#### SITE INFORMATION **Report Type: Closure Report** General Site Information: Site: Save D A 21 Federal #1 Company: COG Operating LLC Section, Township and Range Sec 21 T 25S R 29E Lease Number: API-30-015-34840 County: **Eddy County** GPS: 32.12089° N 103,99588° W Surface Owner: Federal Mineral Owner: From the intersection of HWY 285 and C.R. 724 (Longhorn Rd) travel EAST on Longhorn Rd. Directions: for approximately 4.2 miles, turn NORTH/NE onto Pipline Rd Number 1 and continue for apx. 1.8 miles, turn North onto lease road and continue for apx. 3 miles, turn WEST onto lease road for .9 miles to location on South side of lease road. Release Data: Date Released: 11/29/2013 Type Release: Oil and Produced water Source of Contamination: Leak in packing on polishing rod Fluid Released: 0 bbls Fluids Recovered: 12 bbls Official Communication: Name: Robert McNeil lke Tavarez Company: COG Operating, LLC Tetra Tech Address: One Concho Center 4000 N. Big Spring 600 W. Illinois Ave. Ste 401 City: Midland Texas, 79701 Midland, Texas Phone number: (432) 686-3023 (432) 687-8110 Fax: (432) 684-7137 Email: rmcneil@conchoresources.com Ike.Tavarez@tetratech.com

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	O
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:	1. 3. 4. 0. A. 3. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4.	NM OIL CONSERVATION

Acceptable Soil RRAL (mg/kg) Benzene Total BTEX TPH 10 5,000 50

ARTESIA DISTRICT

JUN 0 4 2014

**RECEIVED** 



March 11, 2014

Mr. Mike Bratcher **Environmental Engineer Specialist** Oil Conservation Division, District 2 811 S. First Street Artesia, New Mexico 88210

Re: Closure Report for the COG Operating LLC., Save D A 21 Federal #1, Unit D, Section 21, Township 25 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Save D A 21 Federal #1, Unit D, Section 21, Township 25 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.12089°, W 103.99588°. 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 November 29, 2013, and released approximately ten (10) barrels of produced water and five (5) barrels of oil from a leaking rod liner packing. To alleviate the problem, COG personnel will ensure that the packing is full. Zero (0) barrels of standing fluids were recovered. The spill affected an area on the pad approximately 30' x 145', as well as an area north of the pad approximately 5' x 95'. The initial C-141 form is enclosed in Appendix A.

#### Groundwater

No water wells were listed within Section 21. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 125' 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 5,000 mg/kg.

#### Soil Assessment and Analytical Results

On December 16, 2013, Tetra Tech personnel inspected and sampled the spill area. Eight (8) auger holes (AH-1 through AH-8) were installed using a stainless steel hand auger to assess the impacted soils. 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 auger hole locations are shown on Figure 3.

Referring to Table 1, the areas of auger holes (AH-5, AH-6, and AH-8) exceeded the TPH RRAL. The areas showed TPH concentrations of 6,500 mg/kg, 12,150 mg/kg, and 18,180 mg/kg at 0-1' below surface, respectively. Auger holes (AH-5 and AH-8) were not vertically defined at 0'-1' below surface. Auger hole (AH-6) showed TPH concentrations that declined with depth below the RRAL at 1'-1.5' below surface.

In addition, the areas of auger holes (AH-4 and AH-6) exceeded the RRAL for total BTEX, but all declined below the RRAL at 1'-1.5' below surface. The area of AH-5 was not vertically defined with a total BTEX concentration of 166 mg/kg at 0-1'.

Elevated chloride concentrations were detected in majority of the auger holes (AH-1, AH-2, AH-3, AH-4, AH-5 and AH-7). The areas of AH-6 and AH-8 did not show a significant chloride impact to the soils. The chloride concentrations at auger holes (AH-1 and AH-4) declined at 1'-1.5' and vertically defined. The areas of auger holes (AH-2, AH-3, AH-5 and AH-7) were not vertically defined with bottom hole auger hole samples of 4,890 mg/kg at 1-1.5', 1,730 mg/kg at 1-1.5', 923 mg/kg at 0-1' and 3,840 mg/kg at 0-1', respectively.



#### **Remedial Activities**

On April 3, 2014, Tetra Tech began supervising the excavation of impacted materials as highlighted (green) on Table 1 and shown on Figure 4. Prior to excavating, backhoe trenches were installed in the areas of AH-2, AH-3, AH-5, AH-7, and AH-8 to evaluate the excavation bottom and define the chloride concentrations.

Referring to Table 1, T-2 and T-4 showed chloride concentrations of 512 mg/kg at 2.0' and 352 mg/kg at 1.0' below surface, respectively. The area of T-1 showed elevated chloride concentrations at 2.0' below surface of 3,760 mg/kg. However, the sample was collected on top of dense bedrock and was possibly cross-contaminated from the surrounding excavation. Tetra Tech resampled the area of AH-2 by chiseling the bedrock, which showed a chloride concentration of 240 mg/kg. The areas of T-3 (AH-5) and T-5 (AH-8) were analyzed for TPH and BTEX and did not show concentrations above the RRAL's.

The areas of AH-1, AH-4, and AH-6 were excavated to a depth of approximately 1.0', and the areas of AH-2, AH-3, AH-5, AH-7, and AH-8 were excavated to a depth of approximately 2.0' below surface.

Approximately 420 yards of excavated soil was transported offsite for proper disposal and the areas will be backfilled with clean material to surface grade.

#### Conclusion

Based on the remedial actions taken, COG requests closure of the site. The Final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

