			1.97	2.02	mg/Kg	1	2	98	101	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	1.88	mg/Kg	1	2	92	94	70 - 130
Matrix Spike (MS-1) Spike	ed Samp	le: 43	32013							
QC Batch: 133927 Prep Batch: 113536		I (Date Ana QC Prepa	lyzed: 2 tration: 2	2016-11-18 2016-11-17]	Analyzec Preparec	l By: HJ l By: HJ
Param	F	С	MS Result	Units	5 Dil.	Spike Amou	e Ma nt Re	trix sult	Rec.	Rec. Limit
DRO		1,2	125	mg/K	g 1	100	<	3.47	125	49.3 - 138
Percent recovery is based on the	spike re	sult.	RPD is b	based on tl	o he spike ar	nd spike	duplicate	result.		
	~P		~~~		~ ··					
D	E C	MS	SD II	., D.1	Spike	Matrix	κ D	Rec	с. 	RPD
Param	FC	Res 19	Sult Un	$\frac{11}{100}$ $\frac{1}{100}$	Amount	Result	t Rec.	Lim 40.3	$\frac{128}{128}$	$\frac{PD}{0}$ $\frac{1000}{20}$
	1,2	12	1000000000000000000000000000000000000		100	<0.47	120	49.0 -	136	0 20
Percent recovery is based on the	spike re	sult.	RPD is d	based on th	ne spike an	ia spike	duplicate	result.		
	MS		MSD			Spik	æ N	AS	MSD	Rec.
Surrogate F C	Result	t	Result	Units	Dil.	Amou	int R	lec.	Rec.	Limit
n-Tricosane	23.0		23.2	mg/Kg	1	20	1	15	116	70 - 130
Matrix Spike (MS-1) Spike QC Batch: 133991 Prep Batch: 113592	ed Samp	le: 43 I (32022 Date Ana QC Prepa	lyzed: 2 ration: 2	2016-11-22 2016-11-20			A I	Analyzed Prepared	l By: RL By: RL
Param	F	С	MS Besult	t Unit	e Dil	Spil A mor	ke M	latrix	Rec	Rec.
Chloride	T.	0	4370	mg/k	. Dn. Xg 10	250	$\frac{10}{10}$	1650	109	80 - 120
Percent recovery is based on the	snike ro	sult	RPD is h	$\frac{1}{8}$	he snike or	d spike	dunlicato	result	100	
i creent recovery is based off the	spike re	suit.	101 10 18 1	ascu UII U	ne spike al	a spike	urpitate	resuit.	•	
		\mathbf{M}	SD		Spike	Matr	ix	Re	c.	RPD
Param	F C	Res	sult Ur	nits Dil.	Amount	t Resu	lt Rec.	Lin	nit RI	PD Limit
Chloride		43	570 mg	/Kg 10	2500	1650) 109	80 -	120 () 20

Report Date: November 28, 2016 212C-MD-00659	Work Order: 16111601 Cimarex- Marquardt 12H	Page Number: 36 of 43 Eddy Co, NM		
Matrix Spike (MS-1) Spiked Sample	: 432032			
QC Batch: 133996	Date Analyzed: 2016-11-22	Analyzed By: RL		
Prep Batch: 113596	QC Preparation: 2016-11-20	Prepared By: RL		
	MS Spike	Matrix Rec.		
Param F	C Result Units Dil. Amount	Result Rec. Limit		
Chloride	3020 mg/Kg = 10 = 2500	487 101 80 - 120		
Percent recovery is based on the spike rest	lt. RPD is based on the spike and spike dup	licate result.		
	MSD Spike Matrix	Bec. BPD		
Param F C	Result Units Dil. Amount Result	Rec. Limit RPD Limit		
Chloride	2920 mg/Kg 10 2500 487	97 80 - 120 3 20		
Matrix Spike (MS-1) Spiked Sample	: 432150			
OC Batch: 133999	Date Analyzed: 2016-11-22	Analyzed By: BL		
Prep Batch: 113598	QC Preparation: 2016-11-20	Prepared By: RL		
	MS Spike	Matrix Rec.		
Param F	C Result Units Dil. Amount	Result Rec. Limit		
Chloride	2920 mg/Kg 5 2500	389 101 80 - 120		
Percent recovery is based on the spike rest	lt. RPD is based on the spike and spike dup	licate result.		
	MSD Spike Matrix	Rec. RPD		
Param F C	Result Units Dil. Amount Result	Rec. Limit RPD Limit		
Chloride	2870 mg/Kg 5 2500 389	99 80 - 120 2 20		

Calibration Standards

Standard (CCV-1)

QC Batch:	133915			Date Analyzed:		2016-11-18		Analyzed By: AK		
					CCVs	CCVs	$\rm CCVs$	Percent		
					True	Found	Percent	Recovery	Date	
Param		\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Benzene			3	mg/kg	0.100	0.0894	89	80 - 120	2016-11-18	
Toluene			3	m mg/kg	0.100	0.0894	89	80 - 120	2016-11-18	
Ethylbenzene	e		3	m mg/kg	0.100	0.0922	92	80 - 120	2016-11-18	
Xylene			3	m mg/kg	0.300	0.277	92	80 - 120	2016-11-18	

Standard (CCV-2)

QC Batch:	133915			Date	Analyzed:	2016-11-18		Analyzed By: AK	
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene			3	mg/kg	0.100	0.105	105	80 - 120	2016-11-18
Toluene			3	m mg/kg	0.100	0.0991	99	80 - 120	2016-11-18
Ethylbenzen	e		3	m mg/kg	0.100	0.0982	98	80 - 120	2016-11-18
Xylene			3	m mg/kg	0.300	0.295	98	80 - 120	2016-11-18

Standard (CCV-3)

