### SITE INFORMATION

					· · · · · · · · · · · · · · · · · · ·						
			t Type: Clo		and shows the second of the second						
General Site I	nformation:	A CARLES CARE									
Site:		and the second se	Central Tank Ba	ttery							
Company:			COG Operating LLC								
	nship and Range	Unit O	Sec 20	T17S	R30E						
Lease Numbe	r:		NMNM-0467932								
County:			Eddy County								
GPS:	······	32.8154			103.99518						
Surface Owne		Federal	· · · · · · · · · · · · · · · · · · ·								
Mineral Owne Directions:	<i>r:</i>					german Cutoff Road, go west on					
					nd go 0.1 miles to lo	niles and lease road will vear to cation					
	A Phates Week		ns as and		en assand						
Date Released		8/2/2010		8/31/20		12/31/2010					
			ood water								
Type Release:		oil and produ		produced		produced water					
Source of Con	tamination:	water tank		6" steel I	ine	equalizer line					
Source of Con Fluid Released	tamination: 1:	water tank 4 bbls oil and	60 water	6" steel I 100 bbls	ine	equalizer line 150 bbls					
Source of Con Fluid Released Fluids Recover	tamination: 1: red:	water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	6" steel I	ine	equalizer line 150 bbls 80 bbls					
Source of Con Fluid Released Fluids Recover Official Comm	tamination: l; red: hunication:	water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	6" steel I 100 bbls	ine	equalizer line 150 bbls					
Source of Con Fluid Released Fluids Recove Official Comm Name:	tamination: I: red: nunication: Pat Ellis	water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	6" steel I 100 bbls	ine Ike Tavarez	equalizer line 150 bbls 80 bbls					
Source of Con Fluid Released Fluids Recover Official Comm Name: Company:	tamination: I: red: hunication: Pat Ellis COG Operating, L	water tank 4 bbls oil and 2 bbls oil and	60 water 30 water	6" steel I 100 bbls	ine Ike Tavarez Tetra Tech	equalizer line 150 bbls 80 bbls					
Source of Con Fluid Released Fluids Recover Official Comm Name: Company: Address:	tamination: I: red: nunication: Pat Ellis	water tank 4 bbls oil and 2 bbls oil and	60 water 30 water RECE	6" steel I 100 bbls 98 bbls	ine Ike Tavarez	equalizer line 150 bbls 80 bbls					
Source of Com Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box	tamination: : red: Pat Ellis COG Operating, L 550 W. Texas Ave	water tank 4 bbls oil and 2 bbls oil and LC 5. Ste. 1300	60 water 30 water RECE AUG 2	6" steel I 100 bbls 98 bbls IVED 3 2013	ine Ike Tavarez Tetra Tech 1910 N. Big Sprin	equalizer line 150 bbls 80 bbls					
Source of Coni Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box City:	tamination: I: red: Pat Ellis COG Operating, L 550 W. Texas Ave Midland Texas, 79	water tank 4 bbls oil and 2 bbls oil and LC 5. Ste. 1300	60 water 30 water RECE AUG 2	6" steel I 100 bbls 98 bbls IVED 3 2013	ine Ike Tavarez Tetra Tech 1910 N. Big Sprin Midland, Texas	equalizer line 150 bbls 80 bbls					
Source of Com Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box	tamination: I: red: Pat Ellis COG Operating, L 550 W. Texas Ave Midland Texas, 79	water tank 4 bbls oil and 2 bbls oil and LC 5. Ste. 1300	60 water 30 water RECE	6" steel I 100 bbls 98 bbls IVED 3 2013	ine Ike Tavarez Tetra Tech 1910 N. Big Sprin	equalizer line 150 bbls 80 bbls					
Source of Coni Fluid Released Fluids Recover Official Comm Name: Company: Address: P.O. Box City:	tamination: I: red: Pat Ellis COG Operating, L 550 W. Texas Ave Midland Texas, 79	water tank 4 bbls oil and 2 bbls oil and LC 5. Ste. 1300	60 water 30 water RECE AUG 2	6" steel I 100 bbls 98 bbls IVED 3 2013	ine Ike Tavarez Tetra Tech 1910 N. Big Sprin Midland, Texas	equalizer line 150 bbls 80 bbls					

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft	0	0
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:	0	
	nan na sana ana ana ana ana ana ana ana	
AČC	eptable Soil RRAL (n	ng/kg) 👾
Benzen	e Total BTEX	TPH
. 10	50	5,000

ETRA TECH

June 20, 2013

Mr. Mike Bratcher Environmental Engineer Specialist Oil Conservation Division District 2 1301 West Grand Avenue Artesia, New Mexico 88210

#### Re: Closure Report for the COG Operating LLC., Southwest Central Tank Battery, Unit 0, Section 20, Township 17 South, Range 30 East, Eddy County, New Mexico.

#### Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess (3) three spills at the Southwest Central Tank Battery, Unit 0, Section 20, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81557°, W 103.99519°. The site location is shown on Figures 1 and 2.

#### Background

COG Operating has reported three spills at the facility and submitted the initial C-141 forms for each spill to the NMOCD. For this work plan, the spills will be referenced as Spill #1, #2 and #3. The approximate spill footprint areas are shown on Figure 3.

#### <u>Spill #1</u>

According to the State of New Mexico C-141 Initial Report, the leak was discovered on August 2, 2010, and released approximately sixty (60) barrels of produced water and four (4) barrels of crude oil. The spill was caused by a failed water pump and overflowed the water tanks. COG personnel repaired the pump and returned the tank to operation. Thirty (30) barrels of produced water and two (2) barrels of crude oil were recovered. The spill initiated at the battery and impacted the north side of the facility pad measuring approximately 100' x 110' and migrated south off the pad in the pasture measuring approximately 100' x 110'. The initial C-141 form is enclosed in Appendix A.



#### <u>Spill #2</u>

According to the State of New Mexico C-141 Initial Report, the leak was discovered on August 31, 2010, and released approximately one hundred (100) barrels of produced water. The spill was caused by a corroding 6" steel line which developed a hole. A new poly line was installed to replace the steel line. Ninety eight (98) barrels of produced water were recovered by the use of a vacuum truck. The spill initiated from the steel line located south of tank battery and fluids migrated south into the pasture measuring approximately 35' x 35'. The spill area encompassed part of the 1<sup>st</sup> spill footprint. The initial C-141 form is enclosed in Appendix A.

#### Spill #3

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 31, 2010, and released approximately one hundred and fifty (150) barrels of produced water. The spill was caused by a PVC adaptor freezing and cracking. Eighty (80) barrels of produced water were recovered by the use of a vacuum truck. The spill initiated at the tank battery and migrated off the pad impacting an area of approximately 8' x 100' and 40' x 150' overlapping the two previous spills in the pasture south of the tank battery. The initial C-141 form is enclosed in Appendix A.

#### Groundwater

No water wells were listed within Section 20. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 250' 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 Spill#1

#### Spill #1 and Spill #2

On August 10, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) 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 chainof-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all the submitted samples were below RRAL for TPH and BTEX. Auger holes (AH-1, AH-2, AH-3, AH-4 and AH-7) were not vertically defined and showed elevated chloride concentrations of 4,320 mg/kg (9-9.5'), 4,120 mg/kg (7-7.5'), 9,530 mg/kg (5-5.5'), 1,070 mg/kg (9-9.5'), and 2,040 mg/kg (2.5-3') respectively. Auger holes (AH-5 and AH-6) did detect elevated chloride concentrations at surface and significantly declined with depth. In order to define the impact of the chloride concentrations, Tech Tetra installed boreholes using an air rotary drilling rig.

Prior to drilling the soil borings, the second spill occurred at the site. The footprint of the second spill overlapped a portion of the first spill in the pasture. The footprint of the second spill is shown on Figure 3. On November 17, 2010, Tetra Tech supervised the installation of soil borings. The soil boring samples were collected to a maximum depth of 30' below ground surface. The soil boring locations are shown on Figure 3. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3. Referring to Table 1, the chloride impact was defined and significantly declined with depth at approximately 10.0' below surface.

#### Spill #3

On December 31, 2010, the third spill occurred at the site overlapping the first and second spill area in the pasture. On February 15, 2011, Tetra Tech installed additional soil borings. Tech personnel supervised the installation of five soil borings (SB-1 through SB-5) utilizing an air rotary drilling rig. The soil boring locations are shown on Figure 3. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3. Referring to Table 1, the chloride impact declined with depth with chloride concentrations declining to 634 mg/kg at SB-1 (10.0'), 240 mg/kg at SB-2 (15.0') and 269 mg/kg at SB-3 (20.0').