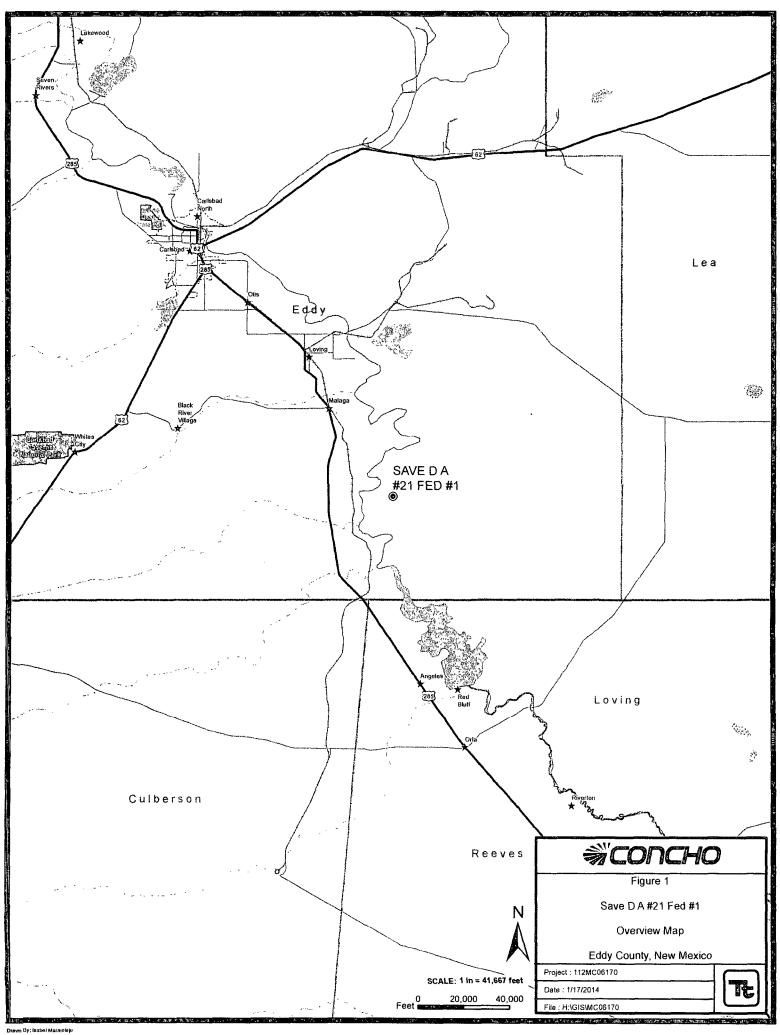
Respectfully submitted,

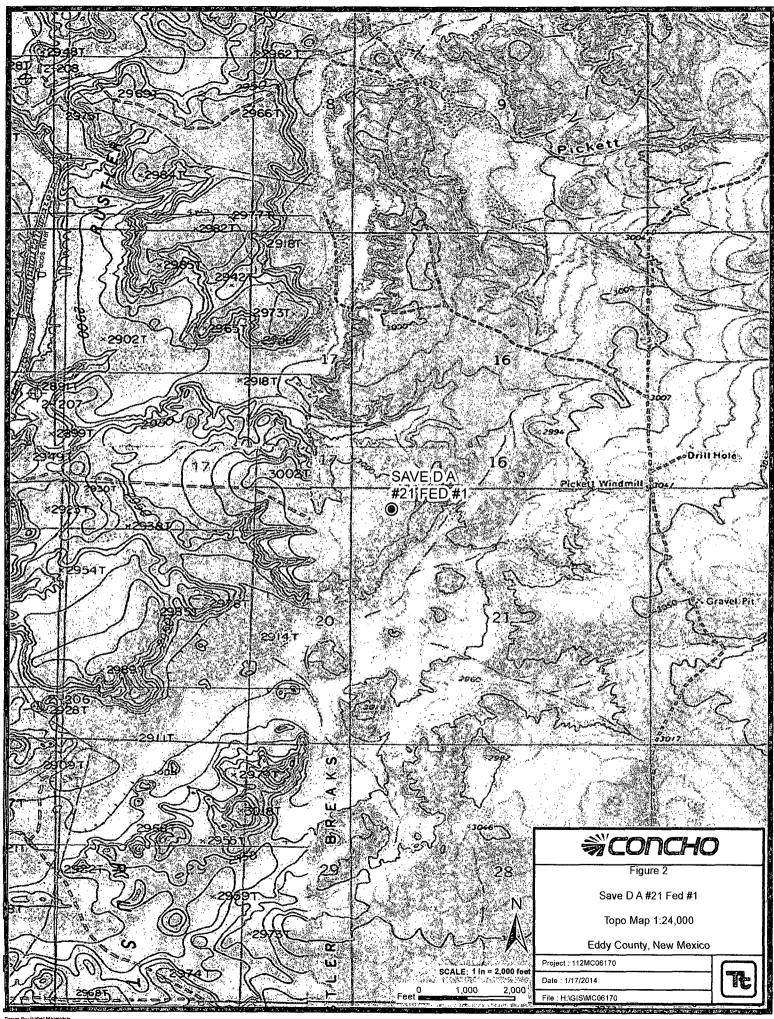
**TETRA TECH** 

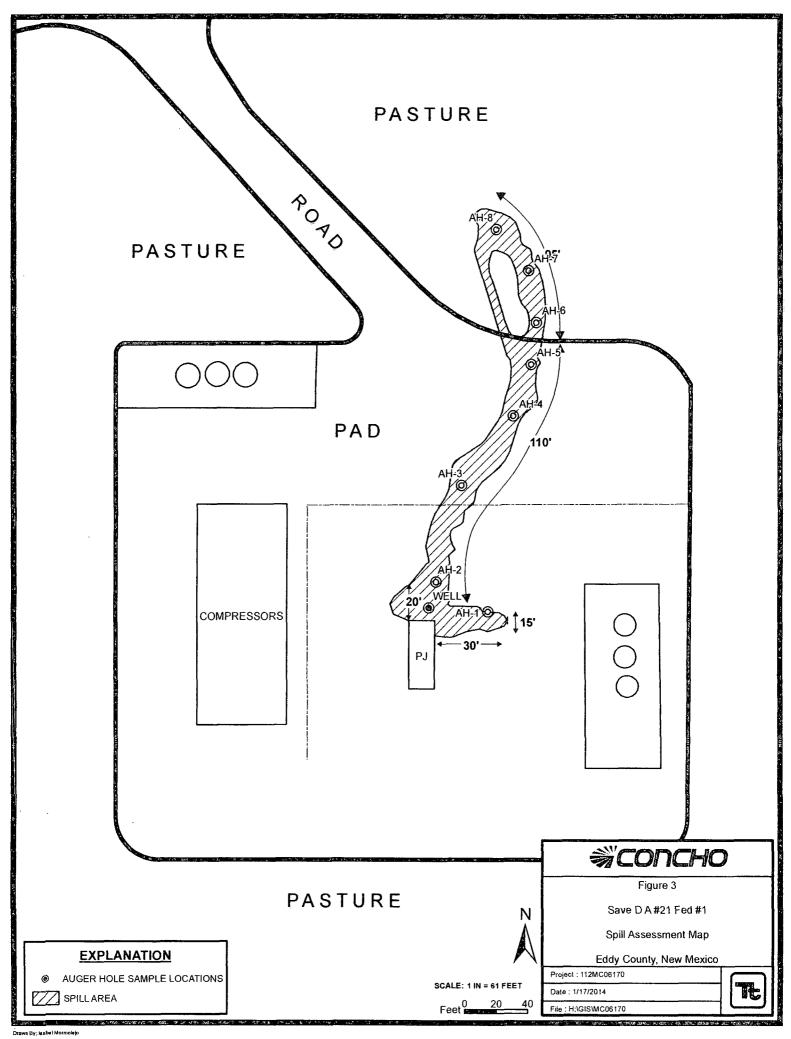
Clair Gonzales, Geologist

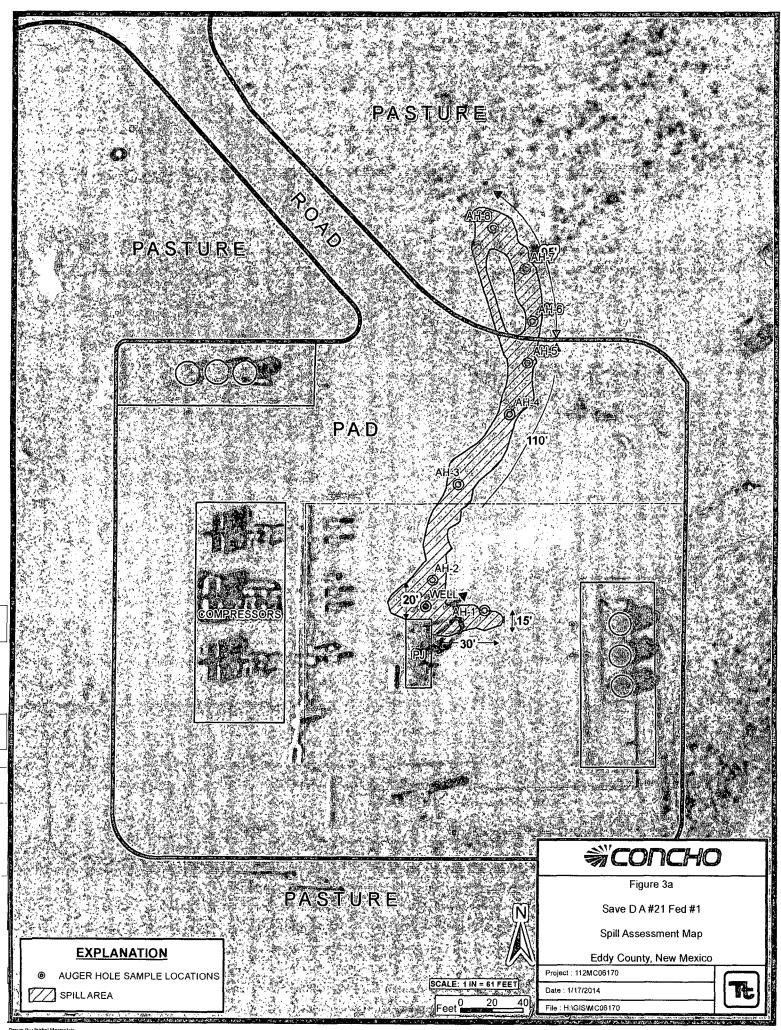
cc: Robert McNeil - COG

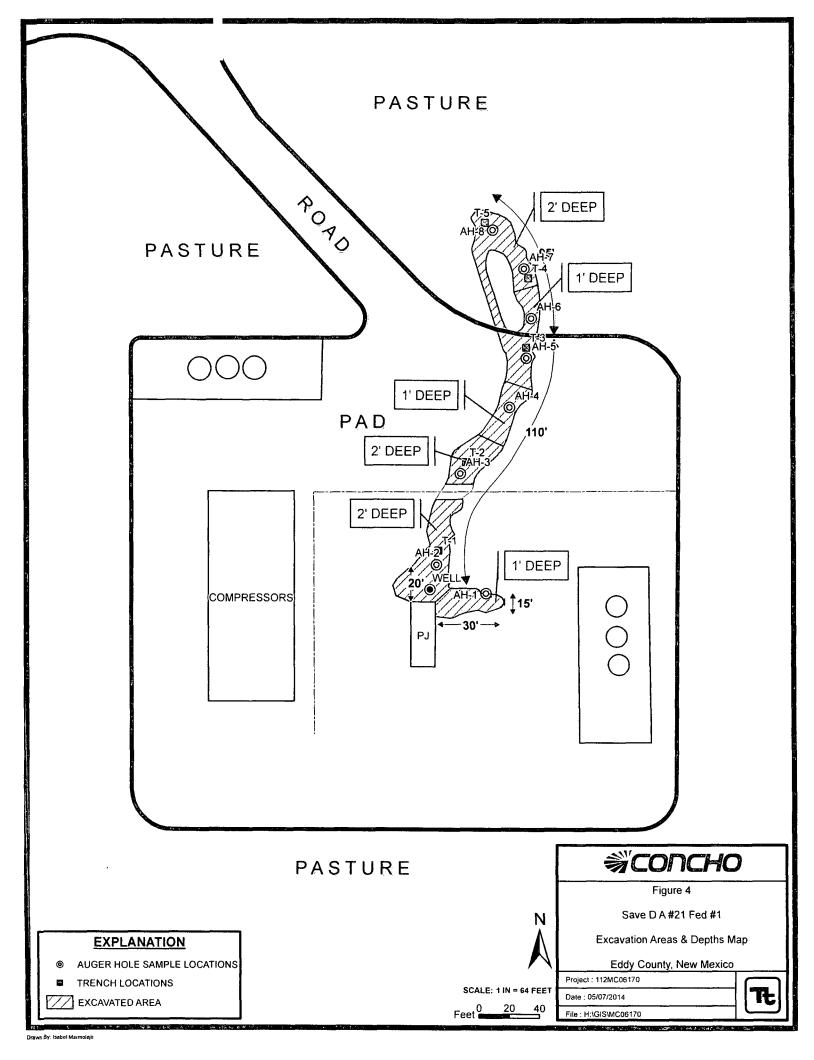
cc: Mike Burton – BLM





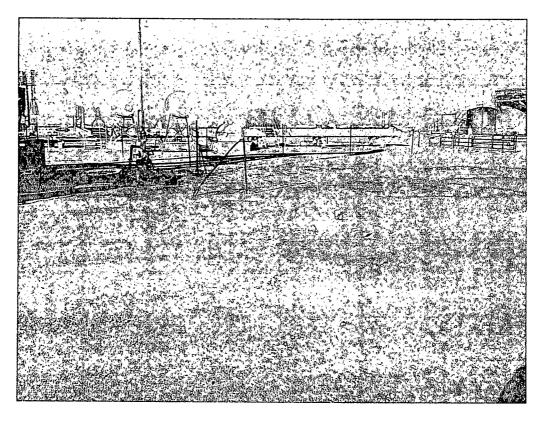




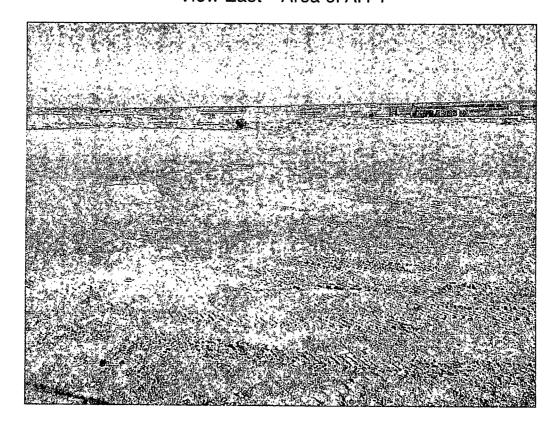


# Photos



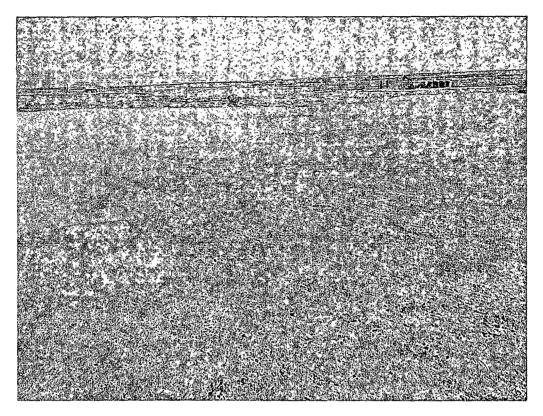


View East - Area of AH-1

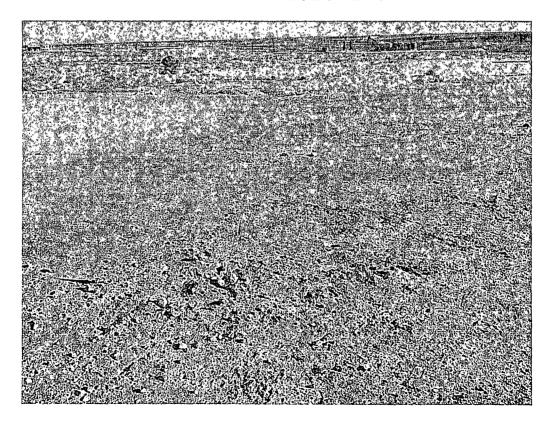


View North - Area of AH-2





View North - Area of AH-3

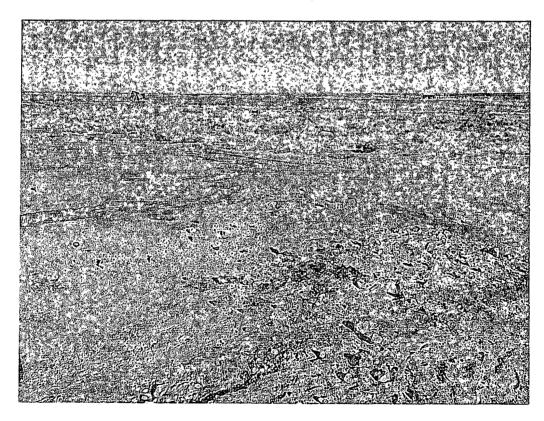


View North - Area of AH-4



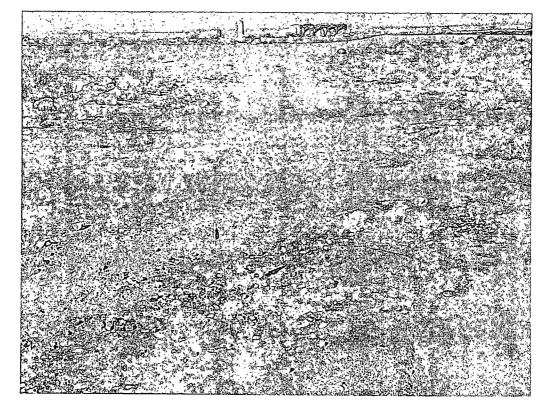


View North - Area of AH-5



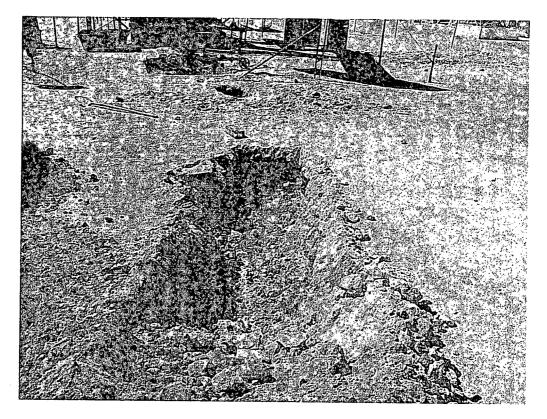
View North - Area of AH-6





View West - Area of AH-7 and AH-8



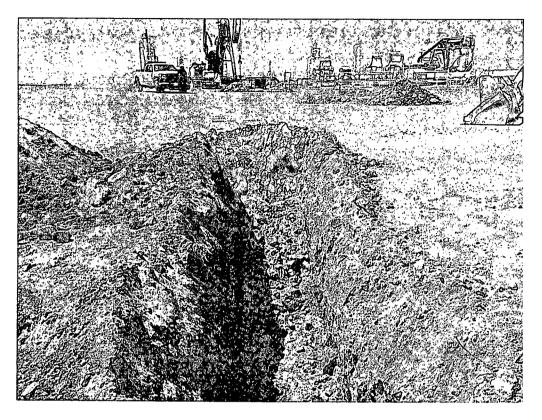


View South - Area of T-1

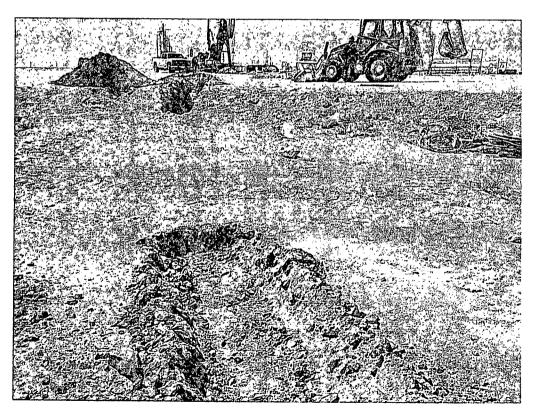


View West- Area of T-2





View West - Area of T-3

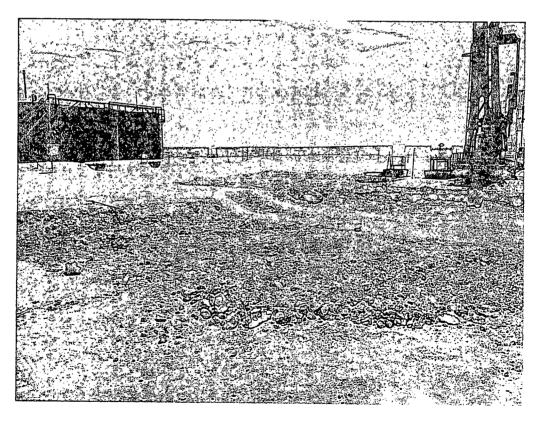


View Southwest - Area of T-4



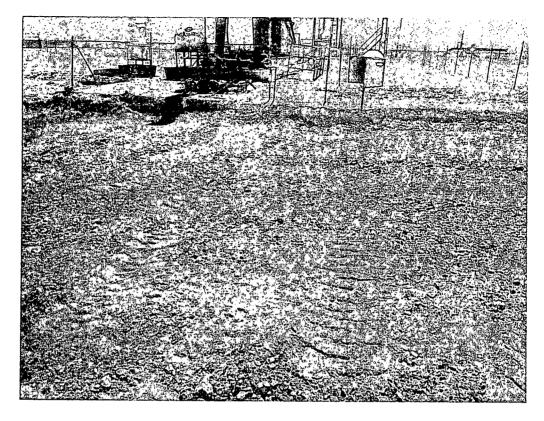


View South - Area of T-5

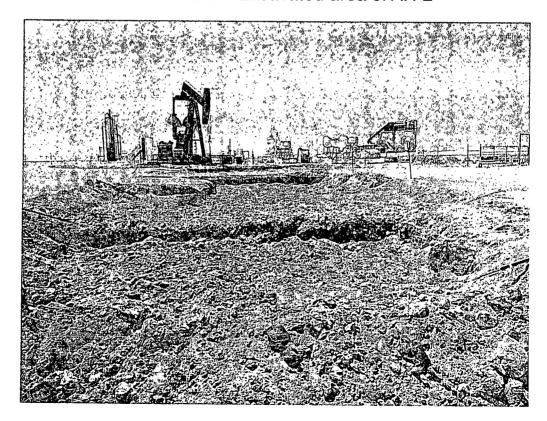


View South - Excavated area of AH-1



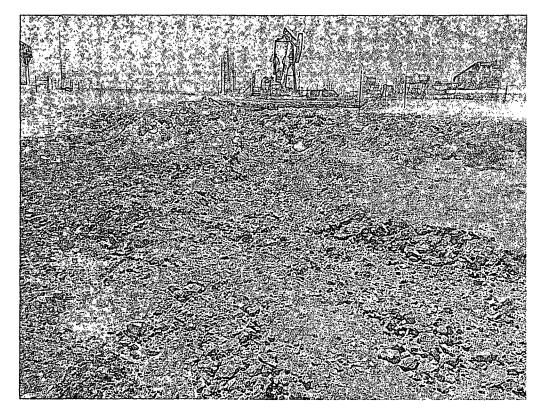


View South - Excavated area of AH-2

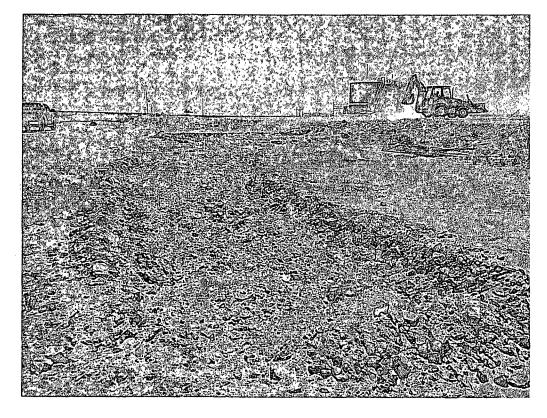


View South - Excavated area of AH-3





View South - Excavated areas of AH-4 and AH-5



View South – Excavated areas of AH-6, AH-7, and AH-8

# Tables

Sample ID	Sample Date	BEB Sample	Excavation Bottom	Soil	Status		TPH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
<u> </u>	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	12/17/2013	0.1	0		X	348	159	507	<0:100	0.176	0.634	12.1	12.9	1,430
	n	1-1.5	0	х		-	-	-	_	-	-	-	-	541
AH-1 North Sidewall	4/11/2014	_	-	х		-	-	<u>-</u>	-	-	-	-	-	912
AH-1 South Sidewall	4/11/2014	-		х		-	_	-	-	-	<u>-</u>	-	-	1,360
AH-1 East Sidewall	4/11/2014	<u>-</u> .	-	Х		<u>-</u>	-	-	-	-	-	-	-	736
AH-2	12/17/2013	0-1	0		X	<8.00	69.2	69.2	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	3,780
	II	1-1.5	0		X									4,890
AH-2 Bottom Hole	4/11/2014	2	0	Х		-	-	-	-	-	-	-	-	240
T-1	4/8/2014	0	0,		X									2,800 "
	II.	2' refusal	0	9734 9984	X									3,760
AH-2 East Sidewall	4/11/2014	-	-	Х		-	-	-	-	-	-	-	-	1,420
AH-2 West Sidewall	4/11/2014	-	-	х		-	-	-	-	-	-	•	-	720

Table 1
COG Operating LLC.
Save D A 21 Federal # 1
Eddy County, New Mexico

		BEB	Excavation	Soil	Status		ΓPH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Sample Depth (ft)	Bottom Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-3	12/17/2013	0-1	0		X	. 313.	231	\$ 544	<0.100	. 0.876	0.833	10:5	× 12.2	5,210
	11	1-1.5	0		X					A har well				1,730
T-2	4/8/2014	0	0		χ									1,520
	"	2 refusal.	0		X									512
AH-3 East Sidewall	4/11/2014	-	-	х		-	7	-	-	-	-	-	-	832
AH-3 West Sidewall	4/11/2014	-	-	х		-	-	-	-	-	-	-	-	1,140
AH-4	12/17/2013	0×1	0		X	885	1,730	2,615	<0.100	6.64	4.62	45.2	56.5	1,450
		1-1.5	0	х		-	-	-	<0.100	0.912	0.955	7.87	9.74	689
AH-4 East Sidewall	4/11/2014	-	-	Х		_	-	-	-	-	-	-	-	784
AH-4 West Sidewall	4/11/2014	-	-	Х		-	•	-	-	-	<del>-</del>	-	-	400

Table 1
COG Operating LLC.
Save D A 21 Federal # 1
Eddy County, New Mexico

		BEB	Excavation	Soil	Status	-	ΓΡΗ (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Sample Depth (ft)	Bottom Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	BTEX (mg/kg)	(mg/kg)
AH-5	12/17/2013	0-1	0 *		X	3,200	3,300	6,500	0.699	29.4	12.9	123	166	923
T-3	4/8/2014	0.	0		X	<10.0	<10.0	<10:0	<0.050	·<0:050	<0.050	<0.150	<0.300	
	tt .	2	0	×		<10.0	30.6	30.6	<0.050	<0.050	<0.050	<0.150	<0.300	-
	и	4' refusal	0	Х		<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	-
AH-5 South Sidewall	4/11/2014	-	-	х		-	-	<u>-</u>	-	-	-	_	-	368
AH-5 East Sidewall	4/11/2014	-	-	х		-	-	-	_	-	-	-	-	1,570
AH-5 West Sidewall	4/11/2014	-	-	Х		<b>-</b>	-	-	-	-	-	-	-	416
AH-6	12/17/2013	0-1	0		X	7,810	4,340	12,150	2.33	95.9	32:0	278	408	244
	n	1-1.5	0	х		49.4	<50.0	49.4	<0.0200	<0.0200	0.0699	0.271	0.341	516
AH-6 East Sidewall	4/11/2014	<u>.</u>	-	х		-	-	-	-	-	-	-	-	2,040
AH-6 West Sidewall	4/11/2014	-	-	х		-	-	-	-	-	-	-	-	656