QC Batch: 133	915			Date	Date Analyzed:		2016-11-18		Analyzed By: AK		
					CCVs	$\rm CCVs$	CCVs	Percent			
					True	Found	Percent	Recovery	Date		
Param		F	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Benzene			3	mg/kg	0.100	0.103	103	80 - 120	2016-11-18		
Toluene			3	m mg/kg	0.100	0.104	104	80 - 120	2016-11-18		
Ethylbenzene			3	m mg/kg	0.100	0.0994	99	80 - 120	2016-11-18		
Xylene			3	m mg/kg	0.300	0.296	99	80 - 120	2016-11-18		

Standard (CCV-1)

QC Batch: 133916

Date Analyzed: 2016-11-18

Analyzed By: AK

Report Date 212C-MD-00	: November)659	28, 2016		Work Cimarex	Order: 16111 4- Marquardt	Page Number: 38 of 43 Eddy Co, NM		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		3	mg/Kg	1.00	1.04	104	80 - 120	2016-11-18

Standard (CCV-2)

QC Batch:	133916			Date Analyzed:	2016-11-18		Analy	Analyzed By: AK		
				CCVs	CCVs	CCVs	Percent			
				True	Found	Percent	Recovery	Date		
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
GRO		3	mg/Kg	1.00	0.990	99	80 - 120	2016-11-18		

Standard (CCV-3)

QC Batch:	133916		Ι	Date Analyzed:	2016-11-18	3	Analy	zed By: AK
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		3	mg/Kg	1.00	1.17	117	80 - 120	2016-11-18

Standard (CCV-1)

QC Batch:	133927			Date Analyzed:	2016-11-1	.8	Analyzed By: HJ		
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO		1,2	mg/Kg	100	84.4	84	80 - 120	2016-11-18	

Standard (CCV-2)

QC Batch:	133927			Date Analyzed: 2016-11-18			Analyzed By: HJ		
				CCVs	CCVs	CCVs Demosrat	Percent	Data	
				Irue	Found	Percent	Recovery	Date	
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO		1,2	mg/Kg	100	95.3	95	80 - 120	2016-11-18	

Report Date: November 28, 2016 212C-MD-00659				Work O Cimarex-	91 2H	Page Nu	mber: 39 of 43 Eddy Co, NM		
Standard ((ICV-1)								
QC Batch:	133991			Da	te Analyzed:	2016-11-22		Analy	vzed By: RL
Param		F	С	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2016-11-22
Standard ((CCV-1))							
QC Batch:	133991			Da	te Analyzed:	2016-11-22		Analy	zed By: RL
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param		F	С	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Standard ((ICV-1)								
QC Batch:	133996			Da	te Analyzed:	2016-11-22		Analy	vzed By: RL
					CCVs	CCVs	CCVs	Percent	
Daram		Б	С	Unita	True	Found	Percent	Limita	Date
Chloride		Ľ	U	mg/Kg	100	99.0	99	85 - 115	2016-11-22
Standard ((CCV-1))							
QC Batch:	133996			Da	te Analyzed:	2016-11-22		Analy	vzed By: RL
					CCVs	CCVs Found	CCVs Demograt	Percent	Data
Param		F	С	Unite	True	Conc	Percent	Limits	Date Analyzed
Chloride		T.	0	mg/Kg	100	101	101	85 - 115	2016-11-22
				mg/ ng	100	101	101	00 - 110	2010-11-22

Standard (ICV-1)

QC Batch: 133999

Date Analyzed: 2016-11-22

Analyzed By: RL

Report Date: 212C-MD-0065	November 2 59	8, 2016		Work C Cimarex-	Order: 161116 - Marquardt	Page Number: 40 of 43 Eddy Co, NM		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	\mathbf{F}	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2016-11-22

Standard (CCV-1)

QC Batch:	133999	133999			Date Analyzed:	2016-11-2	2	Analyzed By: R		
					CCVs	CCVs	CCVs Demosrat	Percent	Data	
					Irue	Found	Percent	Recovery	Date	
Param		F	\mathbf{C}	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride				mg/Kg	g 100	100	100	85 - 115	2016-11-22	

Page Number: 41 of 43 Eddy Co, NM

Limits of Detection (LOD)

					Spike	
Test	Method	Matrix	Instrument	Analyte	Amount	Pass
BTEX	S 8021B	soil	BTEX-2	Benzene	0.0128	Pass
BTEX	S 8021B	soil	BTEX-2	Toluene	0.0128	Pass
BTEX	S 8021B	soil	BTEX-2	Ethylbenzene	0.0128	Pass
BTEX	S 8021B	soil	BTEX-2	Xylene	0.0128	Pass
Chloride (Titration)	SM 4500-Cl B $$	soil	N/A	Chloride	50.0	Pass
TPH DRO	S 8015 D	soil	TPH-3	DRO	15.0	Pass
TPH GRO	S 8015 D	soil	BTEX-2	GRO	5.00	Pass

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying	Certification	Laboratory
\mathbf{C}	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	Kansas	Kansas E-10317	Lubbock
2	NELAP	T104704219-16-13	Lubbock
3	NELAP	T104704392-14-8	Midland

Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

I OF: 3	EST hod No.)	So	JT ,Hq ,a	c. Air) co) noitsO\a	Spromo Sermes () sted BriqiA () MJq SedcA) MJq shoinA toism											Date: //./#	AIRBILL #:	OTHER:	Results by:	RUSH Charges Authorized:	15 50mg/kg
PAGE:	ANALYSIS REQU (Circle or Specify Met		510/625 60/624 5 B4 Cd 5 B4 Cd	A DA 2 A PA 2 2 8 2 8 2 8 2 8 1 0 4 2 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8	PAH 8270 RCRA Metal TCLP Volatili RCLP Volatili RCI GC.MS Vol. 8 GC.MS Vol. 8 GC.MS Vol. 8 GC.MS Vol. 8 GC.MS Vol. 8 GC.MS Vol. 8 C.MS Vol											SAMPLED BY: (Print & Initial)	FEDEX BUS	HAND DELIVERED UPS	TETRA TECH CONTACT PERSON:	Ike Tauarez	, to ful BAEX EX CONTRACTOR
Iv Record			RESERVATIVE		BLEX 8051B HUO3 HUO3 HITLEBED (J MOWBEB OE	X X X N I	X X X N		I N X X	N X X X	XXX	N X X	IN X X X			Date: Wiblit	Date: Time:	Date:	Time:	TIME IN:53	Excrets 10-9/Kg
Chain of Custoc		KA TECH Big Spring St. 4, Texas 79705 4559 • Fax (432) 682-3946	INAGER: Tavare 2	arau ardt 12 H	SAMPLE IDENTIFICATION	0-6")	(0-1.) (1, 328)	1'-1.S) (1' BE B)	7-2.5) (1'BEB)	(0-1) (1, 050)	(0-1') (1'BEB)	1-1.5') (1'BED)	0-1) (1, GEB)	-1.5') (1'BEB)	() (, BEB)	RECEIVED BY (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	Date: 11/15/10	Vellow copy - Return Orginal copy to
Request of (-0	1910 N. Midlanc (432) 682-	SITE MA IKe	PROJECT NAME: Cimarcx - M	XIRTAM RNOO BARD I	S X AH-1 (S X AH - Z	5 X AH - 2 (S XAH-Z (S X AH - 3 (5 X AH - 4 C	S XAH-4 (5 XAH-5 Q	S X AH - 5 (1	5 XAH-6 (Date: 11. 15 Time:	Date: Time:	Date:	Гіте: С С	ZIP: PHONE:	1 9-5 REMARKS:
Analysis I	0		CLIENT NAME:	PROJECT NO.:	LAB I.D. NUMBER Zoi 6	132013 11.14	014.11.14	015 11.14	016 11.14	017 11.14	DI8 11.14	019 11.14	620 11.14	021 11.14	022 11.14	ELINQUISHED BY (Signature)	ELINQUISHED BY: (Signature)	ELINQUISHED BY: (Signature)	ECEIVING LABORATORY:	DDRESS: ITY: M: dl d STATE: ONTACT:	AMPLE CONDITION WHEN RECEIVED: Secolds (U. M. 11)

oF: 🔾	st d No.)		F ,Hq ,ar	c. tos) s/Catior	9q2 smmsĐ Beta (Pada Setasi noina vojeM noina vojeM											Date: 11.14 Time:	AIRBILL #:	OTHER:		HUSH Charges Authorized: Yes No	
PAGE: Z	ANALYSIS REQUES (Circle or Specify Metho	a Vr Pd Hg Se	570/625 5 Ba Co 5 Ba Co 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	MUM. 8 Ag As 88 Ag As 88 Ag As 8240/82 1, Vol. 83 608 86 88	PH 8075 PAH 8270 RCRA Metal TCLP Wetal TCLP Wetal TCLP Semi Y RCI GC.MS Vol. 8 GC.MS Vol. 8 GC.MS Vol. 8 Chloride	x	X	X	X	X			X		×	SAMPLED BY: (Print & Initial)	SAMPLE SHIPPED BY: (Circle) FEDEX BUS	HAND DELIVERED UPS TETRA TECH CONTACT PERSON:	1	1 Ke Javarez	90/36 (Jr.0
UN Record			RESERVATIVE METHOD		BLEX 8051B NONE ICE HUO3 LIFLEBED (V NOWBEB OE	X X X N N X X	1 N X X X	X X NI	X X X X	I N X X X	XX	X X X X	I W X X X	I N X X	1 N X X	release Times 10,053	Date: Time:	Date:	all a bet	TIME 16:55	Work II Lidi
Chain of Custo		XA TECH Big Spring St. , Texas 79705 4559 • Fax (432) 682-3946	NAGER: Taugrez	Wenself 12 H	AMPLE IDENTIFICATION	(0,-1,)(1,BEB	(0-1)	(1-1.5)	10-1) (1'BEB	(1-0)	(1-1.5)	(0-1) (1'BEB)	10 - 1)	(1-1.5)	(2-2.5)	RECEIVED BY Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	RECEIVED BY: (Signature)	DATE: 11/10/14	AS In In
Regulast of C		HET 1910 N. Midland (432) 682-4	SITE MAI	PROJECT NAME:	XIATAM RAMOD BARÐ	Z-HY	A14-8	AH-8	8-H- 9	A14-10	A14-10	AH-11	A 1-12	AH-12	A H - 12	Date: 16,15 Time:	Date: Time:	Date:	semi	H ZIP: PHONE: ZIP:	REMARKS:
Analvsis R			LIENT NAME:	PROJECT NO .:	LAB I.D. NUMBER ZOIL	32023 11.14	1 024 11.14	025 11.14	026 11.14	027 11.14	028 11.14	029 11.14	030 11.14	031 11.14	032 11.14	THELINOUISHED BY: Signature)	teLINQUISHED BY: (Signature)	IELINQUISHED BY: (Signature)	ECEIVING LABORATORY:	DDRESS: XITY: Mid/ d STATE: ONTACT:	AMPLE CONDITION WHEN RECEIVED:
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	Midland, lexas (432) 682-4559 • Fax	79705 (432) 682-3946					ot.tx3) o	Ar by H					N		so		-				
CLIENT NAME:	SITE MANAGER:	2172	SHERS	PRE	SERVA	INE O	1X100	Ba Cd		Þ29/09	929/02			00	IT ,Hq ,a						
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432033 11.14 S	(1-0) SI-HY X		I N		××	×	×					×									
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Outside County