#### **Closure Activities**

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. For safety concerns, COG had moved two of the water tanks located along the east edge of the pad. The tanks were installed on the east side of the pad, which encompassed a portion of the spill area.

The final excavation depths of the soil remediation were met as stated in the approved work plan. The excavation depths are highlighted in Table 1 and shown on Figure 4. Once excavated to the appropriate depths, Tetra Tech collected confirmation samples from the pad and in the pasture area.



Referring to Table 1, all of the bottom hole confirmation samples collected on the pad showed that the maximum extent of chloride contamination was removed. The confirmation samples collected in the pasture showed elevated chloride concentrations present in the excavation bottoms at 7.0' and 10.0' below surface. Based on the data, the areas of AH-1, AH-2 and AH-3 were capped with a 40 mil liner at a depth of approximately 4.0' below surface. The areas of AH-4 and AH-7 on the pad were also capped with clay material at approximately 3.0' below surface. All of the excavated areas were backfilled with clean soil to grade. Approximately 2,100 cubic yards of soil were excavated and hauled to R360 for proper disposal.

Based on the remedial activities performed, COG request closure of the site. Copies of the C-141's (Finals) are included in Appendix A. If you have any questions or comments concerning the remedial activities, please call at (432) 682-4559.

> Respectfully submitted, TETRA TECH

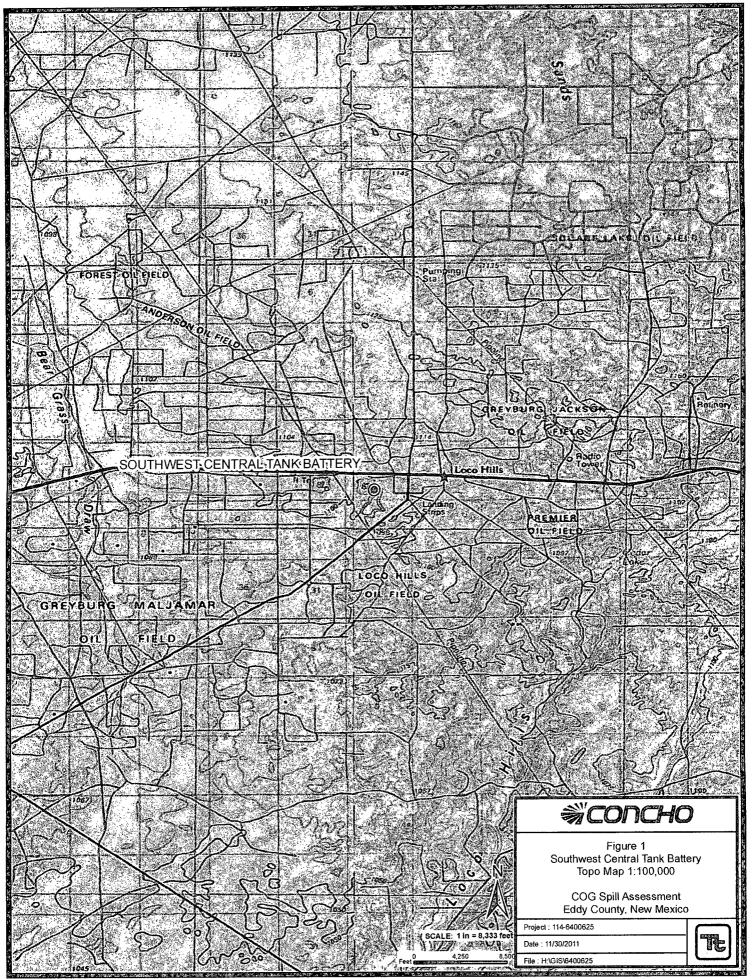
Tke Tavarez, PG Project Manager

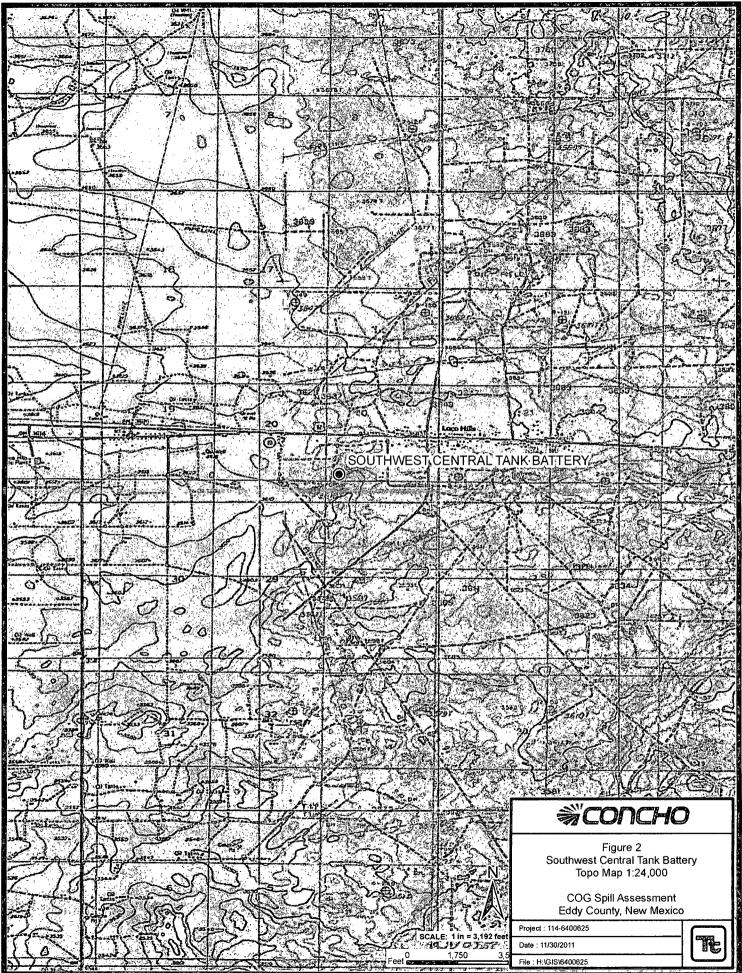
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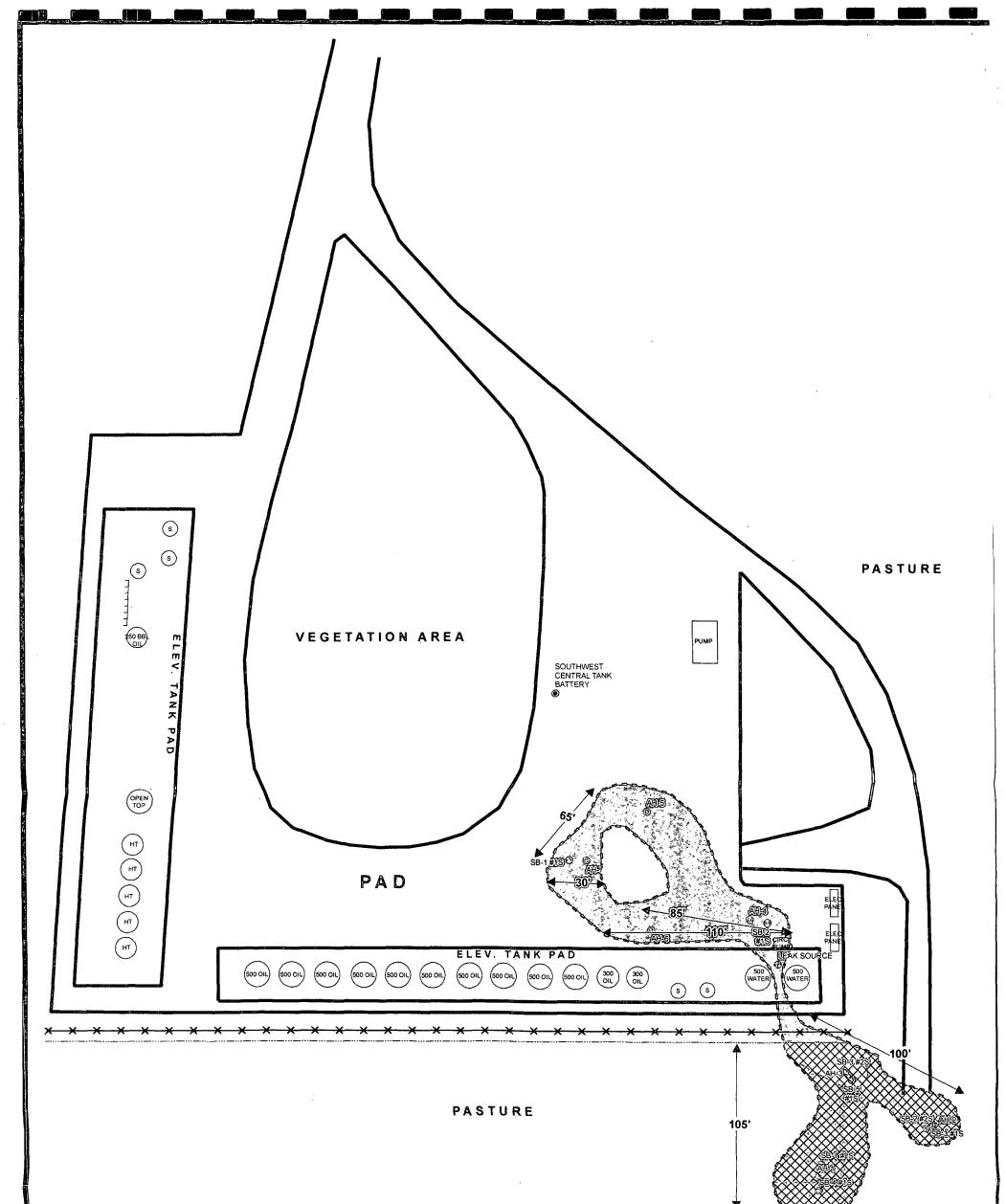
Pat Ellis – COG Mike Burton *–* BLM