Samula ID	Samula Data	BEB Sample	Excavation Bottom	Soil	Status		TPH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
Sample ID	Sample Date	Depth (ft)	Depth (ft)	In-Situ	Removed		DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-7	12/17/2013	0.10	Ó		×	580	385	965	<0!100*	2.33	1-37	16.8	20.5	3,840
T-4	4/8/2014	0	0.		X							ductor with the same		320
	n	1' refusal	0	х		-	-	-	-	-	-	-	_	352
AH-7 East Sidewall	4/11/2014	-	-	х		-	-	-	-	-	-	-	-	656
AH-7 West Sidewall	4/11/2014	-	-	Х		-	-	-	-	-	-	-	-	736
AH-8	12/17/2013	0-1-1	0	X 120	X	2,680	<b>15,500</b>	18,180	·**0.393	27.3	17.0	151	196	66.9
T-5	4/8/2014	0.0	0		X	/137	,2,655 <sub>4</sub>	., 2,792		<0.050°	0.696	3,57	<b>4.27</b>	
	n	2	0	X		<10.0	12.5	12.5	<0.050	<0.050	<0.050	<0.150	<0.300	-
AH-8 East Sidewall	4/11/2014	-	-	х		-	-	-	-	-	-	-	_	1,040
AH-8 West Sidewall	4/11/2014	-	-	Х		-	-	-	-	-	-	-	-	2,160

( - ) Not Analyzed

(BEB) Below Excavation Bottom

Excavation Depths

# Appendix A

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

### State of New Mexico **Energy Minerals and Natural Resources**

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

Form C-141

Revised October 10, 2003

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

			Kele	ease Notific	catio	n and Co	orrective A	ction	l	,		
						OPERA'	ГOR		Initia	al Report		Final Report
Name of Co	ompany	COG OP	ERATIN	G LLC	Τ	Contact	***************************************	obert N				1
Address				idland, TX 797	01	Telephone 1	No. 4	32-230	0-0077			
Facility Na	me	Save D A	21 Feder	al #001		Facility Typ	e	Tank B	attery			
Surface Ow	mer Feder	al		Mineral C	)wner				Lease N	lo. (API#	30-015	5-34840
				LOCA	OITA	N OF REI	LEASE					
Unit Letter D	Section 21	Township 25S	Range 29E	Feet from the	North	/South Line	Feet from the	East/V	Vest Linc	County	Eddy	
				Latitude 32.1	2089	Longi	tude 103.99588					
				NAT	URE	OF REL	EASE					
Type of Rele	ase Oil and	produced wa	ter			Volume of	Release 5bl	bls oil water	Volume F	Recovered		Obbls of oil duced water
Source of Ro	elcase Packir	ng leak					our of Occurrenc	_		Hour of D 13 11:00	iscovery	
Was Immedi	ate Notice C		67			If YES, To						
		U	Yes 🛚	No 🛛 Not Re	equired							
By Whom?		1 10				Date and H		1 117		<del></del>		
Was a Water	course Reac		Yes 🛛	No		If YES, Vo	lume Impacting t	he Wate	ercourse.			
If a Waterco	urse was Imp	pacted, Descri	be Fully.*							<del></del>		
Describe Car	use of Proble	m and Remed	ial Action	Taken.*								
Polishing roo	l liner packii	ng leaked due	to weathe	r change. Make :	sure the	packing is ful	I					
Describe Arc	a Affected a	ind Cleanup A	Action Tak	en.*			· · · · · · · · · · · · · · · · · · ·					
vacuum trucl	k. All free fli	uids have beer	n recovere	d. Concho will hi	ive the	spill site samp	king on the polish led to delineate a prificant remediat	ny poss	ible contan	able to rec nination fr	over Obbl om the re	s with a lease and we
I hereby certify that the information given above is true and complet regulations all operators are required to report and/or file certain relepublic health or the environment. The acceptance of a C-141 report should their operations have failed to adequately investigate and remorthe environment. In addition, NMOCD acceptance of a C-141 repfederal, state, or local laws and/or regulations.						iotifications ar le NMOCD m le contaminati	nd perform correct arked as "Final Ro on that pose a thre	tive acti eport" d eat to gr	ions for rel loes not reli ound water	cases which leve the op r, surface v	th may en perator of water, hur	danger liability nan health
							OIL CONS	SERV	ATION	DIVIS	ON	
Signature:	7	C+ 12	4 /									
Printed Name			Grubbs J	r.		Approved by	District Superviso	or:				
Title:	S	enior Environ	mental Co	ordinator		Approval Dat	c:		Expiration	Date:		
E-mail Addro	2SS:	rgrubbs@	concho.co	m		Conditions of	Approval:			Attacho	:d 🔲	
Date: 12-	11-2013		Phone:	432-661-660	. 1							

\* Attach Additional Sheets If Necessary

**NM** OIL CONSERVATION

ARTESIA DISTRICT

JUN 0 4 2014

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

\* Attach Additional Sheets If Necessary

### State of New Mexico **Energy Minerals and Natural Resources**

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

Revised October 10, 2003

Form C-141

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

### **Release Notification and Corrective Action**

						<b>OPERA</b>	<b>TOR</b>		☐ Initia	l Report	$\boxtimes$	Final Report
		OG Operat					bert McNeil					
				Texas 79701			No. (432) 230-0					
Facility Nar	ne Save I	A 21 Feder	al #001		I	Facility Typ	e Tank Batter	ry				
Surface Ow	ner: Feder	al		Mineral O	wner				Lease N	o. (API #)	30-01	5-34840
				LOCA	TION	OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North/	South Line	Feet from the	East/\	Vest Line	County		
D	21	25S	29E		:	:					Eddy	,
·	1		]	Latitude N 32.1	2089°	Longitud	e W 103.99588	3°				
				NAT	TIRE (	OF RELI	EASE					
Type of Relea	ase: Oil and	I produced wa	ter	147.8.1	ORD		Release 5 bbls of	il	Volume R	ecovered 0	bbls o	il
		· ·					produced water			roduced wa		
Source of Re	lease: Packi	ing				Date and H 11/29/2013	our of Occurrence	e	Date and 1 11/29/201	Hour of Dise 3 11:00 a		
Was Immedia	ate Notice (		Yes 🏻	No ⊠ Not Re	equired	If YES, To	Whom?					
By Whom?	_					Date and H	lour					
Was a Water	course Read						lume Impacting th	he Wate	ercourse.			
			Yes 🗵	No		N/A						
If a Watercou	irse was Im	pacted, Descri	be Fully.*	*		L			0.15			DVATION
N/A									<b>1/1</b>	ARTESI		RVATION I
										JUN	042	2014
Describe Cau	se of Probl	em and Remed	dial Action	n Taken.*								
Polishing rod	liner packi	ng leaked due	to weathe	er change. Make s	sure pack	king is full.				REC	CEIV	ED
Describe Are	a Affected	and Cleanup A	Action Tak	en.*		*****						
Tech inspecte then brought	ed site and our to surface	collected samp ce grade with o	les to defi clean back	ater were released ine spills extent. S fill material. Tetra	oil that e a Tech p	exceeded RR repared closu	AL was removed are report and sub-	and hau mitted t	iled away fo o NMOCD	or proper dis for review.	sposal.	Site was
regulations al public health should their cor the environ	I operators or the envir operations hament. In a	are required to ronment. The ave failed to a	report ar acceptance dequately CD accep	is true and completed in the certain received a C-141 report investigate and received of a C-141 received.	elease no ort by the emediate	otifications ar NMOCD ma contamination	nd perform correct arked as "Final Re on that pose a thre	tive acti eport" d eat to gr	ons for rele oes not reli- ound water	ases which eve the oper , surface wa	may er ator of ter, hu	ndanger liability man health
Cianatura				>			OIL CONS	SERV	ATION	DIVISIC	<u>N</u>	
Signature: Printed Name	: Ike Tavar	ez (AG	ait	In coc	)	Approved by	District Superviso	or:	······································			
Title: Project	Manager				Í	Approval Dat	e:	1	Expiration I	Date:		
E-mail Addre												
	ss: Ike.Tav	arez@TetraTe	ch.com			Conditions of	Approval:			Attached		

# Appendix B

# Water Well Data Average Depth to Groundwater (ft) COG - Save D A 21 Federal #1 Eddy County, New Mexico

	2	4 Sc	uth		28	East				24 Sc	outh	2	9 Eas	t		24	South	;	30 East	
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19	20		21	22		23	24		19	20	21	22	23	24	19 <b>2</b>	31 20	21	22	23	24
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19	20		21	22		23	24		19	20	21	22	23	24	19	20	21 <b>265</b>	22	23	24
	96		_				1_2		<u> </u>	<u> </u>	SITE	<u>[</u>	<u> </u>				268			
30	29		28	27		26 40	25		30	29	28	27	26	25	30	29	28	27	26	25
	15		90			05			30	20 11			105			<u> </u>				
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	<u>۔۔</u>	6 Sc			20	East	1331	1	,,,,,,	26 Sc		21	9 East		<u> </u>	06.	South	<u> </u>	30 East	<u>.                                    </u>
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19	20		21	22		23	24		19 <i>J</i>	20	21	22 <b>57</b>	23	24	19	20	21	22	23	24
	1		<u> </u>	120								69							1	180
30	29		28	27		26	25		30 🗸	29	28	27	26	25	30	29	28	27	26	25
31	32		33	34	$\neg$	35	36		31	32	33	34	35	36	31	32	33	34	35	36
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New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Field water level

New Mexico Water and Infrastructure Data System

# Appendix C

Report Date: January 6, 2014 Work Order: 13121819 Page Number: 1 of 3

# **Summary Report**

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX 79705

Report Date: January 6, 2014

Work Order: 13121819

Project Location: Eddy Co, NM

Project Name: COG/Save D A 21 Fed #001

Project Number: TBD

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
349281	AH-1 0-1'	soil	2013-12-17	00:00	2013-12-18
349282	AH-1 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349283	AH-2 0-1'	soil	2013-12-17	00:00	2013-12-18
349284	AH-2 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349285	AH-3 0-1'	soil	2013-12-17	00:00	2013-12-18
349286	AH-3 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349287	AH-4 0-1'	soil	2013-12-17	00:00	2013-12-18
349288	AH-4 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349289	AH-5 0-1'	soil	2013-12-17	00:00	2013-12-18
349290	AH-6 0-1'	soil	2013-12-17	00:00	2013-12-18
349291	AH-6 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349292	AH-7 0-1'	soil	2013-12-17	00:00	2013-12-18
349293	AH-8 0-1'	soil	2013-12-17	00:00	2013-12-18

		В	TEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
349281 - AH-1 0-1'	<0.100 Qs	$0.176_{\mathrm{Qs}}$	$0.634~_{\mathrm{Qs}}$	12.1 Qs	159	348
349283 - AH-2 0-1'	$< 0.0400 _{\mathrm{Qs}}$	$< 0.0400   \mathrm{Qs}$	$< 0.0400   \mathrm{q_s}$	$< 0.0400 _{\mathrm{Qs}}$	69.2	< 8.00
349285 - AH-3 0-1'	$< 0.100 Q_8$	$0.876~_{\mathrm{Qs}}$	0.833 Qs	10.5 Qs	231	313
349287 - AH-4 0-1'	$< 0.100   \mathrm{Qs}$	$6.64~_{\mathrm{Qs}}$	4.62 Qs	45.2 Qs	1730	885
349288 - AH-4 1-1.5'	< 0.100	0.912	0.955	7.87		
349289 - AH-5 0-1'	$0.699_{\ \mathrm{Qs}}$	$29.4_{\mathrm{Qs}}$	$12.9_{ m Qs}$	123 Qs	3300	3200
349290 - AH-6 0-1'	<b>2.33</b> Qs	95.9 Q <sub>8</sub>	$32.0_{ m Qs}$	278 Qa	4340	7810
349291 - AH-6 1-1.5'	< 0.0200	< 0.0200	0.0699	0.271	< 50.0	49.4
349292 - AH-7 0-1'	$< 0.100   \mathrm{Qs}$	$2.33~_{\mathrm{Qs}}$	1.37 Qs	16.8 Qs	385	580
349293 - AH-8 0-1'	0.393 Qs	27.3 Qa	17.0 Qs	151 Qs	15500	2680

Sample: 349281 - AH-1 0-1'

Report Date: Janua	ary 6, 2014	Work Order: 13121819	Page I	Number: 2 of 3
Param	Flag	Result	Units	RL
Chloride		1430	mg/Kg	4
Sample: 349282 -	- AH-1 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		541	mg/Kg	4
Sample: 349283 -	- AH-2 0-1'			
Param	Flag	Result	Units	RL
Chloride		3780	nıg/Kg	4
Sample: 349284 -	- AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		4890	mg/Kg	4
Sample: 349285 -	- AH-3 0-1'			
Param	Flag	Result	Units	RL
Chloride		5210	mg/Kg	4
Sample: 349286 -	- AH-3 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		1730	mg/Kg	4
Sample: 349287 -	· AH-4 0-1'			
Param	Flag	Result	Units	RL
Chloride		1450	mg/Kg	4
Sample: 349288 -	AH-4 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		689	mg/Kg	4

Report Date: Janua	ary 6, 2014	Work Order: 13121819	Page I	Number: 3 of 3
Sample: 349289 -	· AH-5 0-1'			
Param	Flag	Result	Units	RL
Chloride		923	mg/Kg	4
Sample: 349290 -	- AH-6 0-1'			
Param	Flag	Result	Units	R.L
Chloride		244	mg/Kg	4
Sample: 349291 -	AH-6 1-1.5'			
Param	$\operatorname{Flag}$	Result	Units	RL
Chloride		516	mg/Kg	4
Sample: 349292 -	AH-7 0-1'			
Param	Flag	Result	Units	RL
Chloride		3840	mg/Kg	4
Sample: 349293 -	AH-8 0-1'			
Param	Flag	Result	Units	RL
Chloride		66.9	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Lubbock. El Paso, Midland, Carroliton.

Texas 79424 Texas 79922 Texas 79703 Texas 75006 800-378-1296 806 - 794 - 1296

FAX 806 - 794 - 1298 915-585-3443 FAX 915 - 585 - 4944 432-689-6301

972-242-7750

FAX 432-689-6313

### E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

#### Certifications WBE NCTRCA $\mathbf{DBE}$ NELAP DoD LELAP Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

Report Date: January 6, 2014

Work Order:

13121819

Eddy Co, NM Project Location:

Project Name: COG/Save D A 21 Fed #001

Project Number:

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
349281	AH-1 0-1'	soil	2013-12-17	00:00	2013-12-18
349282	AH-1 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349283	AH-2 0-1'	soil	2013-12-17	00:00	2013-12-18
349284	AH-2 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349285	AH-3 0-1'	soil	2013-12-17	00:00	2013-12-18
349286	AH-3 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349287	AH-4 0-1'	soil	2013-12-17	00:00	2013-12-18
349288	AH-4 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349289	AH-5 0-1'	soil	2013-12-17	00:00	2013-12-18
349290	AH-6 0-1'	soil	2013-12-17	00:00	2013-12-18
349291	AH-6 1-1.5'	soil	2013-12-17	00:00	2013-12-18
349292	AH-7 0-1'	soil	2013-12-17	00:00	2013-12-18
349293	AH-8 0-1'	soil	2013-12-17	00:00	2013-12-18

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.

This report consists of a total of 45 pages and shall not be reproduced except in its entirety, without written approval of

TraceAnalysis, Inc.

Michael April

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

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Sample 349282 (AH-1 1-1.5')	
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Sample 349285 (AH-3 0-1')	
Sample 349286 (AH-3 1-1.5')	
Sample 349287 (AH-4 0-1')	
Sample 349288 (AH-4 1-1.5')	
Sample 349289 (AH-5 0-1')	
Sample 349290 (AH-6 0-1')	
Sample 349291 (AH-6 1-1.5')	
Sample 349292 (AH-7 0-1')	
Sample 349293 (AH-8 0-1')	
Sumple 010200 (IIII 0 ° 2 )	
Method Blanks	
QC Batch 107761 - Method Blank (1)	
QC Batch 107765 - Method Blank (1)	
QC Batch 107771 - Method Blank (1)	
QC Batch 107808 - Method Blank (1)	
QC Batch 107810 - Method Blank (1)	
QC Batch 107811 - Method Blank (1)	
QC Batch 107855 - Method Blank (1)	
QC Batch 107889 - Method Blank (1)	
QC Batch 107983 - Method Blank (1)	
QC Batch 107984 - Method Blank (1)	
QC Datch 107904 - Internod Diank (1)	
Laboratory Control Spikes	
QC Batch 107761 - LCS (1)	
QC Batch 107765 - LCS (1)	
QC Batch 107771 - LCS (1)	
QC Batch 107808 - LCS (1)	
QC Batch 107810 - LCS (1)	
QC Batch 107811 - LCS (1)	
QC Batch 107855 - LCS (1)	
QC Batch 107889 - LCS (1)	
QC Batch 107983 - LCS (1)	
QC Batch 107984 - LCS (1)	
QC Batch 107761 - MS (1)	
QC Batch 107765 - MS (1)	
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## Case Narrative

Samples for project COG/Save D A 21 Fed #001 were received by TraceAnalysis, Inc. on 2013-12-18 and assigned to work order 13121819. Samples for work order 13121819 were received intact at a temperature of 3.9 C.