Laboratory Number: 471335 Customer Sample ID: AH-1 0-6 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (ESI	ABLIS	HMEN	T)		
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	
рН	8.0	(5.8)	-	Mod. All	kaline						
Conductivity	1,420	(-)	umho/cm	Moderat	e		CI	*		Fertilizer Recommended	
Nitrate-N	3	(-)	ppm**	I						30 lbs N/acre	
Phosphorus	4	(50)	ppm							95 lbs P2O5/acre	
Potassium	46	(125)	ppm							60 lbs K20/acre	
Calcium	38,057	(180)	ppm						II	0 lbs Ca/acre	
Magnesium	517	(50)	ppm						II	0 lbs Mg/acre	
Sulfur	4,321	(13)	ppm							0 lbs S/acre	
Sodium	80	(-)	ppm		1111						
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement										0.00 tons 100ECCE/acre	
				Detaile	ed Sali	nity Te	est (Sa	turated	l Paste	Extract)	
				p⊦	1				7.4	l .	
				Co	onduct	ivity			3.20) mmhos/cm	
				Sc	odium				112	2 ppm 4.867 meq/L	
				Po	otassiu	m			16	ppm 0.413 meq/L	
				Ca	alcium				558	3 ppm 27.865 meq/L	
				Ma	agnesi	um			80	ppm 6.597 meq/L	
				SA	٩R				1.17		
				SS	SP				12.25	5	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471336 Customer Sample ID: AH-2 1-1 5 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: II	MPROVED	AND H		RMUDA	GRAS	S (ESI	TABLIS	HMEN	T)		
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	
рН	8.1	(5.8)	-	Mod. All	kaline						
Conductivity	1,750	(-)	umho/cm	High			CL	*		Fertil	izer Recommended
Nitrate-N	3	(-)	ppm**	I						3	30 lbs N/acre
Phosphorus	1	(50)	ppm	I						10	00 lbs P2O5/acre
Potassium	137	(125)	ppm					I I			0 lbs K20/acre
Calcium	26,772	(180)	ppm						11		0 lbs Ca/acre
Magnesium	1,083	(50)	ppm						Ш		0 lbs Mg/acre
Sulfur	4,656	(13)	ppm								0 lbs S/acre
Sodium	96	(-)	ppm								
Iron											
Zinc											
Manganese							i				
Copper							i i				
Boron											
Limestone Requirement										0.0	00 tons 100ECCE/acre
				Detaile	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)	
				pŀ	1				7.7	,	
				Co	onduct	ivity			4.64	mmhos/cm	ı
				Sc	odium				130	ppm	5.664 meq/L
				Po	otassiu	m			76	ppm	1.941 meq/L
				Ca	alcium				491	ppm	24.489 meq/L
				Ма	agnesi	um			364	ppm	29.924 meq/L
				SA	٩R				1.09		
				SS	SP				9.13	6	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471337 Customer Sample ID: AH-3 0-1 (6"BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		MUDA	GRAS	S (ESI	ABLIS	HMEN	T)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	7.9	(5.8)	-	Mod. All	kaline					
Conductivity	183	(-)	umho/cm	None			CI	<u>.</u>		Fertilizer Recommended
Nitrate-N	3	(-)	ppm**	I						30 lbs N/acre
Phosphorus	3	(50)	ppm							100 lbs P2O5/acre
Potassium	54	(125)	ppm			III				55 lbs K20/acre
Calcium	21,300	(180)	ppm						II	0 lbs Ca/acre
Magnesium	133	(50)	ppm					111		0 lbs Mg/acre
Sulfur	5,161	(13)	ppm							0 lbs S/acre
Sodium	272	(-)	ppm							
Iron										
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement										0.00 tons 100ECCE/acre
				Detail	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)
				pł	4				7.2	
				Co	onduct	ivity			8.07	' mmhos/cm
				Sc	odium				522	22.698 meq/L
				Po	otassiu	Im			26	ppm 0.658 meq/L
				Ca	alcium				1103	ppm 55.042 meq/L
				Ma	agnesi	um			10	ppm 0.804 meq/L
				SA	AR				4.30	
				SS	SP				28.66	i

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471338 Customer Sample ID: AH-4 1-1 5 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (EST	ABLIS	HMEN	T)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	8.6	(5.8)	-	Mod. All	kaline					
Conductivity	2,100	(-)	umho/cm	High			CI	<u>*</u>		Fertilizer Recommended
Nitrate-N	3	(-)	ppm**	I						30 lbs N/acre
Phosphorus	2	(50)	ppm	Ш						100 lbs P2O5/acre
Potassium	253	(125)	ppm					1111		0 lbs K20/acre
Calcium	21,084	(180)	ppm						II	0 lbs Ca/acre
Magnesium	961	(50)	ppm						II	0 lbs Mg/acre
Sulfur	5,250	(13)	ppm							0 lbs S/acre
Sodium	463	(-)	ppm							
Iron										
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement										0.00 tons 100ECCE/acre
				Detail	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)
				pł	1				8.2	
				Co	onduct	ivity			9.23	mmhos/cm
				Sc	odium				803	ppm 34.954 meq/L
				Po	otassiu	m			100	ppm 2.565 meq/L
				Ca	alcium				495	ppm 24.704 meq/L
				Ma	agnesi	um			37	7 ppm 3.030 meq/L
				SA	٩R				9.39	
				SS	SP				53.57	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471339 Customer Sample ID: AH-5 1-1 5 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (EST	ABLIS	HMEN	T)		
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	
рН	7.7	(5.8)	-	Mod. All	kaline						
Conductivity	2,120	(-)	umho/cm	High			CL	<u>.</u>		Fertilizer Recommended	
Nitrate-N	3	(-)	ppm**	I						30 lbs N/acre	
Phosphorus	4	(50)	ppm							95 lbs P2O5/acre	
Potassium	61	(125)	ppm							50 lbs K20/acre	
Calcium	25,581	(180)	ppm						II	0 lbs Ca/acre	
Magnesium	164	(50)	ppm					111		0 lbs Mg/acre	
Sulfur	5,009	(13)	ppm							0 lbs S/acre	
Sodium	154	(-)	ppm			Ш					
Iron											
Zinc											
Manganese											
Copper							i				
Boron											
Limestone Requirement										0.00 tons 100ECCE/acre	
				Detail	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)	
				pł	4				7.3	8	
				Co	onduct	ivity			7.08	mmhos/cm	
				Sc	odium				316	ppm 13.758 meq/L	-
				Po	otassiu	Im			11	ppm 0.293 meq/L	-
				Ca	alcium				1149	ppm 57.340 meq/L	-
				Ma	agnesi	um			48	ppm 3.985 meq/L	-
				SA	AR				2.48	8	
				SS	SP				18.25		