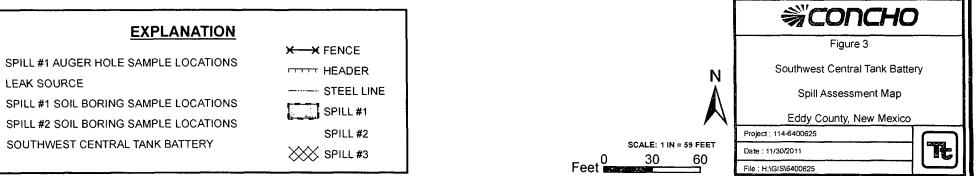
FIGURES

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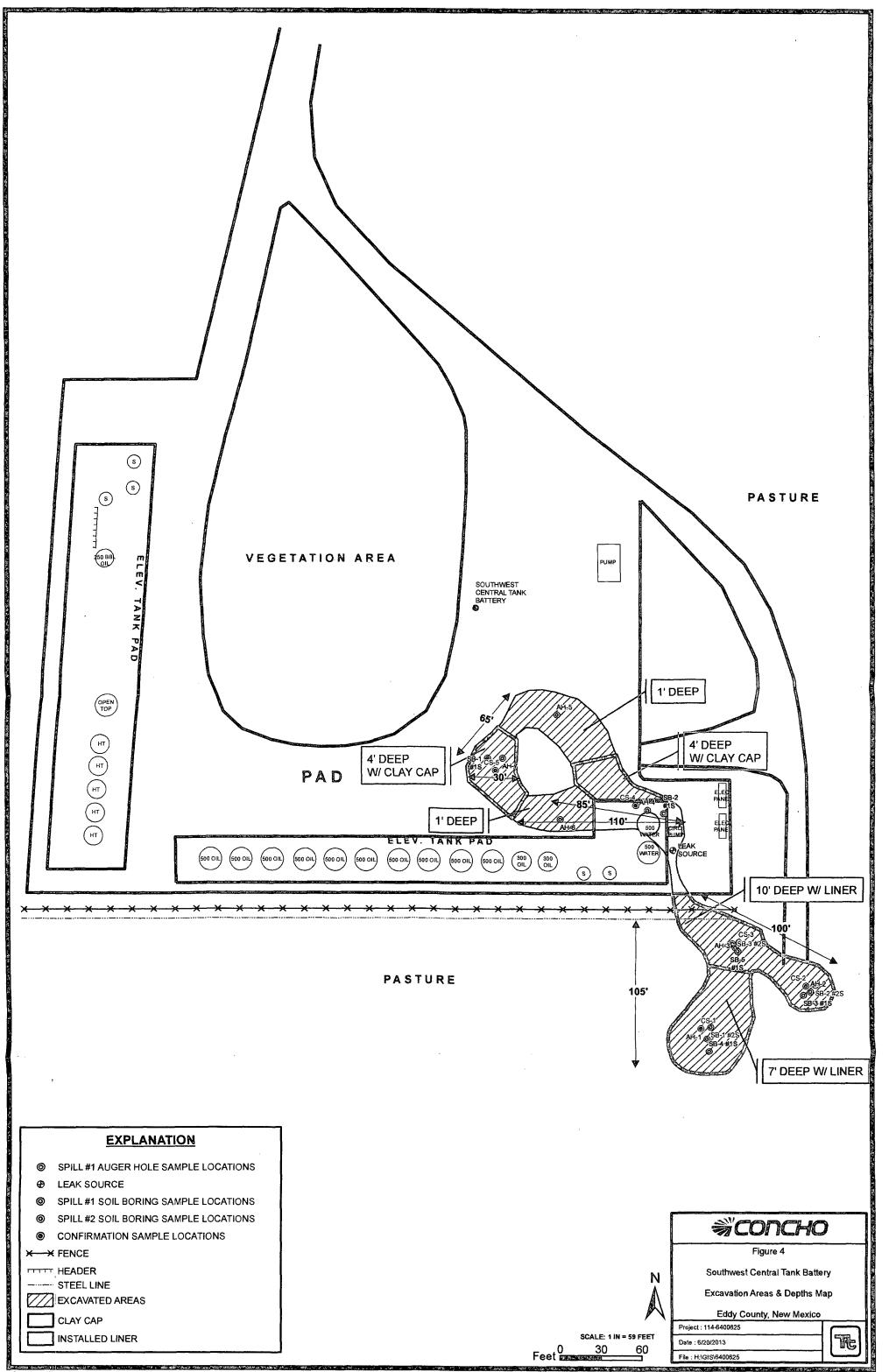






- SPILL #1 AUGER HOLE SAMPLE LOCATIONS 0
- Ð LEAK SOURCE
- 0
- 0
- ۲ SOUTHWEST CENTRAL TANK BATTERY

vn By: Isabel Marmoleio



Drawn By; taabel Marmolej

TABLES

	Sample	Sample	Depth		l Status	्र र	PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	
Sample ID	Date	Depth (ft)	(BEB)		Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Pasture - Spill 3 - Spill	Assessment		erlappe	d Spills					• •				
SB-1	2/15/11	Õ-1'.			ч <sup>33</sup> Х							لېږې د د. پېړې	<b>#8,780</b>
Liner		<u>:</u> 3			X				2. 10 8. L.4.		and the second states of the second	2	3,190
		<b>5</b>			Χ.,								3,270
		7	475 C	1	~÷ Х			- - -					¥6,050
		10'		Х									639
		15'		X									<200
		20'		Х									<200
		25'		Х									<200
		30'		Х									<200
Pasture - Spill 1 and Sp	ill 2 - Assess	sment Data											
AH-1	8/10/10	0-1'			X	<2.00	234	234	<0.0200	<0.0200	<0.0200	<0.0200	3,220
		1-1.5'	•		X	-	-	- ·	-	-	-	-	5,080
		2-2.5		· ·	• X •	1 <b>1</b> - 1		-		- `	-	-	5,970
Liner	11	3-3.5'			Х	-	-	-		-		-	12,100
-	17	4-4.5'			х	-	-	-	-	-	<del>-</del> . *		12,800
	17	5-5.5'		· · ·	Х	-	-	-	-	-	- 3		13,700
	87	6-6.5'			×	-	-	· _ · ·	÷ .	-	-	-	13,000
	11	7-7.5'		X	j	-	-	-	-	-	-	-	10,000
	11	8-8.5'		X		-	-	-		_	-	-	7,010
	17	9-9.5'		X		-	-	-	-	-	_	-	4,320
SB-4	11/17/10	0-1'		Τ	X		- 1	-	-	-	-	-	3,710
Liner		3'		1	X	-	-	-	-	-	-	- 1	2,080
	17	5'	· .		××		· -	-	-	-	· _	-	8,930
	u u	7'			X	-	- 1	-	-	-	-	-	11,300
		10'		X		-	-	-	-	-	-	-	3,190
	0	15'		X		-	· -	-	-	-	-	-	302
		20'		X		-	-	-	-	-	-	-	<200
	11	25'		X		-	-	-	-	-	-	-	<200
	H	30'		Х		-	-		-	-	-	-	<200
CS-1 South Wall	2/28/13	-		X		-	-	-	-	-	-	-	<20.0
CS-1 East Wall	"	-		X		-	-	-	-	-	-	-	215
CS-1 West Wall	"	-		X		1 -	-	-	-	-	-		105
CS-1 Bottom Hole	14	7'		X		- 1	-	-	-	-	-		8,160