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

		Prep	$\operatorname{Prep}$	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	91171	2013-12-19 at 08:26	107765	2013-12-20 at 12:25
BTEX	S 8021B	91224	2013-12-20 at 12:31	107810	2013-12-23 at 09:48
BTEX	S 8021B	91258	2013-12-23 at 12:50	107855	2013-12-24 at 13:15
Chloride (Titration)	SM 4500-Cl B	91351	2013-12-31 at 08:40	107983	2014-01-03 at 10:26
Chloride (Titration)	SM 4500-Cl B	91351	2013-12-31 at 08:40	107984	2014-01-03 at 10:34
TPH DRO - NEW	S 8015 D	91215	2013-12-19 at 13:00	107761	2013-12-20 at 09:49
TPH DRO - NEW	S 8015 D	91251	2013-12-23 at 08:35	107808	2013-12-23 at 08:40
TPH GRO	S 8015 D	91171	2013-12-19 at 08:26	107771	2013-12-20 at 12:55
TPH GRO	S 8015 D	91224	2013-12-20 at 12:31	107811	2013-12-23 at 09:51
TPH GRO	S 8015 D	91286	2013-12-24 at 09:00	107889	2013-12-30 at 15:54

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 13121819 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.

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 6 of 45 Eddy Co, NM

# **Analytical Report**

Sample: 349281 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX QC Batch: 107765 Prep Batch: 91171 Analytical Method: S 8021B Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19

Prep Method: S 5035 Analyzed By: AK Prepared By: AK

RLCert Units Dilution Parameter Flag Result RLBenzene < 0.100 0.0200 mg/Kg 5 Q<sub>B</sub>,U Toluene 5 0.0200Qя 0.176mg/Kg Ethylbenzene 5 Qa 0.634mg/Kg 0.020012.1 mg/Kg 5 0.0200 Xylene Qs

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.40	mg/Kg	5	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		5.19	mg/Kg	5	2.00	260	70 - 130

Sample: 349281 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 107983 Prep Batch: 91351 Analytical Method: SM 4500-Cl B Date Analyzed: 2014-01-03 Sample Preparation: 2013-12-31

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Sample: 349281 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 107761
Prep Batch: 91215

Analytical Method: S 8015 D
Date Analyzed: 2013-12-20
Sample Preparation: 2013-12-19

Prep Method: N/A
Analyzed By: KC
Prepared By: KC

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 7 of 45 Eddy Co, NM

Prep Method: S 5035

GRO

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			122	mg/Kg	1	100	122	70 - 130

Sample: 349281 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 107771 Prep Batch: 91171 Analytical Method: S 8015 D Date Analyzed: 2013-12-20

Sample Preparation:

2013-12-20 Analyzed By: AK 2013-12-19 Prepared By: AK

RL Parameter Flag Cert Result

 Flag
 Cert
 Result
 Units
 Dilution
 RL

 1
 348
 mg/Kg
 5
 4.00

~			~				Spike	Percent	Recovery
Surrogate		$\operatorname{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				2.07	mg/Kg	5	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		12.6	mg/Kg	5	2.00	630	70 - 130

Sample: 349282 - AH-1 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 107983 Prep Batch: 91351 Analytical Method: Date Analyzed:

Sample Preparation:

541

SM 4500-Cl B 2014-01-03

Units

mg/Kg

Prep Method: N/A Analyzed By: AR Prepared By: AR

RL Parameter Flag Cert Result

2013-12-31

Dilution RL

4.00

5

Sample: 349283 - AH-2 0-1'

Laboratory: Midland

Chloride

Analysis: BTEX QC Batch: 107765 Prep Batch: 91171 Analytical Method: S 8021B Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19

 S 8021B
 Prep Method:
 S 5035

 2013-12-20
 Analyzed By:
 AK

 2013-12-19
 Prepared By:
 AK

continued ...

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 8 of 45 Eddy Co, NM

sample.	349283	continued			,
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			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	$Q_{\mathbf{s}_{i}}\Omega$	Ŀ	< 0.0400	mg/Kg	2.	0.0200
Toluene	$Q_N,U$	1	< 0.0400	mg/Kg	2	0.0200
Ethylbenzene	$Q_N, U$	1	< 0.0400	mg/Kg	2	0.0200
Xylene	Qs,U	1	< 0.0400	mg/Kg	2	0.0200

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		•	1.58	mg/Kg	2	2.00	79	70 - 130
4-Bromofluorobenzene (4-BFB)			1.64	mg/Kg	2	2.00	82	70 - 130

## Sample: 349283 - AH-2 0-1'

Laboratory:

Prep Batch:

Midland

91351

Analysis: Chloride (Titration) QC Batch: 107983 Analytical Method: SI Date Analyzed: 20

Sample Preparation:

 SM 4500-Cl B
 Prep Method:

 2014-01-03
 Analyzed By:

 2013-12-31
 Prepared By:

## Sample: 349283 - AH-2 0-1'

Laboratory:

Midland

Analysis: TPH DRO - NEW QC Batch: 107761
Prep Batch: 91215

Analytical Method: S 8015 D
Date Analyzed: 2013-12-20
Sample Preparation: 2013-12-19

Prep Method: N/A Analyzed By: KC Prepared By: KC

N/A

AR.

AR.

			R.L			
Parameter	Flag	Cert	Result	Units	Dilution	RL
DRO		1	69.2	mg/Kg	1	50.0

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			115	mg/Kg	1	100	115	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 9 of 45 Eddy Co, NM

Sample: 349283 - AH-2 0-1'

Laboratory: Midland

TPH GRO Analysis: QC Batch: 107771 Prep Batch: 91171

S 8015 D Analytical Method: Date Analyzed:

2013-12-20 Sample Preparation: 2013-12-19

Prep Method: S 5035 Analyzed By: AKPrepared By: AK

RL

Parameter Cert Units Dilution RLFlag Result GRO 4.00 <8.00 mg/Kg 2 U 1

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			2.15	mg/Kg	2	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			2.40	mg/Kg	2	2.00	120	70 - 130

Sample: 349284 - AH-2 1-1.5'

Laboratory: Midland

Prep Batch: 91351

Analysis: Chloride (Titration) QC Batch: 107983

Analytical Method: Date Analyzed:

SM 4500-Cl B 2014-01-03 Sample Preparation: 2013-12-31

Prep Method: N/A Analyzed By: AR. Prepared By: AR

RL

Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Chloride			4890	mg/Kg	10	4.00

Sample: 349285 - AH-3 0-1'

Laboratory: Midland

Analysis: BTEX QC Batch: 107765 Prep Batch: 91171

Analytical Method: S 8021B Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19 Prep Method: S 5035 Analyzed By: AK Prepared By: AK

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	Qs,U	1	< 0.100	mg/Kg	5	0.0200
Toluene	Qн	1	0.876	mg/Kg	5	0.0200
Ethylbenzene	Qs	1	0.833	mg/Kg	5	0.0200
Xylene	Qs	1	10.5	mg/Kg	5	0.0200

Work Order: 13121819

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Eddy Co, NM

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qar	Qst		1.39	mg/Kg	5	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		4.60	mg/Kg	5	2.00	230	70 - 130

Sample: 349285 - AH-3 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 107983 Analytical Method:

SM 4500-Cl B

Prep Method: N/A AR

Date Analyzed: 2014-01-03 Prep Batch: 91351 Sample Preparation: 2013-12-31 Analyzed By: Prepared By: AR

RLCert Parameter Flag Result Units Dilution RLChloride 5210 mg/Kg 10 4.00

Sample: 349285 - AH-3 0-1'

Midland Laboratory:

Analysis: TPH DRO - NEW

QC Batch: 107761 Prep Batch: 91215

Analytical Method: Date Analyzed:

S 8015 D 2013-12-20 2013-12-19 Prep Method: N/A Analyzed By: KCPrepared By: KC

RLCert Parameter Flag Result Units Dilution RLDRO 231 mg/Kg 50.0

Sample Preparation:

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			123	mg/Kg	1	100	123	70 - 130

Sample: 349285 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 107771 Prep Batch: 91171

Analytical Method: Date Analyzed:

S 8015 D 2013-12-20 Sample Preparation: 2013-12-19 Prep Method: S 5035 Analyzed By: AK

ΑK

Prepared By:

RLParameter Flag Cert Result Units Dilution RLGRO 313 mg/Kg 5 4.00 1

Work Order: 13121819

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Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Surrogate	riag	Cert	rtesuit	Omes	Dituion	Amount	riecovery	Lillius
Trifluorotoluene (TFT)			2.07	mg/Kg	5	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB) Qs	Qar		11.3	mg/Kg	5	2.00	565	70 - 130

Sample: 349286 - AH-3 1-1.5'

Laboratory: Midland

Analysis: QC Batch: 107983

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

Prep Batch:

91351

Date Analyzed: Sample Preparation: 2014-01-03

Analyzed By:

AR

2013-12-31

Prepared By:

			$\mathrm{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1730	mg/Kg	10	4.00

Sample: 349287 - AH-4 0-1'

Laboratory:

Midland

Analysis: BTEX QC Batch: 107765 Analytical Method: Date Analyzed:

S 8021B

Prep Method: S 5035 Analyzed By:

AK

Prep Batch: 91171

Sample Preparation:

2013-12-20 2013-12-19

Prepared By:

AK

		R.L			
Flag	Cert	Result	Units	Dilution	RL
Q×	1	< 0.100	mg/Kg	5	0.0200
Qu	1	$\boldsymbol{6.64}$	mg/Kg	5	0.0200
$Q_8$	1	$\bf 4.62$	mg/Kg	5	0.0200
Qs	1	45.2	mg/Kg	5	0.0200
	Qs Qs Qs	QH 1 QH 1 QH 1	Flag Cert Result  Q* 1 <0.100  Q* 1 6.64  Q* 1 4.62	Flag         Cert         Result         Units           Q*         1         <0.100	Q* 1 <0.100 mg/Kg 5 Q* 1 <b>6.64</b> mg/Kg 5 Q* 1 <b>4.62</b> mg/Kg 5

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.41	mg/Kg	5	2.00	70	70 - 130
4-Bromofluorobenzene (4-BFB)			12.0	mg/Kg	5	2.00	600	70 - 130

Sample: 349287 - AH-4 0-1'

Laboratory: Midland

Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B QC Batch: 107983 Date Analyzed: 2014-01-03 Analyzed By: AR. Prep Batch: 91351 Sample Preparation: 2013-12-31 Prepared By:

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 12 of 45 Eddy Co, NM

			R.L			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			1450	mg/Kg	10	4.00

## Sample: 349287 - AH-4 0-1'

Laboratory: Midland

Prep Batch: 91215

Analysis: TPH DRO - NEW QC Batch: 107761

Analytical Method: S 8015 D Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19 Prep Method: N/A Analyzed By: KC Prepared By: KC

Parameter Flag Cert Result Units Dilution RL

DRO 1 1730 mg/Kg 1 50.0

Spike Percent Recovery

							Spike	Percent	Recovery
Surrogate		$\operatorname{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	Qsr	Qsr		191	mg/Kg	1	100	191	70 - 130

## Sample: 349287 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 107889 Prep Batch: 91286 Analytical Method: S 8015 D
Date Analyzed: 2013-12-30
Sample Preparation: 2013-12-24

Prep Method: S 5035 Analyzed By: AK Prepared By: AK

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				2.24	mg/Kg	50	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		19.4	mg/Kg	50	2.00	970	70 - 130

## Sample: 349288 - AH-4 1-1.5'

Laboratory: Midland

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035 QC Batch: 107855 Date Analyzed: 2013-12-24 Analyzed By: AK Prep Batch: 91258 Sample Preparation: 2013-12-23 Prepared By: AK

Report Date: January 6, 2014

Work Order: 13121819 Page Number: 13 of 45 TBD COG/Save D A 21 Fed #001 Eddy Co, NM

			RL			
Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Benzene		1	< 0.100	mg/Kg	5	0.0200
Toluene		1	$\boldsymbol{0.912}$	${ m mg/Kg}$	5	0.0200
Ethylbenzene		1	0.955	$_{ m mg/Kg}$	5	0.0200
Xylene		l	7.87	mg/Kg	5	0.0200

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			9.47	mg/Kg	5	10.0	95	70 - 130
4-Bromofluorobenzene (4-BFB)			10.6	mg/Kg	5	10.0	106	70 - 130

Sample: 349288 - AH-4 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 107983 Date Analyzed: 2014-01-03 Analyzed By: AR Prep Batch: 91351 Sample Preparation: 2013-12-31 Prepared By: AR.

RLFlag Parameter Cert Result Units Dilution RLChloride 689 mg/Kg 5 4.00

Sample: 349289 - AH-5 0-1'

Laboratory: Midland

Analysis: BTEX Analytical Method: S~8021BPrep Method: S 5035 QC Batch: 107765 Date Analyzed: 2013-12-20 Analyzed By: AK Prep Batch: 91171 Sample Preparation: 2013-12-19 Prepared By: AK

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	Qn	ı	0.699	mg/Kg	10	0.0200
Toluene	Qя	1	29.4	mg/Kg	10	0.0200
Ethylbenzene	Qs	ī	12.9	mg/Kg	10	0.0200
Xylene	Qя	1	123	mg/Kg	10	0.0200

						$_{ m Spike}$	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.26	mg/Kg	10	2.00	63	70 - 130
4-Bromofluorobenzene (4-BFB)			22.1	mg/Kg	10	2.00	1105	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 14 of 45

Prep Method:

Eddy Co, NM

N/A

Sample: 349289 - AH-5 0-1'

91351

Laboratory: Midland

Prep Batch:

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B QC Batch: 107983 Date Analyzed: 2014-01-03

Date Analyzed: 2014-01-03 Analyzed By: AR Sample Preparation: 2013-12-31 Prepared By: AR

RL

Parameter Flag Cert Result Units Dilution RL Chloride 923 mg/Kg 5 4.00

Sample: 349289 - AH-5 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A QC Batch: 107761 Date Analyzed: 2013-12-20 Analyzed By: KCPrep Batch: 91215 Sample Preparation: 2013-12-19 Prepared By: KC

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	Qar	Qsr		213	mg/Kg	1	100	213	70 - 130

Sample: 349289 - AH-5 0-1'

Laboratory: Midland

Analysis: TPH GRO S 8015 D Analytical Method: Prep Method: S 5035 QC Batch: 107889 Date Analyzed: Analyzed By: 2013-12-30 AK Prep Batch: 91286 Sample Preparation: 2013-12-24 Prepared By: AK

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	100	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB) Qst	Qar		63.8	mg/Kg	100	2.00	3190	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 15 of 45 Eddy Co, NM

Sample: 349290 - AH-6 0-1'

Laboratory: Midland

BTEX Analysis: QC Batch: 107765 Prep Batch: 91171

Analytical Method: S 8021B Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19 Prep Method: S 5035 Analyzed By: ΑK Prepared By: ΑK

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	Qn	l.	2.33	mg/Kg	40	0.0200
Toluene	Qs	1	95.9	mg/Kg	40	0.0200
Ethylbenzene	Qs	1	32.0	mg/Kg	40	0.0200
Xylene	Qs	1	278	mg/Kg	40	0.0200

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.55	mg/Kg	40	2.00	78	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qar		44.8	mg/Kg	40	2.00	2240	70 - 130

Sample: 349290 - AH-6 0-1'

Midland Laboratory:

Prep Batch:

Chloride (Titration) Analysis: QC Batch: 107983 91351

Analytical Method: SM 4500-Cl B Date Analyzed: 2014-01-03 Sample Preparation: 2013-12-31

Prep Method: N/A Analyzed By: AR. Prepared By: AR.

RLResult Flag Cert Parameter Units Dilution RLChloride 244 mg/Kg 5 4.00

Sample: 349290 - AH-6 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 107761 Prep Batch: 91215

Analytical Method: S 8015 D Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19

Prep Method: N/A Analyzed By: KC Prepared By: KC

			R.L			
Parameter	Flag	Cert	Result	Units	Dilution	RL
DRO		1	4340	mg/Kg	1	50.0

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	Qsr	Qur		276	mg/Kg	1	100	276	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 16 of 45 Eddy Co, NM

Sample: 349290 - AH-6 0-1'

Laboratory:

Midland

Analysis: TPH GRO

Analytical Method:

S 8015 D 2013-12-23 Prep Method: S 5035 AK

OC Batch: Prep Batch: 91224

107811

Date Analyzed: Sample Preparation: 2013-12-20 Analyzed By: Prepared By: AK

RL

Cert Units Dilution RLParameter Flag Result GRO 7810 4.00 mg/Kg 100 1

							Spike	Percent	Recovery
Surrogate		Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				2.09	mg/Kg	100	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		158	mg/Kg	100	2.00	7900	70 - 130

## Sample: 349291 - AH-6 1-1.5'

Laboratory:

Midland

Analysis: **BTEX** QC Batch: 107810 Prep Batch: 91224

Analytical Method: S 8021B Date Analyzed: 2013-12-23 Sample Preparation: 2013-12-20

Prep Method: S 5035 Analyzed By: AK Prepared By: AK

RLParameter Flag Cert Result Units Dilution RLBenzene < 0.0200 mg/Kg 0.0200 U Toluene mg/Kg < 0.0200 1 0.0200U Ethylbenzene mg/Kg 0.0699 1 0.0200 Xylene 0.271mg/Kg 1 0.0200

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1.43	mg/Kg	1	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	70 - 130

## Sample: 349291 - AH-6 1-1.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 107984 Prep Batch: 91351

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2014-01-03

2013-12-31

Prep Method: N/A Analyzed By: AR. Prepared By: AR.

 $continued \dots$ 

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 17 of 45 Eddy Co, NM

sample 349291 continued . . .