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471340 Customer Sample ID: AH-6 0-1 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (ES	TABLIS	HMEN	Т)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	7.6	(5.8)	-	Slightly	Alkaline					
Conductivity	3,240	(-)	umho/cm	V. High			c	L*		Fertilizer Recommended
Nitrate-N	1	(-)	ppm**							35 lbs N/acre
Phosphorus	4	(50)	ppm					1		95 lbs P2O5/acre
Potassium	63	(125)	ppm					1		45 lbs K20/acre
Calcium	26,870	(180)	ppm						II	0 lbs Ca/acre
Magnesium	102	(50)	ppm					1 11		0 lbs Mg/acre
Sulfur	4,902	(13)	ppm							0 lbs S/acre
Sodium	310	(-)	ppm							
Iron								1		
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement					-					0.00 tons 100ECCE/acre
				Detail	ed Sali	nity To	est (Sa	turated	d Paste	Extract)
				pł	4				7.0	
				Co	onduct	ivity			14.14	mmhos/cm
				So	odium				578	25.134 meq/L
				Po	otassiu	m			11	ppm 0.288 meq/L
				Ca	alcium				2484	ppm 123.954 meq/L
				Ma	agnesi	um			51	ppm 4.221 meq/L
				S	AR				3.14	
				SS	SP				16.36	;

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471341 Customer Sample ID: AH-7 0-1 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (ESI	ABLIS	HMEN	T)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	7.6	(5.8)	-	Mod. All	kaline					
Conductivity	2,680	(-)	umho/cm	V. High			CI	*		Fertilizer Recommended
Nitrate-N	2	(-)	ppm**	I						35 lbs N/acre
Phosphorus	2	(50)	ppm	III						100 lbs P2O5/acre
Potassium	46	(125)	ppm							60 lbs K20/acre
Calcium	40,778	(180)	ppm						II	0 lbs Ca/acre
Magnesium	266	(50)	ppm							0 lbs Mg/acre
Sulfur	4,490	(13)	ppm							0 lbs S/acre
Sodium	739	(-)	ppm							
Iron										
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement										0.00 tons 100ECCE/acre
				Detaile	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)
				рŀ	1				7.4	
				Co	onduct	ivity			15.75	mmhos/cm
				Sc	odium				1638	ppm 71.279 meq/L
				Po	otassiu	m			18	ppm 0.468 meq/L
				Ca	alcium				1659	ppm 82.774 meq/L
				Ma	agnesi	um			73	ppm 5.962 meq/L
				SA	٩R				10.70	
				SS	SP				44.42	2

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471342 Customer Sample ID: AH-8 1-1.5

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (ESI	ABLIS	HMEN	T)		
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	
рН	7.6	(5.8)	-	Mod. All	kaline						
Conductivity	1,520	(-)	umho/cm	Moderat	e		CL	*		Ferti	lizer Recommended
Nitrate-N	3	(-)	ppm**	I							30 lbs N/acre
Phosphorus	1	(50)	ppm	II						1	00 lbs P2O5/acre
Potassium	123	(125)	ppm								0 lbs K20/acre
Calcium	36,728	(180)	ppm						II		0 lbs Ca/acre
Magnesium	379	(50)	ppm								0 lbs Mg/acre
Sulfur	1,072	(13)	ppm								0 lbs S/acre
Sodium	73	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper							i				
Boron											
Limestone Requirement										0.	.00 tons 100ECCE/acre
				Detaile	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)	
				p⊦	1				7.5	i	
				Co	onduct	ivity			3.03	mmhos/cr	n
				Sc	odium				86	i ppm	3.746 meq/L
				Po	otassiu	m			7	' ppm	0.187 meq/L
				Ca	alcium				558	ppm	27.865 meq/L
				Ma	agnesi	um			52	ppm	4.289 meq/L
				SA	٩R				0.93		
				SS	6P				10.38	6	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471343 Customer Sample ID: AH-9 0-1 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown:	IMPROVED	AND H		RMUDA	GRAS	S (ES	TABLIS	HMEN	T)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	7.8	(5.8)	-	Mod. All	kaline					
Conductivity	1,840	(-)	umho/cm	High			c	L*		Fertilizer Recommended
Nitrate-N	5	(-)	ppm**	Ш						30 lbs N/acre
Phosphorus	1	(50)	ppm	I				I I		100 lbs P2O5/acre
Potassium	132	(125)	ppm					1		0 lbs K20/acre
Calcium	36,309	(180)	ppm						11	0 lbs Ca/acre
Magnesium	260	(50)	ppm							0 lbs Mg/acre
Sulfur	954	(13)	ppm							0 lbs S/acre
Sodium	651	(-)	ppm)1111			
Iron								1		
Zinc										
Manganese										
Copper										
Boron								1		
Limestone Requirement										0.00 tons 100ECCE/acre
				Detail	ed Sali	nity T	est (Sa	turated	d Paste	Extract)
				pł	1				7.4	l .
				Co	onduct	ivity			6.09	mmhos/cm
				Sc	odium				692	2 ppm 30.108 meq/L
				Po	otassiu	Im			8	ppm 0.214 meq/L
				Ca	alcium				615	ppm 30.695 meq/L
				Ma	agnesi	um			31	ppm 2.560 meq/L
				SA	٩R				7.38	}
				SS	SP				47.36	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471344 Customer Sample ID: AH-10 1-1.5 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown:	IMPROVED	AND H	') Ybrid Bef	RMUDA	GRAS	S (ES	TABLIS	HMEN	IT)		
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	
рН	7.7	(5.8)	-	Mod. Al	kaline						
Conductivity	1,120	(-)	umho/cm	Moderat	te		, c	Ľ,		Ferti	lizer Recommended
Nitrate-N	6	(-)	ppm**	11111							25 lbs N/acre
Phosphorus	7	(50)	ppm					I I			90 lbs P2O5/acre
Potassium	172	(125)	ppm				финнин	1 1			0 lbs K20/acre
Calcium	26,671	(180)	ppm				финини		II		0 lbs Ca/acre
Magnesium	208	(50)	ppm								0 lbs Mg/acre
Sulfur	590	(13)	ppm								0 lbs S/acre
Sodium	27	(-)	ppm	11111							
Iron								1			
Zinc								1			
Manganese											
Copper											
Boron											
Limestone Requirement										0.	00 tons 100ECCE/acre
				Detail	ed Sali	nity T	est (Sa	turate	d Paste	Extract)	
				pł	H				7.4	ļ	
				Co	onduct	ivity			2.34	mmhos/cr	n
				So	odium				46	ppm	2.020 meq/L
				Po	otassiu	ım			9	ppm	0.230 meq/L
				Ca	alcium				551	ppm	27.511 meq/L
				M	agnesi	um			23	ppm	1.908 meq/L
				S	AR				0.53		
				S	SP				6.38		