Sample ID	Sample	Sample	Depth		I Status	П	PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride (mg/kg)
	Date	Depth (ft)		In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Pasture - Spill 3 - Spill	Assessment	t (	Overlap	ped Spil	is 1 and 2)						····		
SB-2	2/15/11	0-1'			X								8,320
Liner		3'		ŝ.	Χ								_5,590
		5'			. <b>. X</b>								5,700
		7'			× X				1				5,520
		10'			×								3,450
		15'		Х									240
		20'		Х									<200
		25'		Х									281
		30'		Х									245
Pasture - Spill 1 and Sp	ill 2 - Asses	sment Data											
AH-2	8/10/10	0-1'			Х	<2.00	323	323	<0.0200	<0.0200	<0.0200	<0.0200	3,210
	u	1-1.5'			X	-	-	-	-	-	-	-	451
	11	2-2.5'	•		X	-	-	-	-	-	-	-	868
Liner		3-3.5'		· .	X	-	-	-	-	-	-	-	963
		4-4,5'	-	•.	X	-	-	-	-	-	-	-	2,790
	. n	5-5.5		••••••••••••••••••••••••••••••••••••••	Х	-	· .	-	-	-	-	-	3,460
	0	6-6.5	<i>.</i> ,		X	-		-	-		· -		2,940
		7-7.5'			X	-	-	-	-	-	-		4,120
SB-3	11/17/10	0-1'		<u> </u>	X		-	- 1	-	-	-	· -	3,340
Liner		3'			X	· -	- 1	-	-	· -	-		1,120
	"	5'		1	X	· - ·		-		-	-		2,360
	11	7'		-	X	-	-	-	-	-	-	-	2,590
	19	10'			X	<u> -</u>	-	-	-	-	-	-	1,690
	"	15'		X		-	-	-	-	-	-	-	<200
	"	20'		X	İ — — —	-	-	-	-	-	-	-	<200
	"	25'		X	<u> </u>	-	-	-	-	-		-	<200
CS-2 North Wall	3/1/13	- T	1	X	1	<u> </u>	T _	-	-	-	-	-	215
CS-2 South Wall	"	-	<u> </u>	X		-	- 1		-	-		-	210
CS-2 East Wall		-	-	X		-	- 1	-	<u> </u>	-	-	-	653
CS-2 Bottom Hole	b1	10'	1	x		-	1 -		-	-	-	-	4,300

	Sample	Sample	Depth	Soi	l Status	π	PH (mg/l		Benzene	Toluene	Ethlybenzene	Xylene (mg/kg)	Chloride (mg/kg)
Sample ID	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	/kg) (mg/kg)	(mg/kg)		
Pasture - Spill 3 - Spill	Assessment	(Ov	erlappe	d Spill 1	and 2)	• •			··. · ·	•			
SB-3	2/15/11	0-1	31.03	影說書言	X		E.C. C	ANT IST	STRO.	22 F 76	SAME	T. Santa	/11/800 👾
Liner		-3-3		10000	5 /X - 2++		in the second						4,910
		5.5		R. S. R.	* X * 1	2.5 25.43	<u> 1</u>			1. 1. 1. 2		28 - 3	3,240
		a 7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	1. 1. 1. 1.	<b>新祝</b> 家博			101					C. Shinks	9,690
		10'53		S. W. S.	¥ X	3.20	SCA.		1	Salar Salar	Stor Lad	5.55	4 090
		15'		Х									2,090
		20'		X									269
		25'		X								1	<200
		30'		X						1			<200
		40'		X		1	1			1			<200
		50'		X			1			1			<200
Pasture - Spill 1 and Sp	oill 2 - Asses	sment Data	L	•						•	• • • • • •		
AH-3	8/10/10	. 0-1			X	<10.0	3,020	3,020	<0.100	<0.100	<0.100	<0:100	1,220
	17	1-1.5			X			. <b>-</b>	-			-	1,590
	"	2-2.5			X	-	-	-		· ·	-	-	4,980
Liner	'n	3-3.5		2.55	X		1.12	-	-	-	- * *	-	6,860
	"	4-4.5		11.84	<b>X</b>		-	1990 <b>-</b> 1990 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19900 - 19	-		-	-	7,740
	"	5-5.5		- 2	X	-	-	-	•		-	-	9,530
SB-5	11/17/10	0-1'			X				-	_ ·		-	2,710
Liner	1	3'		1 17	x		-					_	7,480
	"	5'	·		X			- /	-		_		7,320
	"	7'			X			-	· - · ·	· -		-	11,000
	"	10'			X	-	-	-	<u> </u>		-	-	4,740
	11	15'		X	· · · · · · · · · · · ·	-	-	-		_			3,880
	"	20'		X		-	-	-	-	<u> </u>			266
	"	25'		X		<u> </u>	-	-					<200
	u	30'		X		-	-	-	-	-	-	-	205
CS-3 Southeast Wall	3/1/13	-		X		-	-	-	-	-	-	-	352
CS-3 East Wall	"			X		-	-	-	-	-	-	-	78.3
CS-3 West Wall	"	-		X		-	-	-	-	-	-	-	308
CS-3 Bottom Hole		10'		X		-	-	-	-	-	-	-	6,130

	Sample	Sample	Depth	oil Status	Π	PH (mg/l	kg)	Benzene	Toluene	Ethlybenzene	Xyléné	
Sample ID	Date	Depth (ft)	(BEB) In-Si	u Removed	5 Marchine	1.	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Chloride (mg/kg)
Pad Area - Spill 1 - As	sessment Da	ta	1									
AH-4	8/10/10	. 0-1		× Z.X	<2.00		≥<50.0%	la<0:0200γ	<0.0200 .	<pre>&lt;&lt;0.0200</pre>	<20.0200	· · · · · 8,740
	17	≫ <u>1</u> -1:5										T 3,720
	"	2-2:5		2 X S								3,500
	"	. 3-3:5 <sup>1</sup>	er lag kan	X See	1. See 12.			31	T.F.F.		1. 18	C 3 500 5
		4-4.5'	Х		-	-	-	-	-	-	-	1,490
	U	5-5.5'	X		-	-	-	-	-	-	-	3,210
	U	6-6.5'	X		-	-	-	-	-	-	-	1,220
		7-7.5'	X		-	-	-	-	-	-	- 1	559
		8-8.5'	Х		-	-	-	-	-		-	640
		9-9.5'	X		-	-	-	-	-	-	~	1,070
SB-2	11/17/10	0-1		- X-		20 C	(BEAL	SEL SEL	S-0-46		1910-160	11.600 <sup>8</sup>
Clay	"	3.2.2		1 . X		AND DECK	a a la caracteria de la c			Same and		13,400
	11	5'	X		1 -	- 1	-	-	-	-	-	2,270
		7'	Х		-	-	-	-	-	-	-	2,770
	17	10'	X		-	- 1	-	-	-	-	-	1,320
	15	15'	Х			-	-	-	-	-	-	<200
	н	20'	X		-	-	-	-	-	-	-	<200
	n	25'	X		-	-	-	-	-	-	-	<200
CS-4 North Wall	3/8/13	-	X	<b></b>	-	-	-	-	-	-	-	364
CS-4 South Wall	"	-	X		-	-	-	-	-	-	-	3,740
CS-4 East Wall	14	-	X		-	-	-	1 -	-	-	-	2,490
CS-3 Bottom Hole	11	-	X		-	-	-	-	-	-	- 1	519
CS-4 West Wall	3/11/13	-	X		-	-	-	-	-	-	-	4,850