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			516	mg/Kg	5:	4.00

## Sample: 349291 - AH-6 1-1.5'

Laboratory: Midland

Analysis: TPH DRO - NEW

107808

QC Batch: Prep Batch: 91251 Analytical Method:

Sample Preparation:

Date Analyzed:

S 8015 D

2013-12-23

Prep Method: N/A Analyzed By: KC

Prepared By: KC

			RL			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
DRO		1	< 50.0	mg/Kg	1	50.0

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			114	mg/Kg	1	100	114	70 - 130

## Sample: 349291 - AH-6 1-1.5'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 107811 Prep Batch: 91224

Analytical Method: Date Analyzed:

S 8015 D 2013-12-23 Sample Preparation: 2013-12-20

Prep Method: S 5035 Analyzed By: ΑK Prepared By: ΑK

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
GRO		1	49.4	mg/Kg	1	4.00

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.86	mg/Kg	1	2.00	93	70 - 130
4-Bromofluorobenzene (4-BFB)	Qar	Qar		3.64	mg/Kg	1	2.00	182	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 18 of 45 Eddy Co, NM

#### Sample: 349292 - AH-7 0-1'

Laboratory:	Midland
A no lugia	$\mathbf{D}\mathbf{T}\mathbf{E}\mathbf{V}$

Analysis: BTEX QC Batch: 107765 Prep Batch: 91171 Analytical Method: S 8021B
Date Analyzed: 2013-12-20
Sample Preparation: 2013-12-19

Prep Method: S 5035 Analyzed By: AK Prepared By: AK

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Benzene	Qя	1	< 0.100	mg/Kg	5	0.0200
Toluene	Qs	1	2.33	mg/Kg	5	0.0200
Ethylbenzene	Qs	1	1.37	mg/Kg	5	0.0200
Xylene	Qя	1	16.8	mg/Kg	5	0.0200

						Spike	Percent	Recovery	
Surrogate	$\operatorname{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotoluene (TFT) 1 Qs	Qut		1.32	mg/Kg	5	2.00	66	70 - 130	
4-Bromofluorobenzene (4-BFB) QSF	Qsr		5.99	${ m mg/Kg}$	5	2.00	300	70 - 130	

## Sample: 349292 - AH-7 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)
QC Batch: 107984
Prep Batch: 91351

Analytical Method: SM 4500-Cl B
Date Analyzed: 2014-01-03
Sample Preparation: 2013-12-31

Prep Method: N/A Analyzed By: AR Prepared By: AR

			$\mathrm{RL}$			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			3840	mg/Kg	10	4.00

## Sample: 349292 - AH-7 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 107761
Prep Batch: 91215

Analytical Method: S 8015 D Date Analyzed: 2013-12-20 Sample Preparation: 2013-12-19 Prep Method: N/A
Analyzed By: KC
Prepared By: KC

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
DRO		1	385	mg/Kg	1	50.0

							Spike	Percent	Recovery
Surrogate		Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	Qsr	Qsr		131	${ m mg/Kg}$	1	100	131	70 - 130

Report Date: January 6, 2014 Work Order: 13121819

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#### Sample: 349292 - AH-7 0-1'

Laboratory: Midland

Analysis: TPH GRO Analytical Method: QC Batch: 107771 Date Analyzed: Prep Batch: 91171

S 8015 D 2013-12-20 Sample Preparation: 2013-12-19

Prep Method: S 5035 Analyzed By: AKPrepared By:

RLParameter Flag Cert Result Units Dilution RL**GRO** 580 mg/Kg 5 4.00

							Spike	Percent	Recovery
Surrogate		$\operatorname{Flag}$	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				1.94	mg/Kg	5	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)	$Q_{ST}$	Qsr		15.0	mg/Kg	5	2.00	750	70 - 130

## Sample: 349293 - AH-8 0-1'

Laboratory: Midland

Analysis: **BTEX** Analytical Method: S 8021B QC Batch: 107765 Date Analyzed: 2013-12-20 Prep Batch: 91171 Sample Preparation: 2013-12-19

Prep Method: S 5035 Analyzed By: AKPrepared By: ΑK

			RL			
Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Benzene	Qs	1	0.393	mg/Kg	5	0.0200
Toluene	Qs	1	27.3	${ m mg/Kg}$	5	0.0200
Ethylbenzene	Qs	1	17.0	${ m mg/Kg}$	5	0.0200
Xylene	Qs	1	151	mg/Kg	5	0.0200

							Spike	Percent	Recovery
Surrogate		$\operatorname{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)	2 Qar	Qsr		1.27	mg/Kg	, 5	2.00	64	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		31.1	${ m mg/Kg}$	5	2.00	1555	70 - 130

#### Sample: 349293 - AH-8 0-1'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 107984 Date Analyzed: 2014-01-03 Analyzed By: AR. Prep Batch: 91351 Sample Preparation: 2013-12-31 Prepared By: AR.

continued ...

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 20 of 45 Eddy Co, NM

sample 349293 continued . . .

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			66.9	mg/Kg	5	4.00

#### Sample: 349293 - AH-8 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 107808 Prep Batch: 91251 Analytical Method: Date Analyzed:

Sample Preparation:

S 8015 D 2013-12-23 Prep Method: N/A Analyzed By: KC Prepared By: KC

							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	${f Amount}$	Recovery	Limits
n-Tricosane	Qar	Qsr		995	mg/Kg	5	100	995	70 - 130

#### Sample: 349293 - AH-8 0-1'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 107889 Prep Batch: 91286 Analytical Method: S 8015 D Date Analyzed: 2013-12-30 Sample Preparation: 2013-12-24

S 8015 D Prep Method: S 5035 2013-12-30 Analyzed By: AK 2013-12-24 Prepared By: AK

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.79	mg/Kg	100	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB) Q	sr Qsr		45.8	mg/Kg	100	2.00	2290	70 - 130

Work Order: 13121819

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## Method Blanks

Method Blank (1)

QC Batch: 107761

QC Batch: 107761 Prep Batch: 91215

DRO

Date Analyzed: 2013-12-20 QC Preparation: 2013-12-19 Analyzed By: KC

Prepared By:

MDL Parameter Flag Cert Result

Units RL< 6.88 mg/Kg 50

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			114	mg/Kg	1	100	114	88.3 - 126.1

Method Blank (1)

QC Batch: 107765

QC Batch: 107765 Prep Batch: 91171

Date Analyzed: 2013-12-20 QC Preparation: 2013-12-19

Analyzed By: AK Prepared By:

MDL Parameter Flag Cert Result Units RLBenzene < 0.00533 mg/Kg 0.02 Toluene mg/Kg 0.02< 0.006451 Ethylbenzene < 0.0116 mg/Kg 0.021 Xylene < 0.00874 mg/Kg0.02

						$_{ m Spike}$	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.68	mg/Kg	1	2.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)			1.54	mg/Kg	1	2.00	77	70 - 130

Method Blank (1)

QC Batch: 107771

QC Batch: 107771 Prep Batch: 91171

Date Analyzed: 2013-12-20 QC Preparation: 2013-12-19

Analyzed By: AK Prepared By: AK

Work Order: 13121819

Page Number: 22 of 45  $\rm COG/Save~D~A~21~Fed~\#001$ Eddy Co, NM

Parameter		Fla	ag	Cert		MDL Result		Units		R.L
GRO				1		< 2.32		mg/Kg		4
Surrogate		F	lag Cert	Result	Units	Dilution	Spike Amoun			overy mits
Trifluorotoluene (TFT	·)			2.34	mg/Kg	1	2.00	117	•	- 130
4-Bromofluorobenzene		).		2.13	mg/Kg	1	2.00	106	70	- 130
Method Blank (1)	QC :	Batch: 107	808							
QC Batch: 107808			Date	Analyzed:	2013-12-23	}		Analy	zed By:	KC
Prep Batch: 91251				reparation:	2013-12-23				red By:	KC
Parameter		Fla	ag	Cert		MDL Result		Units		RL
DRO				1		<6.88		mg/Kg		50
Surrogate	Flag	Cert	Result	Units	Dilution	Spi n Amo		Percent Recovery	Reco Lin	nits
n-Tricosane			109	mg/Kg	1	10	00	109	88.3 -	126.1
Method Blank (1)  QC Batch: 107810	QC :	Batch: 107	Date	Analyzed:	2013-12-23				zed By:	AK
Prep Batch: 91224			QC F	reparation:	2013-12-20	)		Prepa	red By:	AK
						MDL				
Parameter		F	'lag	Cert		Result		Units		RL

rarameter	riag		Cert		Result		Units	$\kappa_{\rm L}$
Benzene			1		< 0.00533	1	ng/Kg	0.02
Toluene			1		< 0.00645	1	ng/Kg	0.02
Ethylbenzene			1		< 0.0116	3	ng/Kg	0.02
Xylene			i		< 0.00874	1	ng/Kg	0.02
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.45	mg/Kg	1	2.00	72	70 - 130
4-Bromofluorobenzene (4-BFB)			1.47	mg/Kg	1	2.00	74	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 23 of 45

Eddy Co, NM

Method Blank (1)

QC Batch: 107811

QC Batch: 107811 Prep Batch: 91224 Date Analyzed: 2013-12-23 QC Preparation: 2013-12-20 Analyzed By: AK

Prepared By: AK

 $\mathsf{MDL}$ 

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	70 - 130

Method Blank (1)

QC Batch: 107855

QC Batch: 107855 Prep Batch: 91258 Date Analyzed: 2013-12-24

Analyzed By: AK Prepared By: AK

QC Preparation: 2013-12-23

MDL Parameter Flag Cert Result Units RLBenzene < 0.00354 mg/Kg 0.02 1 Toluene mg/Kg 0.02< 0.00966 Ethylbenzene < 0.00790 mg/Kg0.02Xylene < 0.00667 mg/Kg 0.02

						Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	Result	$\operatorname{Units}$	Dilution	${f Amount}$	Recovery	Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Method Blank (1)

QC Batch: 107889

QC Batch: 107889 Prep Batch: 91286 Date Analyzed: 2013-12-30 QC Preparation: 2013-12-24 Analyzed By: AK Prepared By: AK

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 24 of 45 Eddy Co, NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		,	1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.89	mg/Kg	1	2.00	94	70 - 130

Method Blank (1)

QC Batch: 107983

Flag

QC Batch: 107983 Date Analyzed:

2014-01-03

Analyzed By: AR

Prep Batch:

Parameter

Chloride

91351

QC Preparation:

Cert

2013-12-31

Prepared By:

mg/Kg

Units RL

4

Method Blank (1)

QC Batch: 107984

QC Batch:

107984

Date Analyzed:

2014-01-03

MDL

Result

< 3.85

Analyzed By: AR AR

Prep Batch:

91351

QC Preparation:

2013-12-31

Prepared By:

MDLParameter Flag Cert Result Units RLChloride < 3.85 mg/Kg 4

Work Order: 13121819 COG/Save D A 21 Fed #001

**Laboratory Control Spikes** 

#### Laboratory Control Spike (LCS-1)

QC Batch: 107761 Prep Batch: 91215 Date Analyzed: 2013-12-20 QC Preparation: 2013-12-19 Analyzed By: KC Prepared By: KC

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Eddy Co, NM

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit 79.4 - 120.1 <6.88 DRO 261 mg/Kg 250 104

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	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		1	257	mg/Kg	1	250	< 6.88	103	79.4 - 120.1	2	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	115	115	mg/Kg	1	100	115	115	92.9 - 137.7

## Laboratory Control Spike (LCS-1)

QC Batch: 107765 Date Analyzed: 2013-12-20 Analyzed By: AK
Prep Batch: 91171 QC Preparation: 2013-12-19 Prepared By: AK

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	$\mathbf{A}$ mount	Result	Rec.	$_{ m Limit}$
Benzene		1	1.57	mg/Kg	1	2.00	< 0.00533	78	70 - 130
Toluene		1	1.58	${ m mg/Kg}$	1	2.00	< 0.00645	79	70 - 130
Ethylbenzene		1	1.62	mg/Kg	1	2.00	< 0.0116	81	70 - 130
Xylene		1	4.91	mg/Kg	1	6.00	< 0.00874	82	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	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.56	mg/Kg	1	2.00	< 0.00533	78	70 - 130	1	20
Toluene		1	1.56	mg/Kg	1	2.00	< 0.00645	78	70 - 130	1	20
Ethylbenzene		1	1.60	${ m mg/Kg}$	1	2.00	< 0.0116	80	70 - 130	1	20
Xylene		ı	4.89	mg/Kg	1	6.00	< 0.00874	82	70 - 130	0	20

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 26 of 45 Eddy Co, NM

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.51	1.46	mg/Kg	1	2.00	76	73	70 - 130
4-Bromofluorobenzene (4-BFB)	1.59	1.51	mg/Kg	1	2.00	80	76	70 - 130

#### Laboratory Control Spike (LCS-1)

QC Batch:

107771

Date Analyzed:

2013-12-20

Analyzed By: AK

Prep Batch: 91171

QC Preparation: 2013-12-19

Prepared By: AK

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	14.8	mg/Kg	1	20.0	< 2.32	74	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	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	14.4	mg/Kg	1	20.0	< 2.32	72	70 - 130	3	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.99	1.96	mg/Kg	1	2.00	100	98	70 - 130
4-Bromofluorobenzene (4-BFB)	2.18	2.19	mg/Kg	1	2.00	109	110	70 - 130

## Laboratory Control Spike (LCS-1)

QC Batch:

107808 Prep Batch: 91251

Date Analyzed:

2013-12-23

QC Preparation: 2013-12-23

Analyzed By: KC Prepared By: KC

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$
DRO		l	292	mg/Kg	1	250	< 6.88	117	79.4 - 120.1

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
DRO		1	291	mg/Kg	1	250	< 6.88	116	79.4 - 120.1	0	20

Report Date: January 6, 2014

TBD

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 27 of 45 Eddy Co, NM

Cumagata	LCS Result	LCSD Result	Units	Dil.	Spike	LCS	LCSD	Rec. Limit
Surrogate	nesuit	nesuit		1711.	Amount	R.ec.	Rec.	Lillit
n-Tricosane	112	112	mg/Kg	1	100	112	$1\bar{1}2$	92.9 - 137.7

#### Laboratory Control Spike (LCS-1)

QC Batch: 107810 Prep Batch: 91224 Date Analyzed: 2013-12-23 QC Preparation: 2013-12-20

Analyzed By: AK Prepared By: AK

Param	${f F}$	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.56	mg/Kg	1	2.00	< 0.00533	78	70 - 130
Toluene		1	1.74	mg/Kg	1	2.00	< 0.00645	87	70 - 130
Ethylbenzene		1	1.66	mg/Kg	1	2.00	< 0.0116	83	70 - 130
Xylene		1	5.14	mg/Kg	1	6.00	< 0.00874	86	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	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.60	mg/Kg	1	2.00	< 0.00533	80	70 - 130	3	20
Toluene		1	1.60	${ m mg/Kg}$	1	2.00	< 0.00645	80	70 - 130	8	20
Ethylbenzene		1	1.64	${ m mg/Kg}$	1	2.00	< 0.0116	82	70 - 130	1	20
Xylene		1	4.98	mg/Kg	1	6.00	< 0.00874	83	70 - 130	3	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.83	1.46	mg/Kg	1	2.00	92	73	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.59	$\mathrm{mg}/\mathrm{Kg}$	1	2.00	97	80	70 - 130

#### Laboratory Control Spike (LCS-1)

QC Batch: 107811 Prep Batch: 91224 Date Analyzed: 2013-12-23 QC Preparation: 2013-12-20 Analyzed By: AK Prepared By: AK

			LCS			$_{ m Spike}$	Matrix		Rec.
Param	F	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		i	15.2	mg/Kg	1.	20.0	< 2.32	76	70 - 130

Report Date: January 6, 2014

TBD

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 28 of 45

Eddy Co, NM

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	16.9	mg/Kg	1	20.0	< 2.32	84	70 - 130	11	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.94	2.12	mg/Kg	1	2.00	97	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.42	2.46	mg/Kg	1	2.00	121	123	70 - 130

#### Laboratory Control Spike (LCS-1)

QC Batch:

107855

Prep Batch: 91258

Date Analyzed: QC Preparation:

2013-12-24

2013-12-23

Analyzed By: AK

Prepared By: AK

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	1.83	mg/Kg	1	2.00	< 0.00354	92	70 - 130
Toluene		1	1.84	mg/Kg	1	2.00	< 0.00966	92	70 - 130
Ethylbenzene		1	2.09	mg/Kg	1	2.00	< 0.00790	104	70 - 130
Xylene		1	6.35	mg/Kg	1	6.00	< 0.00667	106	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	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.75	mg/Kg	1	2.00	< 0.00354	88	70 - 130	5	20
Toluene		1	1.77	mg/Kg	1	2.00	< 0.00966	88	70 - 130	4	20
Ethylbenzene		1	2.02	mg/Kg	1	2.00	< 0.00790	101	70 - 130	4	20
Xylene		1	6.11	mg/Kg	1	6.00	< 0.00667	102	70 - 130	4	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.93	1.92	mg/Kg	1	2.00	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.11	${ m mg/Kg}$	1	2.00	105	106	70 - 130

#### Laboratory Control Spike (LCS-1)

QC Batch:

107889

Prep Batch: 91286

Date Analyzed:

2013-12-30

QC Preparation: 2013-12-24

Analyzed By: AK Prepared By: AK

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 29 of 45 Eddy Co, NM

			LCS			Spike	Matrix		Rec.
Param	F	$\mathbf{C}_{-}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	17.9	mg/Kg	1	20.0	< 2.32	90	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	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	17.8	nıg/Kg	1	20.0	< 2.32	89	70 - 130	1	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.94	1.81	mg/Kg	1	2.00	97	90	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.08	mg/Kg	1	2.00	106	104	70 - 130

### Laboratory Control Spike (LCS-1)

QC Batch: 107983 Prep Batch: 91351 Date Analyzed: 2014-01-03 QC Preparation: 2013-12-31 Analyzed By: AR. Prepared By: AR.