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471345 Customer Sample ID: AH-11 0-1 (1'BEB)

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: I	MPROVED	AND H		RMUDA	GRAS	S (EST	ABLIS	HMEN	T)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	7.9	(5.8)	-	Mod. All	kaline					
Conductivity	1,520	(-)	umho/cm	Moderat	e		с	L*		Fertilizer Recommended
Nitrate-N	1	(-)	ppm**							35 lbs N/acre
Phosphorus	3	(50)	ppm					I I		95 lbs P2O5/acre
Potassium	90	(125)	ppm				Ш	 		25 lbs K20/acre
Calcium	32,484	(180)	ppm						II	0 lbs Ca/acre
Magnesium	170	(50)	ppm					âU -		0 lbs Mg/acre
Sulfur	4,539	(13)	ppm							0 lbs S/acre
Sodium	394	(-)	ppm							
Iron								1		
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement										0.00 tons 100ECCE/acre
				Detail	ed Sali	nity Te	est (Sa	turated	d Paste	Extract)
				pł	1				7.5	5
				Co	onduct	ivity			4.74	mmhos/cm
				So	odium				619	ppm 26.922 meq/L
				Po	otassiu	m			16	0.401 meq/L
				Ca	alcium				483	3 ppm 24.113 meq/L
				Ma	agnesi	um			11	l ppm 0.927 meq/L
				SA	AR				7.61	
				SS	SP				51.41	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471346 Customer Sample ID: AH-12 2-2.5

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (ESTABLISHMENT)													
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.			
рН	8.0	(5.8)	-	Mod. Alk	aline								
Conductivity	2,520	(-)	umho/cm	V. High			С	L*		Ferti	lizer Recommended		
Nitrate-N	39	(-)	ppm**								0 lbs N/acre		
Phosphorus	5	(50)	ppm					1			90 lbs P2O5/acre		
Potassium	545	(125)	ppm					ф	I I		0 lbs K20/acre		
Calcium	17,910	(180)	ppm						11		0 lbs Ca/acre		
Magnesium	1,660	(50)	ppm						III -		0 lbs Mg/acre		
Sulfur	5,157	(13)	ppm								0 lbs S/acre		
Sodium	578	(-)	ppm				III						
Iron													
Zinc													
Manganese													
Copper													
Boron													
Limestone Requirement										0	.00 tons 100ECCE/acre		
				Detaile	d Sali	nity Te	est (Sa	turated	l Paste	Extract)			
				pH					7.9)			
				Co	nduct	ivity			7.56	mmhos/ci	m		
				So	dium				571	ppm	24.864 meq/L		
				Po	tassiu	m			67	ppm	1.712 meq/L		
				Ca	lcium				523	ppm	26.074 meq/L		
				Ma	ignesi	um			494	ppm	40.592 meq/L		
				SA	R				4.31				
				SS	P				26.67				

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471347 Customer Sample ID: AH-13 2-2.5

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: II	MPROVED	AND H		RMUDA	GRAS	S (ES	ABLIS	HMEN	Т)	
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.
рН	8.9	(5.8)	-	Strongl	y Alkaline	e				
Conductivity	1,710	(-)	umho/cm	High			CI	<u>*</u>		Fertilizer Recommended
Nitrate-N	7	(-)	ppm**	111111						25 lbs N/acre
Phosphorus	2	(50)	ppm	Ш						100 lbs P2O5/acre
Potassium	47	(125)	ppm							60 lbs K20/acre
Calcium	17,631	(180)	ppm						II	0 lbs Ca/acre
Magnesium	286	(50)	ppm							0 lbs Mg/acre
Sulfur	5,297	(13)	ppm							0 lbs S/acre
Sodium	221	(-)	ppm							
Iron										
Zinc										
Manganese										
Copper										
Boron										
Limestone Requirement										0.00 tons 100ECCE/acre
				Detail	ed Sali	nity To	est (Sa	turated	d Paste	Extract)
				pl	4				8.4	k in the second s
				C	onduct	ivity			7.25	mmhos/cm
				S	odium				345	ppm 15.009 meq/L
				P	otassiu	m			36	ppm 0.911 meq/L
				C	alcium				500	ppm 24.944 meq/L
				М	agnesi	um			155	ppm 12.747 meq/L
				S	AR				3.46	5
				S	SP				28.00	

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.