	Sample	Sample	Depth	Soi	l Status	T	PH (mg/l	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride (mg/kg)
Sample ID	Date	Depth (ft)	(BEB)	In-Situ	Removed	21-11 F & 11			. (mg/kg) -	(mg/kg)	(mg/kg)	(mg/kg)	Chionae (hig/kg)
Pad Area - Spill 1 -	Assessment Da	ta	- -			·		1.1			te transfer a		
AH-5	8/10/10	美0-1公司	STATE:	N.Z.S.	X	×<2.00	₹\$50.0	ã<50.0 ×			Menant Ma	影的计学	·
	"	1-1.5'		Х		-	-	-	-	-	-	-	1,090
		2-2.5'		Х		~	-	-	-	-	-	-	255
	"	3-3.5'		Х			-	-	-	-	-		<200
AH-6	8/10/10	0-1	<b>注於</b> 論	X	18-18-18-	<2.00)	<50:0	<u></u> <50.0					1 640
		1-1.5'		X		-	-	-	-	-	-	-	208
	0	2-2.5'		X		-	-	-	-	-	-	-	223
AH-7	8/10/10	0-1	1. T.	2112		s<2.00	<50.0	<50.0	-C	A CAR	net de la Port		4,250
		1-1.5	() A.C.		X Z			47. A. A. A.			and a start of the	1.1.1	41,090
	"	2-2.5			X	2			6			Sec. Sec.	951
	"	2:5-3.0	1.1.22		× X	19.23				a fair		Rol- 4	2,040
SB-1	11/17/10	0-1'	CALLEN					1.		Ma Harris	A A A A A A A A A A A A A A A A A A A		4,450
	"	3.3	1. 34	2 LL	- X	14 14 - 14 - 14				S. S. S. S.	Contraction and the second	Ser Sall	3,920
Clay	"	5'		X		-	-	-		-	-	-	3,160
		7'		X		-	-	-	· -	-	-	-	2,930
		10'		X		· -	-	-	-	-	-	-	570
	0	15'		X		-	-	-	-		-	-	293
		20'		X		-	-	-		-		L,	370
CS-5 North Wall	3/8/13	-		X		-	-	-		-	-		349
CS-5 East Wall	+1	-		Х		-	-		-	-	-	-	1,140
CS-5 West Wall		-		X		-	-	-	-	-		-	162
CS-5 Bottom Hole	11	-		X		-	-	-	-	-	-	-	2,040
CS-5 South Wall	3/11/13	-		Х		-	-	-	-	-	-	-	737

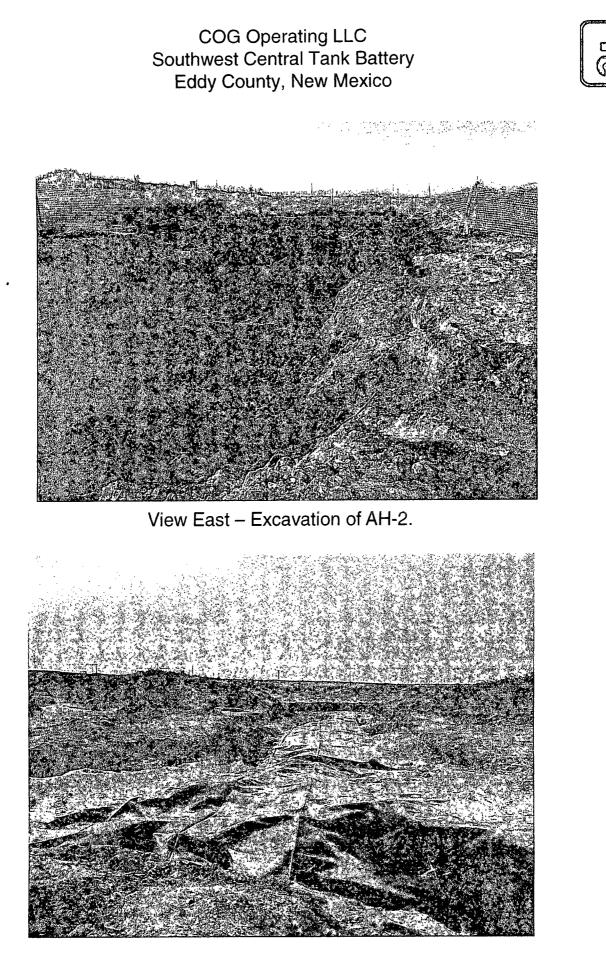
Below Excavation Bottom BEB

Not Analyzed

(--) Excavation Depths **\*** 

Liner Installation

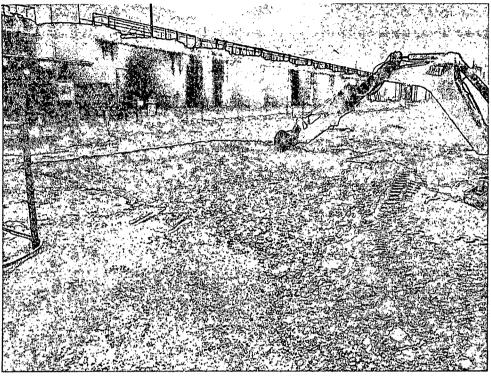
## PHOTOGRAPHS



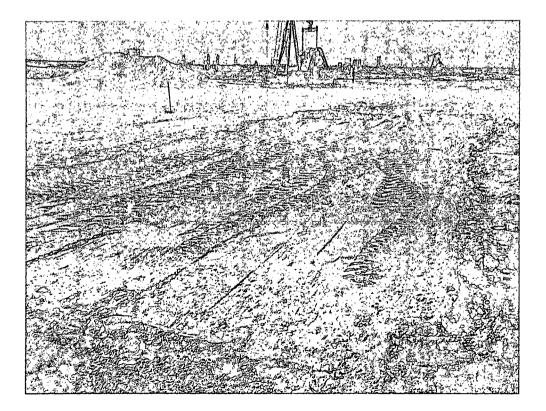
TETRA TECH

View South – Liner installation in area of AH-1 thru AH-3.

COG Operating LLC Southwest Central Tank Battery Eddy County, New Mexico

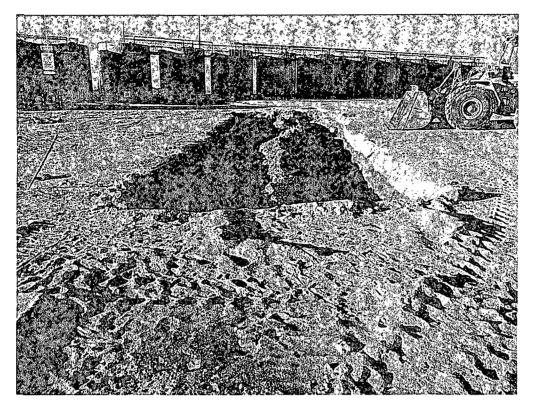


View Southwest – Excavation of AH-6.

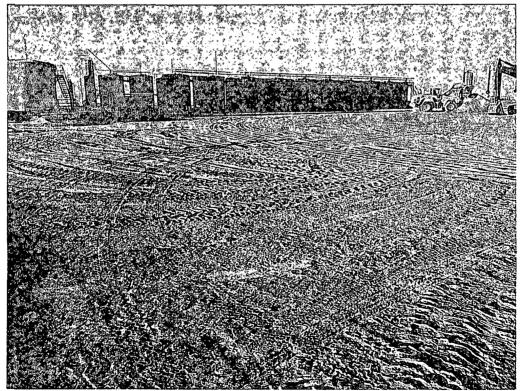


View Northeast – Excavation of AH-5.

COG Operating LLC Southwest Central Tank Battery Eddy County, New Mexico



View Southwest – Excavation and clay cap installation in area of AH-7.



View South – Backfill of areas on pad.

## A XION399A

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

## **Release Notification and Corrective Action**

	OPERATOR	Initial Report	Final Report
Name of Company COG Operating LLC	Contact Pat Ellis		
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 685-4332		
Facility Name Southwest Central Tank Battery	Facility Type Tank Battery		
	· · · · · · · · ·		

Surface Owner: Federal

Mineral Owner

Lease No. NMNM-0467932

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County	
0	20	.17S	30E					Ed	idy