LCS Spike Matrix Rec. Param F  $\mathbf{C}$ Result Units Dil. Result Limit Amount Rec. Chloride 26602500 < 3.85 106 89.7 - 115.9 mg/Kg

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	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2590	mg/Kg	1	2500	<3.85	104	89.7 - 115.9	3	20

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

#### Laboratory Control Spike (LCS-1)

QC Batch: 107984 Prep Batch: 91351 Date Analyzed: 2014-01-03 QC Preparation: 2013-12-31

Analyzed By: AR. Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2370	mg/Kg	1	2500	< 3.85	95	89.7 - 115.9

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 30 of 45 Eddy Co, NM

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2490	mg/Kg	1	2500	< 3.85	100	89.7 - 115.9	5	20

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

Matrix Spike (MS-1)

Spiked Sample: 349281

QC Batch: 107761 Date Analyzed: 2013-12-20 Analyzed By: KC

Prep Batch: 91215

QC Preparation: 2013-12-19

Prepared By: KC

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	385	mg/Kg	1	250	159	90	64.8 - 149.9

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

			MSD			Spike	Matrix		Rec.		RPD	
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$	RPD	$\operatorname{Limit}$	
DRO		1	369	mg/Kg	1	250	159	84	64.8 - 149.9	4	20	

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

	MS	MSD			$_{ m Spike}$	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	133	134	mg/Kg	1	100	133	134	85.4 - 147.7

Matrix Spike (MS-1)

Spiked Sample: 349283

QC Batch: 107765 Prep Batch: 91171

Date Analyzed: 2013-12-20 QC Preparation: 2013-12-19

Analyzed By: AK Prepared By: AK

		<b>T</b> 3	a	MS	TT 11	D.I	Spike	Matrix	D	Rec.
Param		F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene	3 <sub>Q*</sub>	Qs	1	< 0.0107	mg/Kg	2	2.00	< 0.0107	0	70 - 130
Toluene	Qs	Qs	1	< 0.0129	mg/Kg	$^2$	2.00	< 0.0129	0	70 - 130
Ethylbenzene	$Q_{H}$	Qs	1	< 0.0232	mg/Kg	2	2.00	< 0.0232	0	70 - 130
Xylene	Qs	$\mathbf{Q}_{\mathbf{s}}$	1	< 0.0175	${ m mg/Kg}$	$^2$	6.00	< 0.0175	0	70 - 130

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

				MSD			Spike	Matrix		Rec.		RPD
Param		$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	4 Qs	Qs	1	< 0.0107	mg/Kg	2	2.00	< 0.0107	0	70 - 130	0	20
Toluene	$Q_8$	Qs	i	< 0.0129	mg/Kg	2	2.00	< 0.0129	0	70 - 130	0	20

continued ...

Report Date: January 6, 2014

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 31 of 45 Eddy Co, NM

matrix spikes continued ...

TBD

				MSD			$_{ m Spike}$	Matrix		$\operatorname{Rec}$ .		RPD
Param		$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Ethylbenzene	Qs	Qs	1	< 0.0232	mg/Kg	2	2.00	< 0.0232	0	70 - 130	0	20
Xylene	$Q_8$	$\mathbf{Q}_{\mathbf{H}}$	1	< 0.0175	mg/Kg	2	6.00	< 0.0175	0	70 - 130	0	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.58	1.59	mg/Kg	2	2	79	80	70 - 130
4-Bromofluorobenzene (4-BFB)	1.62	1.61	mg/Kg	2	$^2$	81	80	70 - 130

Matrix Spike (MS-1)

Spiked Sample: 349283

F

 $\mathbf{C}$ 

QC Batch: 107771 Date Analyzed:

MS

Result

2013-12-20

Dil.

Spike

Amount

Result

Analyzed By: AK

Prep Batch: 91171

Param

Prepared By: AK

Limit

70 - 130

QC Preparation: 2013-12-19

Units

Matrix Rec.

Rec.

84

GRO	1	6.76	mg/Kg	2	8.00	<4.64
Percent recovery is based on the spike result	RPD	is based	on the sp	ike and sp	ike duplicat	e result.

			MSD			Spike	Matrix		${ m Rec.}$		RPD	
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$_{ m Limit}$	
GRO		1	6.02	mg/Kg	2	8.00	< 4.64	75	70 - 130	12	20	

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

Surrogate	$rac{ ext{MS}}{ ext{Result}}$	$rac{ ext{MSD}}{ ext{Result}}$	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	2.04	mg/Kg	2	2	101	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.14	2.08	mg/Kg	<b>2</b>	2	107	104	70 - 130

Matrix Spike (MS-1)

Spiked Sample: 349344

QC Batch: 107808

Prep Batch: 91251

Date Analyzed:

2013-12-23

Analyzed By: KC

QC Preparation:

2013-12-23

Prepared By: KC

			MS			Spike	Matrix		${ m Rec.}$
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$
DRO		ı	273	mg/Kg	1	250	< 6.88	109	64.8 - 149.9

Work Order: 13121819 Page Number: 32 of 45 COG/Save D A 21 Fed #001 Eddy Co, NM

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$	RPD	Limit
DRO		1	265	mg/Kg	1	250	< 6.88	106	64.8 - 149.9	3	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	Result	Result	$_{ m Units}$	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	108	104	mg/Kg	1	100	108	104	85.4 - 147.7

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch:

107810

Date Analyzed:

2013-12-23

Analyzed By: AK

Prepared By: AK

Prep Batch: 91224

QC Preparation: 2013-12-20

MS Spike Matrix Rec. F  $\mathbf{C}$ Param Result Units Dil. Amount Result Rec. Limit 70 - 130 Benzene 1.52 mg/Kg 1 2.00 < 0.00533 76 70 - 130 Toluene 1.54 mg/Kg 2.00 77 1 < 0.00645Ethylbenzene 1.57 70 - 130 mg/Kg 1 2.00 < 0.0116 78 4.72 6.00 79 70 - 130 Xylene mg/Kg 1 < 0.00874

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.47	mg/Kg	1	2.00	< 0.00533	74	70 - 130	3	20
Toluene		1	1.50	mg/Kg	1	2.00	< 0.00645	75	70 - 130	3	20
Ethylbenzene		1	1.50	mg/Kg	1	2.00	< 0.0116	75	70 - 130	5	20
Xylene		1	4.57	mg/Kg	1	6.00	< 0.00874	76	70 - 130	3	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT) Qsr Qsr	г 1.33	1.28	mg/Kg	1	2	66	64	70 - 130
4-Bromofluorobenzene (4-BFB)	1.55	1.49	mg/Kg	1	2	78	74	70 - 130

Matrix Spike (MS-1) Spiked Sample: 349344

QC Batch: 107811 Prep Batch: 91224

Date Analyzed:

2013-12-23 QC Preparation: 2013-12-20 Analyzed By: AK Prepared By: AK Report Date: January 6, 2014

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 33 of 45 Eddy Co, NM

Param

 $\overline{GRO}$ 

		MS			Spike	Matrix		Rec.	
•	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	
	1	15.4	mg/Kg	1	20.0	< 2.32	77	70 - 130	

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO:		1	15.2	mg/Kg	1	20.0	< 2.32	76	70 - 130	1	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	Result	Result	$\mathbf{U}$ nits	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.95	1.91	mg/Kg	1	2	98	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.38	2.41	mg/Kg	1	2	119	120	70 - 130

Matrix Spike (MS-1)

Spiked Sample: 349304

 $\mathbf{F}$ 

QC Batch: Prep Batch: 91258

107855

Date Analyzed:

2013-12-24 QC Preparation: 2013-12-23

Analyzed By: AK Prepared By: AK

MS Spike Matrix Rec. F  $\mathbf{C}$ Param Result Units Dil. Amount Result Rec. Limit Benzene 1.71 mg/Kg 2.00 < 0.00354 86 70 - 130 1 1 Toluene 1.75 mg/Kg 1 2.00 < 0.00966 88 70 - 130Ethylbenzene 2.00 mg/Kg 2.00 < 0.00790 100 70 - 130 1 Xylene 6.05 mg/Kg 6.00 < 0.00667 101 70 - 130 1

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.66	mg/Kg	1	2.00	< 0.00354	83	70 - 130	3	20
Toluene		1	1.68	mg/Kg	1	2.00	< 0.00966	84	70 - 130	4	20
Ethylbenzene		1	1.91	mg/Kg	1	2.00	< 0.00790	96	70 - 130	5	20
Xylene		ı	5.73	mg/Kg	1	6.00	< 0.00667	96	70 - 130	5	20

	MS	MSD			$\operatorname{Spike}$	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.92	1.92	mg/Kg	1	2	96	96	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.11	mg/Kg	1	2	105	106	70 - 130

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 34 of 45 Eddy Co, NM

Matrix Spike (MS-1)

Spiked Sample: 349560

QC Batch:

107889

Date Analyzed:

2013-12-30

Analyzed By: AK

Prepared By: AK

Prep Batch: 91286

QC Preparation: 2013-12-24

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO		1	17.2	mg/Kg	1	20.0	2.84	72	70 - 130

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

			MSD			Spike	Matrix		R.ec.		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	17.8	mg/Kg	1	20.0	2.84	75	70 - 130	3	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	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$\mathbf{Limit}$
Trifluorotoluene (TFT)	2.20	1.76	mg/Kg	1	2	110	88	70 - 130
4-Bromofluorobenzene (4-BFB)	2.48	1.99	mg/Kg	1	2	124	100	70 - 130

Matrix Spike (MS-1)

Spiked Sample: 349290

QC Batch:

107983

Prep Batch: 91351

Date Analyzed:

2014-01-03 QC Preparation: 2013-12-31 Analyzed By: AR

Prepared By: AR.

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			3050	mg/Kg	5	2500	244	112	78.9 - 121

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$	RPD	Limit
Chloride			2890	mg/Kg	5	2500	244	106	78.9 - 121	5	20

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

Matrix Spike (MS-1)

Spiked Sample: 349293

QC Batch: 107984 Prep Batch: 91351

Date Analyzed:

2014-01-03 QC Preparation: 2013-12-31 Analyzed By: AR. Prepared By: AR

Work Order: 13121819

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			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2400	mg/Kg	5	2500	66.9	93	78.9 - 121

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

			MSD			$\operatorname{Spike}$	Matrix		${ m Rec}.$		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2460	mg/Kg	5	2500	66.9	96	78.9 - 121	2	20

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# Calibration Standards

Standard (CCV-1)

QC Batch: 107761

Date Analyzed: 2013-12-20

Analyzed By: KC

				CCVs True	CCVs Found	CCVs Percent	Percent	Date
				True	rouna	rercent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	265	106	80 - 120	2013-12-20

Standard (CCV-2)

QC Batch: 107761

Date Analyzed: 2013-12-20

Analyzed By: KC

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	267	107	80 - 120	2013-12-20

Standard (CCV-3)

QC Batch: 107761

Date Analyzed: 2013-12-20

Analyzed By: KC

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	271	108	80 - 120	2013-12-20

Standard (CCV-1)

QC Batch: 107765

Date Analyzed: 2013-12-20

Analyzed By: AK

				CCVs	$\operatorname{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		ţ	mg/kg	0.100	0.0879	88	80 - 120	2013-12-20
Toluene		1	mg/kg	0.100	0.0864	86	80 - 120	2013-12-20

continued ...

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 37 of 45 Eddy Co, NM

 $standard\ continued\ \dots$ 

				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Ethylbenzene		1	mg/kg	0.100	0.0844	84	80 - 120	2013-12-20
Xylene		1	mg/kg	0.300	0.253	84	80 - 120	2013-12-20

## Standard (CCV-2)

QC Batch: 107765

Date Analyzed: 2013-12-20

Analyzed By: AK

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0905	90	80 - 120	2013-12-20
Toluene		1	mg/kg	0.100	0.0897	90	80 - 120	2013-12-20
Ethylbenzene		1	mg/kg	0.100	0.0855	86	80 - 120	2013-12-20
Xylene		1	mg/kg	0.300	0.257	86	80 - 120	2013-12-20

## Standard (CCV-3)

QC Batch: 107765

Date Analyzed: 2013-12-20

Analyzed By: AK

				CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0801	80	80 - 120	2013-12-20
Toluene		1	mg/kg	0.100	0.0844	84	80 - 120	2013-12-20
Ethylbenzene		1	mg/kg	0.100	0.0808	81	80 - 120	2013-12-20
Xylene		1	mg/kg	0.300	0.244	81	80 - 120	2013-12-20

## Standard (CCV-1)

QC Batch: 107771

Date Analyzed: 2013-12-20

Analyzed By: AK

				$\mathrm{CCVs}$	$\mathrm{CCVs}$	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.946	95	80 - 120	2013-12-20

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 38 of 45 Eddy Co, NM

Standard (CCV-2)

QC Batch: 107771

Date Analyzed: 2013-12-20

Analyzed By: AK

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		ŀ	mg/Kg	1.00	0.926	93	80 - 120	2013-12-20

Standard (CCV-3)

QC Batch: 107771

Date Analyzed: 2013-12-20

Analyzed By: AK

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.852	85	80 - 120	2013-12-20

Standard (CCV-1)

QC Batch: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

				CCVs	$\operatorname{CCVs}$	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	254	102	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

				CCVs	$\mathrm{CCVs}$	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	284	114	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107808

Date Analyzed: 2013-12-23

Analyzed By: KC

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 39 of 45 Eddy Co, NM

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	273	109	80 - 120	2013-12-23

## Standard (CCV-1)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

				CCVs	CCVs	CCVs	Percent	
				$\operatorname{True}$	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0860	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0847	85	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0814	81	80 - 120	2013-12-23
Xylene		1	mg/kg	0.300	0.246	82	80 - 120	2013-12-23

## Standard (CCV-2)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

				CCVs True	CCVs Found	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0852	85	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0832	83	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0797	80	80 - 120	2013-12-23
Xylene~_		1	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

## Standard (CCV-3)

QC Batch: 107810

Date Analyzed: 2013-12-23

Analyzed By: AK

				$rac{ ext{CCVs}}{ ext{True}}$	$\operatorname{CCVs}$ Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0864	86	80 - 120	2013-12-23
Toluene		1	mg/kg	0.100	0.0842	84	80 - 120	2013-12-23
Ethylbenzene		1	mg/kg	0.100	0.0796	80	80 - 120	2013-12-23
Xylene		i	mg/kg	0.300	0.240	80	80 - 120	2013-12-23

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 40 of 45 Eddy Co, NM

Standard (CCV-1)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

				$\mathrm{CCVs}$	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO	-	1	mg/Kg	1.00	0.906	91	80 - 120	2013-12-23

Standard (CCV-2)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2013-12-23

Standard (CCV-3)

QC Batch: 107811

Date Analyzed: 2013-12-23

Analyzed By: AK

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.837	84	80 - 120	2013-12-23

Standard (CCV-1)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed	
Benzene		i	mg/kg	0.100	0.0955	96	80 - 120	2013-12-24	
Toluene		1	mg/kg	0.100	0.0931	93	80 - 120	2013-12-24	
Ethylbenzene		1	mg/kg	0.100	0.100	100	80 - 120	2013-12-24	
Xylene		1	mg/kg	0.300	0.304	101	80 - 120	2013-12-24	

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 41 of 45 Eddy Co, NM

Standard (CCV-2)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

				CCVs True	CCVs Found	$\operatorname{CCVs}$ $\operatorname{Percent}$	Percent Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1.	mg/kg	0.100	0.0909	91	80 - 120	2013-12-24
Toluene		1	mg/kg	0.100	0.0891	89	80 - 120	2013-12-24
Ethylbenzene		1	mg/kg	0.100	0.0962	96	80 - 120	2013-12-24
Xylene		1	mg/kg	0.300	0.291	97	80 - 120	2013-12-24

Standard (CCV-3)

QC Batch: 107855

Date Analyzed: 2013-12-24

Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0942	94	80 - 120	2013-12-24
Toluene		1	mg/kg	0.100	0.0918	92	80 - 120	2013-12-24
Ethylbenzene		1	mg/kg	0.100	0.0975	98	80 - 120	2013-12-24
Xylene		1	mg/kg	0.300	0.295	98	80 - 120	2013-12-24

Standard (CCV-1)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.13	113	80 - 120	2013-12-30

Standard (CCV-2)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

				CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.812	81	80 - 120	2013-12-30

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Eddy Co, NM

Standard (CCV-3)

QC Batch: 107889

Date Analyzed: 2013-12-30

Analyzed By: AK

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	$\operatorname{Date}$
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		ľ	mg/Kg	1.00	1.02	102	80 - 120	2013-12-30

Standard (CCV-1)

QC Batch: 107983

Date Analyzed: 2014-01-03

Analyzed By: AR

				CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.7	100	85 - 115	2014-01-03

Standard (CCV-2)

QC Batch: 107983

Date Analyzed: 2014-01-03

Analyzed By: AR.

				CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-01-03

Standard (CCV-1)

QC Batch: 107984

Date Analyzed: 2014-01-03

Analyzed By: AR.

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				$\operatorname{True}$	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	$_{ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2014-01-03

Standard (CCV-2)

QC Batch: 107984

Date Analyzed: 2014-01-03

Analyzed By: AR

Work Order: 13121819 COG/Save D A 21 Fed #001

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				CCVs True	CCVs Found	$\operatorname{CCVs}$ $\operatorname{Percent}$	Percent Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2014-01-03

Report Date: January 6, 2014 Work Order: 13121819 Page Number: 44 of 45 TBD COG/Save D A 21 Fed #001 Eddy Co, NM

# **Appendix**

# Report Definitions

Name	Definition
$\overline{\mathrm{MDL}}$	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	NELAP	T104704392-13-7	Midland

# Standard Flags

77	T	
F	Liggerintion	
	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

#### **Result Comments**

Work Order: 13121819 COG/Save D A 21 Fed #001 Page Number: 45 of 45 Eddy Co, NM

- 1 Surrogate low due to possible dilution out of sample.
- 2 Surrogate low due to possible dilution out of sample.
- 3 MS & MSD were not spiked due to prep error. LCS/LCSD show recovery for the batch.
- 4 MS & MSD were not spiked due to prep error. LCS/LCSD show recovery for the batch.

# Attachments

The scanned attachments will follow this page.

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

1210101 Analysis Request of Chain of Custody Record PAGE: OF: **ANALYSIS REQUEST** (Circle or Specify Method No.) TETRA TECH (Ext. to C35) 8 8 1910 N. Big Spring St. 운 문 Midland, Texas 79705 <u>۾</u> (432) 682-4559 • Fax (432) 682-3946 ర ខ 8 CLIENT NAME: SITE MANAGER: **PRESERVATIVE** Ba Ke Tavarez **METHOD** TCLP Volatiles
TCLP Semi Volatiles PROJECT NO.: PROJECT NAME: Alpha Beta (Air) PLM (Asbestos) FILTERED (Y/N) HCL DA 21 Fed #001 CM3 - Sove Eddy, 60. TX MATRIX COMP. GRAB LAB I.D. DATE TIME SAMPLE IDENTIFICATION NONE HNO3 NUMBER 览 2013 349281 10-1 282 283 HA 0-1 284 1-1.5) 285 -1.5) 286 288 ,5 289 RELINQUISHED BY: (Signature) RESERVED BY: (Signature) SAMPLED BY: (Print & Initial) Time: SAMPLE SHIPPED BY: (Circle) RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) AIRBILL #: HAND DELIVERED UPS RELINQUISHED BY: (Signature) Date: RECEIVED BY: (Signature) TETRA TECH CONTACT PERSON: Results by: Time: RECEIVING LABORATORY: RECEIVED BY: (Signature) RUSH Charges ZIP: PHONE: SAMPLE CONDITION WHEN RECEIVED: Please fill out all copies - Laboratory retains Yellow copy - Return Orginal Copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Will a. A. A. C. 390

An	alvs	sis F	$\exists \epsilon$	20	IU	<u>es</u>	st of	Cha	ain of Cu	stody	, F	₹e	CC	oro										PA	GE:		る		OF	: / 6	2	
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CLIENT NAM	ΛE:							MANAGE LKQ	R: Tavarez		VERS			SER	VATI\ IOD	/E	TX1005 Ba Cd Ba Cd S0/624 70/625					3	izi									
PROJECT N	O.:		PF			NAI	ME:	D A		> }	CONTAIL	<u> </u>					-	200	s Ag As	s Ag As	es Volatiles		8240/82	i. Vol. 82	809	٩	ڼ	(Air)	tos)	Sycanor		
LAB I.D. NUMBER	DATE 2013	TIME	MATRIX	COMP.	GRAB			SAMPL	E IDENTIFICATION		NUMBER OF CONTAINERS	FILTERED (	HN03	ICE	NONE		BTEX 8021B	PAH 8270	RCRA Metals Ag	TCLP Metals /	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Welpur minor		
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SAMPLE CONDI	TION WHEN F	RECEIVED:				T	REMARKS:														•:				_							



May 06, 2014

**IKE TAVAREZ** 

**TETRA TECH** 

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: SAVE D A #21 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 04/30/14 9:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accred certif.html.

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

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celeg D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705
Fax To: (432) 682-3946

Received:

04/30/2014

Reported:

05/06/2014

Project Name:

SAVE D A #21 FED #1

Project Number: Project Location:

112MC06170

COG

Sampling Date:

- " -

04/11/2014

Sampling Type:

Soil
\*\* (See Notes)

Sampling Condition: Sample Received By:

Jodi Henson

# Sample ID: AH-1 NSW (H401295-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	912	16.0	05/05/2014	ND	400	100	400	3.92	
Sample ID: AH-1 SSW (I	H401295-02)								
Chloride, SM4500Cl-B mg/kg			Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1360	16.0	05/05/2014	ND	400	100	400	3.92	
Sample ID: AH-1 ESW (	H401295-03)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	736	16.0	05/05/2014	ND	400	100	400	3.92	
Sample ID: AH-2 ESW (F	H401295-04)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1420	16.0	05/05/2014	ND	400	100	400	3.92	
Chloride	1420	16.0	05/05/2014	ND	400	100	400	3.92	

#### Cardinal Laboratories

\*=Accredited Analyte

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

Celeg D. Keine



**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705

Fax To:

(432) 682-3946

Received:

04/30/2014

Reported:

05/06/2014

Project Name:

SAVE D A #21 FED #1

Project Number:

112MC06170

Sampling Date:

04/11/2014

Sampling Type:

Soil

Sampling Condition: Sample Received By:

\*\* (See Notes) Jodi Henson

Project Location:

COG

Sample ID: AH-2 WSW (H401295-05)

Chloride,	SM4500CI-B
-----------	------------

#### Analyzed By: AP

Analyte

Analyte

Analyte

Analyte

Analyte

Result 720

Reporting Limit 16.0

Analyzed 05/05/2014 Method Blank ND

BS 400 % Recovery 100

True Value QC 400

RPD

Qualifier

Sample ID: AH-3 ESW (H401295-06)

Chloride, SM4500CI-B

#### mg/kg

#### Analyzed By: AP

Method Blank

BS

% Recovery

True Value QC 400

RPD Qualifier

Chloride

Chloride

Result

832

Result

1140

Result

784

Result

400

# 16.0

Reporting Limit

16.0

Reporting Limit

16.0

Reporting Limit

16.0

Reporting Limit

05/05/2014

Analyzed

ND

400

100

3.92

0.00

3.92

Sample ID: AH-3 WSW (H401295-07)

Sample ID: AH-4 ESW (H401295-08)

Chloride, SM4500CI-B

mg/kg

Analyzed By: AP

Analyzed

05/02/2014

Method Blank ND

BS

400

% Recovery

100

True Value QC

400

RPD

Qualifier

Chloride

Chloride

Chloride

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyzed

05/02/2014

Method Blank

ND

BS 400

400

% Recovery

100

100

True Value QC

400

RPD Qualifier

0.00

Sample ID: AH-4 WSW (H401295-09)

Chloride, SM4500CI-B

mg/kg

Analyzed By: AP

Analyzed

05/02/2014

Method Blank ND

BS % Recovery

True Value QC

400

RPD 0.00

Qualifier

Cardinal Laboratories

\*=Accredited Analyte

nedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and including, without limitation, business interruptions, loss of use, or loss of profits incurred by die es, affiliates or successors arising out of or related to the perfo dairn is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories

Celeg & Keine



**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705

Fax To: (432) 682-3946

Received:

04/30/2014

Sampling Date:

04/11/2014

Reported:

05/06/2014

Sampling Type:

Soil

Project Name:

SAVE D A #21 FED #1

Sampling Condition: Sample Received By: \*\* (See Notes) Jodi Henson

Project Number:

112MC06170

Project Location: COG

#### Sample ID: AH-5 SSW (H401295-10)

Chloride, SM4500Cl-B	mg	/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-5 ESW (H401295-11)

Chloride, SM4500CI-B	mg	/kg	Analyze						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1570	16.0	05/02/2014	ND	400	100	400	0.00	

## Sample ID: AH-5 WSW (H401295-12)

Chloride, SM4500CI-B	mg	ı/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-6 ESW (H401295-13)

Chloride, SM4500Cl-B	mg	/kg	Analyze						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2040	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-6 WSW (H401295-14)

Chloride, SM4500Cl-B	Analyze	d By: AP							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	656	16.0	05/02/2014	ND	400	100	400	0.00	

#### Cardinal Laboratories

\*=Accredited Analyte

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Celeg & Keine



TETRA TECH IKE TAVAREZ 1910 N. BIG SPRING STREET MIDLAND TX, 79705

Fax To:

(432) 682-3946

Received:

04/30/2014

Sampling Date:

04/11/2014

Reported:

05/06/2014

Sampling Type:

Soil

Project Name:

SAVE D A #21 FED #1

Sampling Condition: Sample Received By: \*\* (See Notes)
Jodi Henson

Project Number:

112MC06170

Project Location:

COG

## Sample ID: AH-7 ESW (H401295-15)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	656	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-7 WSW (H401295-16)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	736	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-8 ESW (H401295-17)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1040	16.0	05/02/2014	ND	400	100	400	0.00	

#### Sample ID: AH-8 WSW (H401295-18)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2160	16.0	05/02/2014	ND	400	100	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celeg & Keene



#### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

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Celey & Kune

Anaivsis Rec	uest of Chain of Custouy	/ Record	PAGE:
		,	ANALYSIS REQUEST (Circle or Specify Method No.)
H401295	TETRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946		(Ext. to C35)  Pb Hg Se  Pd Hg Se  D5/00
CLIENT NAME: COG	SITE MANAGER: FRE TEN VAIRE	PRESERVATIVE METHOD	TX1005 TX1005 S Ba Cd
PROJECT NO.: PRO. 1/2/1/C 06/70	FRE THE VAIRES	Y/N)	8021B 8015 MOD. 270 Metals Ag As Metals Ag As Wolatiles Semi Volatiles Semi Volatiles Semi Volatiles Semi Volatiles Semi Volatiles Semi Volatiles Ale Beta (Ar) Asbestos) Antons/Cattons
LAB I.D. DATE TIME XX EWOO		NUMBER OF CONTAINERS FILTERED (Y/N) HCL HNO3 ICE NONE ODHAN	BTEX 8021B TPH 8015 MOD. TX1005 PAH 8270 RCRA Metals Ag As Ba Cd C TCLP Metals Ag As Ba Cd V TCLP Volatiles TCLP Semi Volatiles RCI GC.MS Vol. 8240/8260/624 GC.MS Semi. Vol. 8270/625 PCB's 8080/608 Pest: 808/608 Chloride Gamma Spec. Alpha Beta (Air) PLM (Asbestos) Major Anions/Cations, pH, TDS
1 4-30. 4	AH-I NSW		
2 /	A4-1 55W		
3	AH-1 ESW		
4	AH-2 ESW		
5 /	AH-2 WSW		
6	AH-3 ESW		
7	A14-3 WSW		
8	AH-4 E3W		
9	AH-4 EUSW		
10/2	A4.5 SSW,		
RELINAVISHED BY: (Stonature)	Date: Time: PECEPTED BY: (Signature) Date: RECEPTED BY: (Signature)	Date: 41501	SAMPLED BY: (Print & Initial)  Date: Time:
RELINQUISHED BY (Signature)	Date: RECGIVED BY: (Signature)	Date:	SAMPLE SHIPPED BY: (Circle) AIRBILL #: FEDEX BUS CRISE
RELINQUISHED BY: (Signature)	Date: RECEIVED BY: (Signature)	Date:	HAND DELIVERED UPS OTHER:  TETRA TECH CONTACT PERSON: Results by:
RECEIVING LABORATORY: ADDRESS:	RECEIVED BY: (Signature)		RUSH Charges Authorized:
	ZIP: DATE:	TIME:	Yes No
SAMPLE CONDITION WHEN RECEIVED:	REMARKS:		

An	aiys	is F	le	qu	est	of C	ha	ain of Cust	ouy	R	e	CC	r	d							Δ.		PAC YSIS		OUE	ST	1				
						ETC	) A	TECH										1	П	(C						od I	Vo.)			1	-
					1 N	<b>910 N.</b> /lidland  32) 682-4	Big S , Tex: 559 •	<b>Spring St.</b> <b>as 79705</b> Fax (432) 682-3946								- 1	5 (Ext. to C35)	Cd Cr Pb Hg Se	Cd Vr Pd Hg Se									001	60		Christian China
CLIENT NAM		6				SITE MAI	NAGEF Ke	Targez		NERS			SER	VATI\ IOD	Æ		TX1005	As Ba C	As Ba C			260/624	270/625						ng 'su		
PROJECT NO		70	PRO	JEC.	NAME:	A	#°	"Targrez_ 21 Fact #1		F CONTA	( <u>S</u> )					8	8015 MOD.	als Ag	als Ag A	ilies Volatile		. 8240/8	mi. Vol. B	809/0	8	<b>Э</b> вс.	(Air)	stos)	200		
LAB I.D. NUMBER	DATE	TIME	MATRIX	GRAB		S.	AMPLI	E IDENTIFICATION		NUMBER OF CONTAINERS	FILTERED (Y/N)	HNO3	SE	NONE		=1	PAH 8270	RCRA Metals Ag	TCLP Metals Ag	TCLP Volatiles	<u>5</u>	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 808	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anie		
11	4.30	K			AH.	-5	E	SW													_			1	1			_			
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13					AH.	6	£3	iw																	1	1			$\perp$		
14					14	-6	WS	iw													$oldsymbol{\perp}$			$\perp$	1						
15					AH-	. 2	ES	iw										_							1	1					
16		-			A14-	. 7	w	5W										L			$oldsymbol{\perp}$				1	1		$\perp$			
17					AH-	8	E	SW				$oldsymbol{\perp}$									L			$\perp$	1						
18					A4.	4	W	Sev																1	1	1					
											$\perp$	$oldsymbol{\perp}$	_					$\perp$			$\perp$			$\downarrow$		L		1	1		
oci piorijanio	ny /02-1				Date:	4-20.	4	Anna di atau tel		Щ		Date:	ليا.	_	, j	,,	1	1		Y: (Pri			Ц	$\perp$				ife:	$\perp$		$oldsymbol{ol}}}}}}}}}}}}}}}}}}}}}$
RELINQUISHED RELINQUISHED	4/1	$\sim$			Time:	1 30 /	17	PECEIVED BY: (Signature)	nsion	<u> </u>	ال المراكب	Time.	STANCE OF STREET	3	1	D				IPPEC				ar Mes	· · · · · · · · · · · · · · · · · · ·		Tir	ne:			
RELINQUISHED			<del></del>		Time: Date:			RECEIVED BY: (Signature)				Time. Date:					=		D DEI	IVER		BUS UPS	\$				отн	ER: _			
RECEIVING LAB ADDRESS:	ORATORY:	•			Time:		F	RECEIVED BY: (Signature)				Time.					=  '	EIHA	TEC	CON	HAC'	I PER	ISUN:	:					H Cha		
CITY:		STATE:		PHON				DATE:		TIM	E:																	Auth	orized 'es	. N	<u>.                                    </u>
SAMPLE CONDI	v F	#5L	Copie	· ·		MARKS:	/ellow	copy - Return Orginal co	ony to Tetr	a Te	ch -	Pro	iect	Man	agei	ret	ains	Pink	COD	·V ~	Acr	oun	tina	rec	eive	s Go	ld c	vao:		-	



April 10, 2014

**IKE TAVAREZ** 

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: SAVE D A #21 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 04/09/14 9:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accred certif.html.