Outside County

Laboratory Number: 471348 Customer Sample ID: Background 0-1

Soil Analysis Report

Soil, Water and Forage Testing Laboratory Department of Soil and Crop Sciences 2478 TAMU College Station, TX 77843-2478 979-845-4816 (phone) 979-845-5958 (FAX) Visit our website: http://soiltesting.tamu.edu

Sample received on: 11/29/2016 Printed on: 12/14/2016 Area Represented: not provided

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (ESTABLISHMENT)													
Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.			
рН	7.9	(5.8)	-	Mod. All	kaline								
Conductivity	1,330	(-)	umho/cm	Moderat	te		CI	<u>.</u>		Fertilizer Recor	nmended		
Nitrate-N	2	(-)	ppm**							35 lbs N/ac	re		
Phosphorus	7	(50)	ppm		1111					90 lbs P2O	5/acre		
Potassium	31	(125)	ppm		11111					75 lbs K20/	acre		
Calcium	33,156	(180)	ppm						11	0 lbs Ca/a	cre		
Magnesium	97	(50)	ppm					11		0 lbs Mg/a	cre		
Sulfur	5,057	(13)	ppm							0 lbs S/aci	re		
Sodium	20	(-)	ppm	1111									
Iron													
Zinc													
Manganese													
Copper							i						
Boron													
Limestone Requirement										0.00 tons 100	ECCE/acre		
				Detail	ed Sali	nity To	est (Sa	turated	d Paste	Extract)			
				pł	4				7.4				
				Co	onduct	ivity			2.04	mmhos/cm			
				Sc	odium				54	ppm	2.349 meq/L		
				Po	otassiu	m			13	ppm	0.343 meq/L		
				Ca	alcium				511	ppm	25.524 meq/L		
				Ma	agnesi	um			19	ppm	1.528 meq/L		
				S	٩R				0.64				
				SS	SP				7.90				

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water. Nitrogen: Apply an additional 40 lbs/A of nitrogen upon 75% vegetative cover.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Analytical Report 549844

for Tetra Tech- Midland

Project Manager: Ike Tavarez

Cimarex-Marquardt 12H ROW

212C-MD-00659

07-APR-17

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)



07-APR-17

SUP ACCREDUES

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

Reference: XENCO Report No(s): **549844 Cimarex-Marquardt 12H ROW** Project Address: Eddy Co NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 549844. 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. 549844 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,

Huns hoah

Kelsey Brooks Project Manager

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Sample Id

AH-4 0-1
AH-5 0-1
AH-6 0-1
AH-6 1-1.5
AH-7 0-1
AH-7 1-1.5
AH-8 0-1
AH-12 0-1
AH-12 1-1.5
AH-13 0-1

Sample Cross Reference 549844



Cimarex-Marquardt 12H ROW

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	03-29-17 00:00		549844-001
S	03-29-17 00:00		549844-002
S	03-29-17 00:00		549844-003
S	03-29-17 00:00		549844-004
S	03-29-17 00:00		549844-005
S	03-29-17 00:00		549844-006
S	03-29-17 00:00		549844-007
S	03-29-17 00:00		549844-008
S	03-29-17 00:00		549844-009
S	03-29-17 00:00		549844-010





CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Cimarex-Marquardt 12H ROW

Project ID: 212C-MD-00659 Work Order Number(s): 549844
 Report Date:
 07-APR-17

 Date Received:
 03/30/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3014353 Inorganic Anions by EPA 300/300.1

Lab Sample ID 549845-001 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: 549844-001, -002, -003, -004, -005, -006, -007, -008, -009, -010.

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



Ike Tavarez

Eddy Co NM

Project Id: Contact:

Project Location:

Certificate of Analysis Summary 549844

Tetra Tech- Midland, Midland, TX

Project Name: Cimarex-Marquardt 12H ROW



Date Received in Lab:Thu Mar-30-17 04:29 pmReport Date:07-APR-17Project Manager:Kelsey Brooks

	Lab Id:	549844-0	01	549844-002		549844-003		549844-004		549844-005		549844-(006
Analysis Paguested	Field Id:	AH-4 0-	1	AH-5 0-	1	AH-6 0-1		AH-6 1-1.5		AH-7 0-1		AH-7 1-	1.5
Analysis Kequesiea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-29-17 00:00		Mar-29-17 00:00		Mar-29-17 (00:00	Mar-29-17 (00:00	Mar-29-17	00:00	Mar-29-17	00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Apr-06-17 1	Apr-06-17 16:02		6:02	Apr-06-17	16:02	Apr-06-17	6:02	Apr-06-17	16:02	Apr-06-17	16:02
	Analyzed:	Apr-06-17 1	7:32	Apr-06-17 17:40		Apr-06-17 17:48		Apr-06-17 17:56		Apr-06-17	18:21	Apr-06-17	17:08
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1470	49.8	2060	48.8	1420	49.8	3330	100	5110	48.7	497	4.88

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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Huns Boah

Kelsey Brooks Project Manager

Page 5 of 11



Ike Tavarez

Eddy Co NM

Contact:

Project Location:

Certificate of Analysis Summary 549844

Tetra Tech- Midland, Midland, TX

TNI REGRATION

Project Name: Cimarex-Marquardt 12H ROW

Date Received in Lab:Thu Mar-30-17 04:29 pmReport Date:07-APR-17Project Manager:Kelsey Brooks

		540044.00		540044.0	00	540044.0	00	540044.0	10	
	Lab Id:	549844-00)/	549844-0	08	549844-0	09	549844-0	10	
Analysis Reauested	Field Id:	AH-8 0-1	l	AH-12 0	-1	AH-12 1-	1.5	AH-13 0	-1	
Anulysis Requesieu	Depth:									
	Matrix:	SOIL		SOIL		SOIL		SOIL		
	Sampled:	Mar-29-17 00:00		Mar-29-17 00:00		Mar-29-17 00:00		Mar-29-17 (00:00	
Inorganic Anions by EPA 300/300.1	Extracted:	Apr-06-17 1	6:02	Apr-06-17 16:02		Apr-06-17 16:02		Apr-06-17 16:02		
	Analyzed:	Apr-06-17 1	8:29	Apr-06-17 1	8:37	Apr-06-17 1	18:45	Apr-06-17	8:53	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Chloride		123	24.8	3040	98.2	1750	49.9	4870	98.8	