Latitude N 32.81578° Longitude W 103.99519°

#### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 150 bbls	ecovered 80 bbls oil						
Source of Release: PVC adaptor at equalizer line	Date and Hour of Occurrence 12/31/2010		Iour of Discovery ) 7:00 a.m.					
Was Immediate Notice Given?	If YES, To Whom?							
By Whom?	Date and Hour 01/30/2011 10:31 a.m.							
Was a Watercourse Reached?	If YES, Volume Impacting the N/A	VED						
If a Watercourse was Impacted, Describe Fully.*		AUG <b>23</b>	2013					
N/A	N	MOCD AF	TESIA					
Describe Cause of Problem and Remedial Action Taken.*			······································					
The PVC adaptor froze and cracked at the equalizer line behind the tanks. upgrading from PVC to plastic coated steel.	All the fittings have been replaced	l and the tank ba	attery is in the process of					
Describe Area Affected and Cleanup Action Taken.*								
Tetra Tech inspected and assessed the spill area for extents. A work plan RRAL were removed and transported to proper disposal. Once excavated Tech prepared closure report and submitted to NMOCD for review.								
I hereby certify that the information given above is true and complete to the regulations all operators are required to report and/or file certain release in public health or the environment. The acceptance of a C-141 report by the should their operations have failed to adequately investigate and remediate or the environment. In addition, NMOCD acceptance of a C-141 report defederal, state, or local laws and/or regulations.	otifications and perform corrective e NMOCD marked as "Final Repor e contamination that pose a threat t	actions for relea t" does not relie o ground water,	uses which may endanger ve the operator of liability surface water, human health					
Signature:	OIL CONSE	RVATION I	DIVISION					
	Approved by District Supervisor:							
Title: Project Manager	Approval Date: Expiration Date:							
E-mail Address: ike.tavarez@tetratech.com Date: 6.70-13 Phone: (432) 682-4559	Conditions of Approval: Attached							

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

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

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

	OPERATOR	Initial Report	Final Report
Name of Company COG Operating LLC	Contact Pat Ellis		
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 685-4332		
Facility Name Southwest Central Tank Battery	Facility Type Tank Battery		

Surface Owner: Federal

Mineral Owner

Lease No. NMNM-0467932

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County	
0	20	175	30Ē						Eddy

Latitude N 32.81578° Longitude W 103.99519°

#### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 100 bbls	Volume Recovered 98 bbls oil	
Source of Release: 6'' steel line	Date and Hour of Occurrence	Date and Hour of Discovery	
	08/31/2010	08/31/2010 5:00 a.m.	
Was Immediate Notice Given?			
Yes 🗌 No 🗌 Not Required			
	If YES, Volume Impacting the Wa	atercourse.	
🗌 Yes 🖾 No	N/A		
	1	RECEIVED	
If a Watercourse was Impacted, Describe Fully.*		1 6 Cans Carl Barra 1 4 Barra Carl	
		ALLC 9 9 2013	
N/A			
		NMOCD ARTESIA	
Source of Release: 6'' steel line   Date and Hour of Occurrence 08/31/2010   Date and Hour of Discovery 08/31/2010 5:00 a.m.     Was Immediate Notice Given?   If YES, To Whom?   Terry Gregston -BLM Jim Amos BLM Mike Bracher-OCD     By Whom?   Date and Hour of 03/1/2010 5:24 p.m.     Was a Watercourse Reached?   Yes INO     Yes INO   If YES, Volume Impacting the Watercourse. N/A     Max a Watercourse was Impacted, Describe Fully.*   N/A     N/A   If YES, Volume Impacting the Watercourse. N/A     Describe Cause of Problem and Remedial Action Taken.*   ImmOCD ARTESIA     Describe Area Affected and Cleanup Action Taken.*   Immove and transported to proper disposal. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. Tetra Tech prepared closure report and submitted to NMOCD for review.     I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and pregulations all perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report does not releave water, futuran health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report does not releave water, futuran health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report does not releave water, futuran health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report does not releave the operator of liability or complianc			
	<i>.</i> <b>.</b>		
	ug was installed to repair the line an	d a new, plastic coasted line is being	
installed to replace the existing line.			
Describe Area Affected and Cleanup Action Taken.*			
	to the appropriate depths, the excava	ation was backfilled with clean soil. Tetra	
Tech prepared closure report and submitted to NMOCD for review.			
	·		
	bes not relieve the operator of respon	sibility for compliance with any other	
tederal, state, or local laws and/or regulations.			
	<u>OIL CONSER</u>	VATION DIVISION	
$\sim$ $/// T/\Lambda$			
Signature:			
	Approved by District Supervisor:		
Printed Name: Ike Tavarez (agent for COG)	· · · · · · · · · · · · · · · · · · ·		
Was a Watercourse Reached?     Yes   No     If a Watercourse was Impacted, Describe Fully.*     N/A     Describe Cause of Problem and Remedial Action Taken.*     Due to corrosion, a 6'' steel water line developed a hole in it. A ½ ir installed to replace the existing line.     Describe Area Affected and Cleanup Action Taken.*     Tetra Tech inspected and assessed the spill area for extents. A work RRAL were removed and transported to proper disposal. Once excavate prepared closure report and submitted to NMOCD for review.     I hereby certify that the information given above is true and complete regulations all operators are required to report and/or file certain relear public health or the environment. The acceptance of a C-141 report the should their operations have failed to adequately investigate and remoor the environment. In addition, NMOCD acceptance of a C-141 rep federal, state, or local laws and/or regulations.     Signature:   Signature:     Mamma   Iteravarez (agent for COG)     Title: Project Manager			
Title: Project Manager	Approval Date:	Expiration Date:	
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval:	Attached	
Date: 6 20 - () Phone: (432) 682-4559			

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

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

## **Release Notification and Corrective Action**

	OPERATOR	Initial Report	Final Report
Name of Company COG Operating LLC	Contact Pat Ellis		
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 685-4332		
Facility Name Southwest Central Tank Battery	Facility Type Tank Battery		

Surface Owner: Federal

Mineral Owner

Lease No. NMNM-0467932

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County	٦.
0	20	17S	30Ē					Eddy	
			ļ						

Latitude N 32.81578° Longitude W 103.99519°

#### NATURE OF RELEASE

Type of Release: Crude Oil and Produced Water	Volume of Release 4 bbls oil 60 bbls pw	Volume R	ecovered 2 bbls oil 30 bbls pw				
Source of Release: Water Tank							
Was Immediate Notice Given?							
Yes No Not Required							
By Whom?	Date and Hour 08/03/2010 3:1	6 p.m.					
Was a Watercourse Reached?	If YES, Volume Impacting the	Watercourse.					
🗌 Yes 🖾 No	N/A						
	60 bbls pw   30 bbls pw     of Release: Water Tank   Date and Hour of Occurrence   Date and Hour of Discovery     08/03/2010   08/03/2010 5:00 a.m.     mediate Notice Given?   If YES, To Whom?     Mike Bratcher-OCD     m?   Date and Hour 08/03/2010 3:16 p.m.     //atercourse Reached?   Yes   No     Yes   No   Not Required     MYA   PECEIVED     AuG 2 3 2013   NMOCD ARTESIA     AuG 2 3 2013   NMOCD ARTESIA     Cause of Problem and Remedial Action Taken.*   AuG 2 3 2013     d water tanks ran over due to an inoperable water pump because of a blown fuse in the panel box. The electrical problem has been repaired.     Area Affected and Cleanup Action Taken.*   A work plan was prepared and submitted to NMOCD for approval. Soils exceeding the ere removed and transported to proper disposal. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. Tetra pared closure report and submitted to NMOCD for review.     certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and rend all prepartors are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger ablt vironment. In addition, NMOCD acceptance of a C-141 report by the NMOCD marked a "Final Report" does not relieve tho operator of liability voronment. In addition						
N/A   AUG 2 3 2013     Describe Cause of Problem and Remedial Action Taken.*   NMOCD ARTESIA     Produced water tanks ran over due to an inoperable water pump because of a blown fuse in the panel box. The electrical problem has been repaired.     Describe Area Affected and Cleanup Action Taken.*							
N/A		AUG <b>23</b>	2013				
60 bbls pw   30 bbls pw     Source of Release: Water Tank   Date and Hour of Occurrence 08/03/2010   Date and Hour of Discovery 08/03/2010 5:00 a.m.     Was Immediate Notice Given?   If YES, To Whom?   Mike Bratcher-OCD     By Whom?   Date and Hour 08/03/2010 3:16 p.m.   Mike Bratcher-OCD     By Whom?   Date and Hour 08/03/2010 3:16 p.m.   No     Was a Watercourse Reached?   If YES, Volume Impacting the Watercourse. N/A   N/A     If a Watercourse was Impacted, Describe Fully.*   N/A   MICCD ARTESIA     Describe Cause of Problem and Remedial Action Taken.*   AUG 2 3 2013 NMOCD ARTESIA     Describe Area Affected and Cleanup Action Taken.*   Tetra Tech inspected and assessed the spill area for extents. A work plan was prepared and submitted to NMOCD for approval. Soils exceeding the RRAL were removed and transported to proper disposal. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. Tet Tech prepared closure report and submitted to NMOCD for review.     I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human hea or the environment. In addition, NMOCD acceptance of a C-141 report by the NMOCD marked as "Fi							
Describe Cause of Problem and Remedial Action Taken.*			······································				
Produced water tanks ran over due to an inoperable water pump because of	of a blown fuse in the panel box. T	he electrical pro	blem has been repaired.				
Describe Area Affected and Cleanup Action Taken.*	· · · · · · · · · · · · · · · · · · ·						
RRAL were removed and transported to proper disposal. Once excavated							
regulations all operators are required to report and/or file certain release n public health or the environment. The acceptance of a C-141 report by th should their operations have failed to adequately investigate and remediat or the environment. In addition, NMOCD acceptance of a C-141 report d	otifications and perform corrective e NMOCD marked as "Final Repo e contamination that pose a threat (	actions for rele t" does not relie o ground water,	ases which may endanger eve the operator of liability surface water, human health				
$M_{1}$	OIL CONSE	RVATION	DIVISION				
Signature:							
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:	• • • • • • • • • • • • • • • • • • •					
Title: Project Manager	Approval Date:	Expiration D	Date:				
	Conditions of Approval:		Attached				
Date: 6-20-13 Phone: (432) 682-4559							