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

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celeg D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



TETRA TECH **IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705 Fax To: (432) 682-3946

Received: Reported: 04/09/2014

04/10/2014

Project Name:

SAVE D A #21 FED #1

Project Number:

112MC06170

Project Location: COG Sampling Date:

04/08/2014

Sampling Type: Soil

Sampling Condition:

Cool & Intact

Sample Received By:

Jodi Henson

#### Sample ID: T-1 (AH-2) 0' (H401068-01)

Analyzed By: AP

Analyte

Result

Reporting Limit

Analyzed

Method Blank

BS % Recovery

True Value QC

400

Qualifier

Chloride

2800

16.0

Reporting Limit

04/09/2014

Analyzed

ND

Method Blank

ND

400

100

3.92

RPD

#### Sample ID: T-1 (AH-2) 2' REFUSAL (H401068-02)

Chloride,	SM4500CI-B
	Analyte

mg/kg

Analyzed By: AP

BS

400

% Recovery

True Value QC RPD

Qualifier

Chloride

Result 3760

16.0

04/09/2014

100

400

3.92

#### Sample ID: T-2 (AH-3) 0' (H401068-03)

Chloride,	SM4500CI-B
	Analyte

Result

Analyzed By: AP

BS

% Recovery

Chloride

Reporting Limit 16.0

04/09/2014

Analyzed

Method Blank ND

400

True Value QC

RPD

1520

100

400

3.92

Sample ID: T-2 (AH-3) 2' REFUSAL (H401068-04)

-		•
bloride.	SM4500CI-	R

Analyte

mg/kg

Analyzed By: AP

Method Blank

ND

BS

% Recovery

True Value QC

Qualifier

Qualifier

Chloride

Result 512

Reporting Limit 16.0

Analyzed 04/09/2014

400

100

400

RPD 3.92

Cardinal Laboratories

\*=Accredited Analyte

All claims, including those for negligence and ies, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether

Celey & Keine

Celey D. Keene, Lab Director/Quality Manager

Page 2 of 10



TETRA TECH
IKE TAVAREZ
1910 N. BIG SPRING STREET
MIDLAND TX, 79705

Fax To: (432) 682-3946

Received:

04/09/2014

Sampling Date:

04/08/2014

Reported:

04/10/2014

Sampling Type:

Soil Cool & Intact

Project Name:

SAVE D A #21 FED #1

Sampling Condition: Sample Received By:

Jodi Henson

Project Number:

112MC06170

Project Location:

COG

## Sample ID: T-3 (AH-5) 0' (H401068-05)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/09/2014	ND	2.12	106	2.00	26.1	
Toluene*	<0.050	0.050	04/09/2014	ND	1.97	98.6	2.00	26.2	
Ethylbenzene*	<0.050	0.050	04/09/2014	ND	1.88	94.2	2.00	26.6	
Total Xylenes*	<0.150	0.150	04/09/2014	ND	5.46	91.1	6.00	25.2	
Total BTEX	<0.300	0.300	04/09/2014	ND					
Surrogate: 4-Bromofluorobenzene (PIL	107 9	% 89.4-12	6						
TPH 8015M	mg/	kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/09/2014	ND	196	98.2	200	0.606	
DRO >C10-C28	<10.0	10.0	04/09/2014	ND	214	107	200	10.8	
EXT DRO >C28-C35	<10.0	10.0	04/09/2014	ND					
Surrogate: 1-Chlorooctane	113 %	65.2-14	0						
Surrogate: 1-Chlorooctadecane	108 9	63.6-15	4						

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**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705 Fax To: (432) 682-3946

Received:

04/09/2014

Reported:

04/10/2014

Project Name:

SAVE D A #21 FED #1

Project Number: Project Location: 112MC06170

COG

Sampling Date:

04/08/2014

Soil

Sampling Type: Sampling Condition:

Cool & Intact

Sample Received By:

Jodi Henson

#### Sample ID: T-3 (AH-5) 2' (H401068-06)

BTEX 8021B	mg/	kg	Analyze	a By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/09/2014	ND	2.12	106	2.00	26.1	
Toluene*	<0.050	0.050	04/09/2014	ND	1.97	98.6	2.00	26.2	
Ethylbenzene*	<0.050	0.050	04/09/2014	ND	1.88	94.2	2.00	26.6	
Total Xylenes*	< 0.150	0.150	04/09/2014	ND	5.46	91.1	6.00	25.2	
Total BTEX	<0.300	0.300	04/09/2014	ND					
Surrogate: 4-Bromofluorobenzene (PIL	107	% 89.4-12	6		Augustina and Au				
ТРН 8015М	mg,	/kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/09/2014	ND	196	98.2	200	0.606	
DRO >C10-C28	30.6	10.0	04/09/2014	ND	214	107	200	10.8	
EXT DRO >C28-C35	<10.0	10.0	04/09/2014	ND					
Surrogate: 1-Chlorooctane	125	% 65.2-14	0	Pro- 1-40 milionardus (ameningana ang ang akang direntaning		Pari da esta esta como a contracta esta una sel la serie de Pari de Andrea.		eki dirinterin (i residikani i ilakisana i ku, ana i™ m	an Parkancian (a. M. mayay yan 4 yandiyah (a. M. 1999)
Surrogate: 1-Chlorooctadecane	113	% 63.6-15	4						

Analyzed By MC

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**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705

Fax To:

(432) 682-3946

Received:

04/09/2014 04/10/2014 Sampling Date:

04/08/2014

Reported:

Sampling Type:

Soil

Project Name:

SAVE D A #21 FED #1

Sampling Condition: Sample Received By: Cool & Intact Jodi Henson

Project Number:

112MC06170

Project Location: COG

# Sample ID: T-3 (AH-5) 4' REFUSAL (H401068-07)

Analyte  ne* ne* nenzene*  Xylenes*	Result <0.050 <0.050 <0.050 <0.050 <0.150	0.050 0.050 0.050	Analyzed 04/09/2014 04/09/2014	Method Blank ND ND	BS 2.12	% Recovery	True Value QC 2.00	RPD 26.1	Qualifier
ne* enzene* Xylenes*	<0.050 <0.050	0.050				106	2.00	26.1	
enzene* Xylenes*	<0.050		04/09/2014	ND					
Xylenes*		0.050		115	1.97	98.6	2.00	26.2	
•	< 0.150		04/09/2014	ND	1.88	94.2	2.00	26.6	
		0.150	04/09/2014	ND	5.46	91.1	6.00	25.2	
BTEX	<0.300	0.300	04/09/2014	ND					
gate: 4-Bromofluorobenzene (PIC	107 %	% 89.4-12	6	y andrew later survey of a manufacture for producers, such states a manufacture for		riyari adamada kabi 🕊 A kabida ara ara ara ara ada k			
015M	mg/	kg	Analyze	d By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
C6-C10	<10.0	10.0	04/09/2014	ND	196	98.2	200	0.606	
>C10-C28	<10.0	10.0	04/09/2014	ND	214	107	200	10.8	
RO >C28-C35	<10.0	10.0	04/09/2014	ND					
	126 %	65.2-14	0			VIII	- Andrew Strawnston - Andrew Strawnsky, Stra	ter i vilitate etteri ritatumun terrira d	Managements - even 4 s Section service aller has salved how
gate: 1-Chlorooctane									
>C10-C28	<10.0 <10.0	10.0	04/09/2014	ND				•	

#### Sample ID: T-4 (AH-7) 0' (H401068-08)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	04/09/2014	ND	400	100	400	3.92	

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TETRA TECH IKE TAVAREZ 1910 N. BIG SPRING STREET MIDLAND TX, 79705

Fax To:

(432) 682-3946

Analyzed By: AP

Method Blank

ND

ND

ND

196

214

98.2

107

Analyzed

04/10/2014

04/10/2014

04/10/2014

Received:

04/09/2014

Reported:

Chloride, SM4500Cl-B

04/10/2014

Project Name:

SAVE D A #21 FED #1

Reporting Limit

10.0

10.0

10.0

65.2-140

63.6-154

Project Number: Project Location:

Analyte

112MC06170

COG

Result

137

2310

345

136 %

130 %

Sampling Date:

04/08/2014

Sampling Type:

% Recovery

Soil

True Value OC

200

200

0.606

10.8

Sampling Condition:

BS

Cool & Intact

RPD

Oualifier

Sample Received By:

Jodi Henson

#### Sample ID: T-4 (AH-7) 1' REFUSAL (H401068-09)

Analyte	Resuit	Reporting Limit	Analyzeu	Metriod blank	D2	% Recovery	True value QC	KPD	Quanner
Chloride	352	16.0	04/09/2014	ND	400	100	400	3.92	
Sample ID: T-5 (AH-8) 0' (H40	)1068-10	<b>)</b> )							
BTEX 8021B	mg/	'kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/09/2014	ND	2.12	106	2.00	26.1	
Toluene*	<0.050	0.050	04/09/2014	ND	1.97	98.6	2.00	26.2	
Ethylbenzene*	0.696	0.050	04/09/2014	ND	1.88	94.2	2.00	26.6	
Total Xylenes*	3.57	0.150	04/09/2014	ND	5.46	91.1	6.00	25.2	
Total BTEX	4.27	0.300	04/09/2014	ND					
Surrogate: 4-Bromofluorobenzene (PIL	109 9	% 89.4-12	6	The state of the s	Language for a minimum insure in course this a sold	A 1000 - 1000 A 1000 - 1000 A		entrem in a restaura para i su percet Percenten	
TPH 8015M	mg/	'kg	Analyze	d By: ms				<u> </u>	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

Cardinal Laboratories

**GRO C6-C10** 

DRO >C10-C28

**EXT DRO > C28-C35** 

Surrogate: 1-Chlorooctane

Surrogate: 1-Chlorooctadecane

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**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET MIDLAND TX, 79705

(432) 682-3946

Fax To:

112MC06170

Received: 04/09/2014 Reported: 04/10/2014

Project Name: SAVE D A #21 FED #1

Project Location: COG

Project Number:

Sampling Date:

04/08/2014

Sampling Type: Soil

Sampling Condition: Cool & Intact Sample Received By:

Jodi Henson

Sample ID: T-5 (AH-8) 2' (H401068-11)

BTEX 8021B	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/10/2014	ND	2.12	106	2.00	26.1	
Toluene*	< 0.050	0.050	04/10/2014	ND	1.97	98.6	2.00	26.2	
Ethylbenzene*	<0.050	0.050	04/10/2014	ND	1.88	94.2	2.00	26.6	
Total Xylenes*	<0.150	0.150	04/10/2014	ND	5.46	91.1	6.00	25.2	
Total BTEX	<0.300	0.300	04/10/2014	ND					
Surrogate: 4-Bromofluorobenzene (PIC	113 9	% 89.4-12	6				in to permission tradition to the common distance for many many many many many many many many		
TPH 8015M	mg/	kg	Analyze	d By: ms				<u>.</u>	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/09/2014	ND	196	98.2	200	0.606	
DRO >C10-C28	<10.0	10.0	04/09/2014	ND	214	107	200	10.8	
EXT DRO >C28-C35	12.5	10.0	04/09/2014	ND					
Surrogate: 1-Chlorooctane	123 9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110 9	63.6-15	4						

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#### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Celeg & Keine

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- / \1 E	<u>,</u>			7							_			4				(Oi-				EQUE		N- 1			σ
						TETRA 1910 N. Big S Midland, Tex (432) 682-4559	Spring St. (as 79705								(Ext. to C35)	Cr Pb Hg Se	Pd Hg		cie o	T Spi	ecity	Meti		<b>VO.</b> )			opeo.
<u>H4</u>	0101	08			<del></del>					<del></del>				4	Š	D BO				4 \%					pH, TDS		
CLIENT NAM	50G					SITE MANAGEI	Taval	10 Z	EBS	P		ETHO	ATIVE DD		TX1005	Ba	Ba		09/03	70/62					S, PH		
PROJECT NO	J.:	_	PRO	0.JEC	TNA	ME: DA#	21 Fc	1#1	F CONTAIN			T			5 MOD.	als Ag As	als Ag As	Volatiles	70/0/00	ni. Vol. 82	809/	88	9C.	(Air)	stos, ns/Cation		
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP. GRAB		SAMPL	E IDENTIFICATI	ION	NUMBER OF CONTAINERS FILTERED (Y/N)	HOL	HN03	ICE	NONE	BTEX 8021B	TPH 8015	RCRA Metals Ag	TCLP Metals	TCLP Semi Volatiles	RCI	GC.MS Sen	PCB's 8080/608	Pest. 808/608 Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Aspestos) Major Anions/Cations,		
1						T-1 (A)	4.5)	0'													$\prod$	1	1				$\prod$
2					<u></u>	T-1 CAH	الة'	2 1 scf4591															$\{ \ \}$				
3			Ш			7-2 (AH	~3)	01													$\prod$	V	$\prod$				
4					I	-2 (AN-	3) 2	L' Refusul												T	П		$\prod$				$\prod$
5					V	-3 CAH.	5) c								1					T	П		$\prod$	T		Π	П
6					V	-3 (AH-:	5) 2		H	П				1						T	П		П		$\prod$	T	П
7					T	-3 (AU-5	5) 4	184591						/	1						П	T	П	T		T	П
8					V	-4 (AH-7	) D'		П	П		T		-							П	1	$\prod$	T	$\prod$	T	П
9					T	-4 CAH-7	) [	refusa 1		П										T		1	П	T	$\prod$		
ID.					T	-5 CAH-8	17, 0'	!					al											brack			
RELINOURS/LED E		"	,		Dati Tim	18: 4 mg - 14 18:	COLUMN (Sign	Then Son	n		late: ime:	7	犯	步	[ S	AMPL	ED BY	(Print	& Initia	al)				Date Time			
RELINQUISHED E		, <b>P</b>		***************************************	Date Tim	te:	RECEIVED BY: (Sign	nature)		D	ate: ime: .					FEDE	X	PED B	В	US				AIRBIL	L #:		
RELINQUISHED B	Y: (Signature	1)			Date Tim		RECEIVED BY: (Sign	nature)			)ate: îme:							VERED CONTA		PS ERSON	N:			THER	esults i	by:	
RECEIVING LABO ADDRESS:	RATORY: _						RECEIVED BY: (Signat	ture)																R	USH C	harges	;
CITY: CONTACT:		STATE: _		PHON	E:		DATE:		TIME:				<u> «نام</u>						_						Yes	•	No
SAMPLE CONDIT		RECEIVED:	41	1		REMARKS:																		y		•	

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An	aiys	is F	łе	a	u	est of Cha	ain of Custou	vF	₹e	C	01	ď									PAGI				<u>,                                    </u>	<u>:</u>		— Ç	۔ 5
				3				<u> </u>										(Ci			'SIS I pecil				o.)			Ş	2
H	HO 10	D69				Midland, Tex (432) 682-4559	Spring St. (as 79705 Fax (432) 682-3946	·	<del></del>					1 1	005 (Ext. to C35)	Cd Cr Pb Hg Se	Cd Vr Pd Hg Se									, TDS		7 7	רמכת
CLIENT NAM	FOL					SITE MANAGE	HI Tavarez	NERS				RVATI THOD	VE		TX1005	3 Ba	88			60/62	270/6					Js, pH			
PROJECT N	D.:				ECT VQ	NAME:	Tavarez Fed#1	CONTAI	V/N)						MOD.	Is Ag A	ds Ag A	Volatiles		8240/82	. Vol. 8; /608	88		, A14	(Alif)	19/Cation			
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	SAMPL	E IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL HCL	SONIE	NONE			TPH 8015	RCRA Metals Ag As Ba	TCLP Metals /	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625 PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air) PLM (Asbestos)	Major Anions/Cations, pH, TDS			
11						7-5 (AH-	8) 2'							1	1														
											T									П				T		П		П	
							·			T		1												T	T	П	T	П	-
										$\top$	1				$\top$	$\prod$		T			$\top$	П		T	T	П	$\top$		
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			П		$\top$	<del></del>				T	$\dagger$	1			$\top$	T	$\top$	1		$  \uparrow  $	T	П	7	十	T	Ħ	T	$\prod$	1
			$\prod$		1					T	1				十	T	$\dagger$	T		$\prod$	$\top$	П	1	T	十	II	+	$\dagger \dagger$	-
				7	+					1	$\dagger$					$\dagger \dagger$	$\dagger$	T		$  \uparrow  $	$\dagger$	П	T	+	十	$\dagger \dagger$	十	H	-
			H	1	$\forall$					T	$\dagger$	+-			$\top$	$\dagger \dagger$	$\top$	†			$\top$	H	1	$\top$	十	H	+	$\dagger \dagger$	-
				1	$\dashv$	1				十	$\top$				1		$\dagger$	T	T		$\dagger$	$  \cdot  $	+	$\top$	+	H	+	$\prod$	-
RELINQUISHED		e) /	<b>1</b>	1		Date: Y=9-14	Bed Signatur Lense	9n		Dat Tim	e:	增	片	F	s	AMPL	ED BY	r: (Prin	nt & In	itial)		<u> </u>			Date: Time:				_
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April 14, 2014

**IKE TAVAREZ** 

TETRA TECH

1910 N. BIG SPRING STREET

MIDLAND, TX 79705

RE: SAVE D A #21 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 04/14/14 10:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accred certif.html.

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

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celeg & Keene

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



**TETRA TECH IKE TAVAREZ** 1910 N. BIG SPRING STREET

MIDLAND TX, 79705

Fax To:

(432) 682-3946

Received:

04/14/2014

Sampling Date:

04/11/2014

Reported:

04/14/2014

Sampling Type:

Soil

Project Name:

SAVE D A #21 FED #1

Sampling Condition:

\*\* (See Notes)

Project Number: **Project Location:**  112MCD6170 COG

Sample Received By:

Jodi Henson

# Sample ID: AH-2 BOTTOM HOLE @ 2' (H401118-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	04/14/2014	ND	400	100	400	0.00	

Cardinal Laboratories \*=Accredited Analyte

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

Celey D. Keine



#### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

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

Celey D. Keene

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CLIENT NAME: 206	<del></del>	SITE MANAGEI	IK. Kuk	152	NERS	F		ERV	ATIVE DD		TX1005	s Ba C	g Ba C			270/625					ns. pH,		
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SAMPLE CONDITION WHEN RECEIVED:  Please fill out all of	copies - Li	REMARKS: aboratory retains Yellow	copy - Return Orginal c	opy to Tetra	Tec	h -	Proje	ect M	lanag	er ret	ains	Pink	сору	· - A	cco	untir	ng re	ceive	es Go	old co	эру.		Appendix App