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Kelsey Brooks Project Manager

Page 6 of 11



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

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

DL Method Detection Limit

NC Non-Calculable

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

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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	
1211 W Florida Ave, Midland, TX 79701 2525 W. Huntington Dr Suite 102, Tempe AZ 85282	(432) 563-1800 (602) 437-0330	(432) 563-171



BS / BSD Recoveries



Project Name: Cimarex-Marquardt 12H ROW

Work Order	#: 549844		Project ID: 212C-MD-00659)0659		
Analyst:	MGO		Da	ate Prepar	red: 04/06/201	7	Date Analyzed: 04/06/2017							
Lab Batch ID:	3014353	Sample: 722686-1-B	SKS	Bate	h #: 1					Matrix: S	Solid			
Units:	mg/kg			BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
Inorga	nic Anions by EP	PA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Analy	tes			[B]	[C]	[D]	[E]	Result [F]	[G]					
Chloride			<4.99	250	239	96	250	234	94	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: Cimarex-Marquardt 12H ROW



Work Order # :	549844						Project II): 212C-I	MD-00659	9					
Lab Batch ID:	3014353	QC- Sample ID:	549844	-006 S	Ba	tch #:	1 Matrix	x: Soil							
Date Analyzed:	04/06/2017	Date Prepared:	04/06/2	017	An	alyst: 1	MGO								
Reporting Units:	mg/kg		Ν	IATRIX SPIK	E / MAT	RIX SP	IKE DUPLICA	TE REC	OVERY	STUDY					
Inorgan	ic Anions by EPA 300/300.1	Parent Sample Result	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample Bosult [F]	Spiked Dup. % P	RPD	Control Limits	Control Limits	Flag			
	Analytes	[A]	[B]	[C]	/0K [D]	[E]	Kesunt [F]	76K [G]	70	70 K	70KI D				
Chloride		497	244	727	94	244	711	88	2	90-110	20	Х			
Lab Batch ID:	3014353	QC- Sample ID:	549845	-001 S	Ba	tch #:	1 Matrix	x: Soil							
Date Analyzed:	04/06/2017	Date Prepared:	04/06/2	017	An	alyst: 1	MGO								
Reporting Units:	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY													
Inorgan	ic Anions by EPA 300/300.1	Parent Sample Posult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag			
	Analytes	[A]	Added [B]	[U]	%к [D]	Added [E]	Kesut [F]	%к [G]	% 0	%K	%KPD				
Chloride		1120	249	1280	64 249		1320	80	3	90-110	20	Х			

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

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manage	SAMPLE CONDITION WHEN RECEIVED: REMARKS:	ADDRESS:	Time: Time: Time: Time:	Time: Time: Time: RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) Date:	RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) Date: Date:	RELIVOUSHED BY: (Signature) Date: 31 30 11 RECEIVED BY: (Signature) Date: 31 30 Time: 16 340 Time: 16 340	M& K AH-13 0-1	1-1.5	AH-12 0-1 1	AH-8 0-1 1	1-1.5	AH-7 0-1 1	1 1.5. 1	AH-6 0-1 1	AH-5 0-1	3/29 6 X AH-4 0-1 1	NUMBER 2017 TIME TIME MATRIX COMP. GRAB SAMPLE IDENTIFICATION FILTERED HCL HNO3 ICE NONE	212C-MO-00459 Marguard + 12H ROW	CLIENT NAME: CIMOLOX SITE MANAGER: CIMOLOX NOT	IEIRATECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 549944		Analysis Request of Chain of Custody Record	
Ta Corrected Temp: 20.5 ves Gold cc	CE: +01	Com Tito	TETRA TECH CONTACT PERSON:	HAND DELIVERED UPS OTHE	SAMPLE SHIPPED BY: (Circle)	SAMPTED BY: (Print & Initial) Dat								×	×× ·		TPH 801 PAH 8270 RCRA Met TCLP Met TCLP Vola TCLP Sem RCI GC.MS Vol GC.MS Vol GC.MS Se PCB's 808/ Chloridg Gamma Sp Alpha Betz	als Ag , als Ag , als Ag , tiles i Volatile b. 8240/8 mi. Vol. 0/608 508 508	As Ba C As Ba C As Ba C 200/624 8270/625	25 (Ext. to C35) d Cr Pb Hg Se d Vr Pd Hg Se	ANALYSIS REQUEST (Circle or Specify Method No.)	PAGE:	
ру.		NUSH Charges Nuthorized: Yes No	Results by:			LI 122 8.º											PLM (Asbe	estos) ens/Catio	ons, pH, 1	TDS		OF:	



Client: Tetra Tech- Midland

XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In

Acceptable Temperature Range: 0 - 6 degC



Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 03/30/2017 04:29:00 PM Temperature Measuring device used : R8 Work Order #: 549844 Comments Sample Receipt Checklist 20.5 #1 *Temperature of cooler(s)? #2 *Shipping container in good condition? N/A #3 *Samples received on ice? No #4 *Custody Seal present on shipping container/ cooler? N/A #5 *Custody Seals intact on shipping container/ cooler? N/A N/A #6 Custody Seals intact on sample bottles? #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 relinguished/ 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)? Yes Houston #21 VOC samples have zero headspace? N/A #22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for N/A samples for the analysis of HEM or HEM-SGT which are verified by the analysts. #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:
 Jessica Kramer

 Jessica Kramer
 Jessica Kramer

 Checklist reviewed by:
 Must Morah

 Kelsey Brooks
 Kelsey Brooks

Date: 03/31/2017

Date: 03/31/2017