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



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Release Notifica	ation an	nd Co	rrective A	ction	*****			<b>English Maadala Kalina Talinki</b>
	OP	ERAT			🛛 Initia	al Report		Final Repo
Name of Company COG OPERATING LLC								
Facility Name Southwest Central Tank Battery	Facil	ity Typ	e Tanl	c Batter	у			
Surface Owner Federal Mineral O	wner				Lease N	lo. NMN	IM-046	57932
LOCA	TION O	F REL	LEASE					
Unit LetterSectionTownshipRangeFeet from theO2017S30E	North/South	h Line	Feet from the	East/W	est Line	County	Eddy	
		0						
				··	1.1			
Type of Release Crude Oil and Produced Water								
							ater	
Source of Release Water tank	Da 08/	te and H /02/2010	our of Occurrenc	e	Date and	Hour of Dis	scovery	
		YES, To		Mike Br	atcher—O	CD		
By Whom? Josh Russo	Da	te and H	our 08/03/2010	3:1	6 p.m.			<b></b>
Was a Watercourse Reached?	If Y	YES, Vo	lume impacting t	he Wate	rcourse.			
If a Watercourse was impacted, Describe Fully.*	<u> </u>							
Produced water tanks ran over due to an inoperable water pump be Describe Area Affected and Cleanup Action Taken.* Initially 4bbls of crude oil and 60bbls of produced water was releas dimensions of the release was 15 yards x 65 yards on location, and condition and the impacted material has been disposed of appropria Sec.20-T17S-R30E, Eddy Co., NM, API # 30-015-29561). Tetra T	sed from the 15 yards x 70 ately. (The c Fech will san	produce ) yards o closest w nple the	d water tanks at t ff of the location. ell location to the spill site area to c	he South The we release lelineate	west Cent Il pad has is the WD any possil	ral Tank Ba been return McIntyre " ble contami	ttery. 7 ed to its E" #4, U	The s original Unit O,
regulations all operators are required to report and/or file certain re public health or the environment. The acceptance of a C-141 repor should their operations have failed to adequately investigate and re	elease notificant rt by the NM emediate cont	ations ar IOCD ma taminatio	ad perform correct arked as "Final Ration that pose a three the operator of the three the operator of the three the operator of the three three the operator of the three thre	tive action eport" do eat to gro responsib	ons for rele bes not reli bund water bility for co	eases which eve the ope r, surface wa ompliance v	may en rator of ater, hur vith any	danger liability nan health
			<u>OIL CON</u>	SEKV.	ALION	DIVISIC	JIN	
Signature:								
Printed Name: Josh Russo	Appro	oved by	District Supervis	or:				
Title: HSE Coordinator	Appro	oval Dat	e:	E	xpiration	Date:		
OPERATOR     ☑ Initial Repo       Name of Company     COG OPERATING LLC     Contact     Pat Ellis       Address     500 W. Texas, Suite 100, Midland, TX 79701     Telephone No. 432-230-0077       Facility Name     Southwest Central Tank Battery     Facility Type     Tank Battery       Surface Owner     Federal     Mineral Owner     Lease No. N       LocCATION OF RELEASE     Initial Repo     Nature Common the Co		Attached	ttached					
LOCATION OF RELEASE       Unit Letter     Section     Township     Range     Feet from the     Feet from the     East/West Line     County       0     20     175     30E     Feet from the     North/South Line     Feet from the     East/West Line     County       Latitude 32.815578     Longitude 103.99519     NATURE OF RELEASE     Volume Recoveree     40bbs of preduced valuer     20bbs of renduce oil     30bbs of renduce oil								

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

Revised October 10, 2003

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	0,144.07000											
<b>Release Notification and Corrective Action</b>												
	OPERATOR	🛛 Initial	Report 🔲 Final Report									
Name of Company COG OPERATING LLC	Contact Pat El	lis										
Address 550 W. Texas. Suite 100, Midland, TX 79701	Telephone No. 432-230-		in the second									
Facility Name Southwest Central Tank Battery	Facility Type Tank Bar		······································									
Surface Owner Federal Mineral Owner		Lease No	D. NMNM-0467932									
LOCATIO	N OF RELEASE											
		st/West Line	County									
O 20 17S 30E		su west thing	Eddy									
Latitude 32.81557	8 Longitude 103.99519	Revenue	anny y sugarang an abhracht da bhlada b bhunn mann a mar a san san san an a									
	5											
	E OF RELEASE											
Type of Release Produced water	Volume of Release 100bbls		covered 98bbls									
Source of Release 6" steel water line	Date and Hour of Occurrence		lour of Discovery									
$N(-1) = 1^{1} + N(-2)^{2} + 2^{2} + 2^{2}$	08/31/2010	08/31/2010	) <u>8:00a.m.</u>									
Was Immediate Notice Given? Yes No Not Required	If YES, To Whom?	Gregston-BL	M									
	1	n AmosBLM										
		e Bratcher—OC										
By Whom? Josh Russo		:24 p.m.										
Was a Watercourse Reached?	If YES, Volume Impacting the W											
🗌 Yes 🛛 No												
to Mine a lange of December Puller*												
If a Watercourse was Impacted, Describe Fully.*												
Describe Cause of Problem and Remedial Action Taken.*												
Due to corrosion, a 6" steel water line developed a hole in it. A 1/2 inch p	lug was installed to repair the line an	d a new, plastic	coated line is being built to									
replace the existing line.			5									
Describe Area Affected and Cleanup Action Taken.*												
Initially 100bbls of produced water was released from the 6" steel line a												
vacuum truck. The fluid flowed from the steel line, to behind the tank be	ittery into the pasture with the dimens	sions of the spil	l area measuring 35° x 35°.									
(The closest well location to the release is the WD McIntyre E #4, 990' Tetra Tech will sample the spill site area to delineate any possible conta												
BLM/NMOCD for approval prior to any significant remediation work.	mination from the release and we will	i present a reme	containon work plan to the									
is sufficience of approval provide und significant remediation work.												
I hereby certify that the information given above is true and complete to	the best of my knowledge and under	stand that nursu	ant to NMOCD rules and									
regulations all operators are required to report and/or file certain release	notifications and perform corrective	actions for relea	ases which may endanger									
public health or the environment. The acceptance of a C-141 report by	he NMOCD marked as "Final Report	" does not relie	ve the operator of liability									
should their operations have failed to adequately investigate and remedi	ate contamination that pose a threat to	ground water.	surface water. human health									
or the environment. In addition, NMOCD acceptance of a C-141 report	does not relieve the operator of respo	onsibility for co	mpliance with any other									
federal, state, or local laws and/or regulations.		-	-									
	OIL_CONSEF	<b>VATION I</b>	DIVISION									
			anna a' fairte ann a' fairte ann ann ann ann ann ann ann ann ann an									
Signature:												
Printed Name: Josh Russo	Approved by District Supervisor:											
Title: HSE Coordinator	Approval Date: Expiration Date:											
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:		Arrow have a									
			Attached									

	Date:	09/07/2010	Phone:	432-212-2399
×	Attach	Additional	Sheets If Necess	ary

Ord Spill

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

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

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

		<b>OPERATOR</b>		itial Report	Final Report
Name of Company COG OPER	ATING LLC	Contact	Pat Ellis		
Address 550 W. Texas, Suite 10	0, Midland, TX 79701	Telephone No.	432-230-0077		
Facility Name Southwest	Central	Facility Type	Tank Battery		
Surface Owner Federal	Mineral Own	er	Leas	e No. NMNM	1-0467932

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	20	17S	30E					Eddy
		(						

Latitude 32 48.908 Longitude 103 59.683

tongitude 105 59.

NAT	<b>URE</b>	OI	5 F	E	LE	AS	E

Type of Release Produced water	Volume of Release 150bbls Volume Recovered 80bbls						
Source of Release PVC adaptor at equalizer line	Date and Hour of Occurrence	Date and H	lour of Discovery				
	12/31/2010	12/31/201	0 7:00 a.m.				
Was Immediate Notice Given?	If YES, To Whom?	•	····				
🛛 Yes 🔲 No 🗌 Not Required		Bratcher-O	CD				
Front Konta		Gregston-B	LM				
By Whom? Josh Russo		0:31 a.m.					
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	tercourse.					
□ Yes ⊠ No							
If a Watercourse was Impacted, Describe Fully.*							
Describe Cause of Problem and Remedial Action Taken.*							
The PVC adaptor froze and cracked at the equalizer line behind the tanks	. All fittings have been replace and the	e tank battery	is in the process of upgrading				
all PVC to plastic coated steel.							
Describe Area Affected and Cleanup Action Taken.*							
	possible contamination from the release	ise and we wi	Il present a remediation work				
plan to the NMOCD/BLM prior to any significant remediation work.							
	loes not relieve the operator of respon	sibility for co	mpliance with any other				
rederal, state, or local laws and/or regulations.		7.1.001.001.1					
	<u>OIL CONSER</u>	VATION I	DIVISION				
Simolum							
			I				
Yes X No     If a Watercourse was Impacted, Describe Fully.*     Describe Cause of Problem and Remedial Action Taken.*     The PVC adaptor froze and cracked at the equalizer line behind the tanks. All fittings have been replace and the tank battery is in the process of upgra all PVC to plastic coated steel.     Describe Area Affected and Cleanup Action Taken.*     Initially 150bbls was released from the cracked fitting behind the tanks and we were able to recover 80bbls with a vacuum truck. From the source, the area measured 8' x 100' to the southeast and ended up 40' x 150' in the pasture. The closest well location to the release is the W.D. McIntyre E#4, Al 30-015-29561. Tetra Tech will sample the spill site rate to delineate any possible contamination from the release and we will present a remediation werk.     I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability for compliance with any other federal, state, or local laws and/or regulations.     Signature:							
Printed Namez Josh Russo			;				
Titler URE Coordinator	Annual Data	Eurisetian D	19 <b>4</b> -1				
THE. ISE COORDINATOR	Approval Date:	Expiration D	alt.				
Euroil Address invess@samaharssauross.com	Conditions of Americal						
E-man Address. Jrussoluconchoresources.com	Concinions of Approval:	i	Attached				
Date: 01/05/2011 Phone: 432-212-2399							
Date: 01/05/2011 Phone: 432-212-2399	in Taken.*     alizer line behind the tanks. All fittings have been replace and the tank battery is in the process of upgrading aken.*     alizer line behind the tanks and we were able to recover 80bbls with a vacuum truck. From the source, the spill nded up 40' x 150' in the pasture. The closest well location to the release is the W.D. McIntyre E#4, API#     alizer a to delineate any possible contamination from the release and we will present a remediation work ant remediation work.     ve is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and and/or file certain release notifications and perform corrective actions for releases which may endanger nee of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability ly investigate and remediate contamination that pose a threat to ground water, surface water, human health eptance of a C-141 report does not relieve the operator of responsibility for compliance with any other     OIL CONSERVATION DIVISION     Approved by District Supervisor:     or   Approval Date:     Expiration Date:						

## **APPENDIX B**

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#### Water Well Data Average Depth to Groundwater (ft) COG - Southwest Central Tank Battery Eddy County, New Mexico

	16 Sc	outh	:	29 East	:		16 5	South	3	0 East			16	South	;	31 East	
3	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2	1
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	1
8	17	16	15	14	13	18	17	16	15	14	13	18	17 .	16	15	14	1
9 10	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	2
0	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	2
1	32	33	34	35	36	31	32	33	34	35	36	31 <b>290</b>	32	33	34	35	3
	17 Sc	outh	:	29 East	:		17 S	South	3	0 East			17	South	;	31 East	
;	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2	1
,	8	9	10	11	12	. 7	8	9	10	11	12	7	8	9	10	11	1
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	1
9	20	21	22 80	23	24	19	20 SITE	21	22	23	24	19	20	21	22	23	2
0	29 <b>210</b> 208'	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	2
1	32	33	34	35 153	36	31	32	33	34	35	36	31	32	33	34 271	35	3
	18 Sc	outh		29 East			18 5	outh	~	0 East			18	South		B1 East	
	5	4	3	2	1	6	10 0	4	3	2	1	6	5	4	3	2	1
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	1:
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14 317	1
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	2
5	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	2
1	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35 261	3

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

MOCD - Groundwater Data

Site Location - Southwest Central Tank Battery



# New Mexico Office of the State Engineer Water Column/Average Depth to Water

No records found.

**PLSS Search:** 

Section(s): 1-36

Township: 17S Range: 30E

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

# APPENDIX C

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## **Summary Report**

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

Report Date: March 15, 2013

Work Order: 13030828

Project Location:	Eddy Co., NM
Project Name:	COG/SW Central TB
Project Number:	114-6400625

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
322880	CS-1 (AH-1) South Wall	soil	2013-02-28	00:00	2013-03-08
322881	CS-1 (AH-1) East Wall	soil	2013-02-28	00:00	2013-03-08
322882	CS-1 (AH-1) West Wall	soil	2013-02-28	00:00	2013-03-08
322883	CS-1 (AH-1) Bottom Hole	soil	2013-02-28	00:00	2013-03-08

#### Sample: 322880 - CS-1 (AH-1) South Wall

Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

#### Sample: 322881 - CS-1 (AH-1) East Wall

Param	Flag	Result	Units	RL
Chloride		215	mg/Kg	4

#### Sample: 322882 - CS-1 (AH-1) West Wall

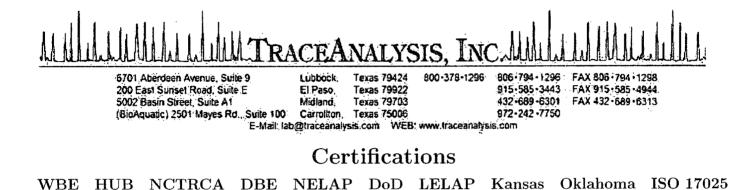
Param	Flag	Result	Units	RL
Chloride		105	mg/Kg	4

#### Sample: 322883 - CS-1 (AH-1) Bottom Hole

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

Report Date: Marc	h 15, 2013	Work Order: 13030828 Page Nun		ge Number: 2 of 2
Param	Flag	Result	Units	RL
Chloride		8160	mg/Kg	4

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## Analytical and Quality Control Report

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

Report Date: March 15, 2013

Work Order: 13030828

Project Location: Eddy Co., NM Project Name: COG/SW Central TB Project Number: 114-6400625

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
322880	CS-1 (AH-1) South Wall	soil	2013-02-28	00:00	2013-03-08
322881	CS-1 (AH-1) East Wall	soil	2013-02-28	00:00	2013-03-08
322882	CS-1 (AH-1) West Wall	soil	2013-02-28	00:00	2013-03-08
322883	CS-1 (AH-1) Bottom Hole	soil	2013-02-28	00:00	2013-03-08

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 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael al

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

# **Report Contents**

Case Narrative	3
Analytical Report     Sample 322880 (CS-1 (AH-1) South Wall)     Sample 322881 (CS-1 (AH-1) East Wall)     Sample 322882 (CS-1 (AH-1) West Wall)     Sample 322883 (CS-1 (AH-1) Bottom Hole)	4 4
Method Blanks QC Batch 99745 - Method Blank (1)	<b>6</b> 6
Laboratory Control Spikes     QC Batch 99745 - LCS (1)     QC Batch 99745 - MS (1)	<b>7</b> 7 7
Calibration Standards       QC Batch 99745 - CCV (1)       QC Batch 99745 - CCV (2)	
Appendix     Report Definitions     Laboratory Certifications     Standard Flags     Attachments	9 9

## Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-08 and assigned to work order 13030828. Samples for work order 13030828 were received intact at a temperature of 5.8 C.

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

		$\operatorname{Prep}$	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	84430	2013-03-13 at 10:25	99745	2013-03-15 at 14:12

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13030828 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: 13030828 COG/SW Central TB

Page Number: 4 of 10 Eddy Co., NM

# **Analytical Report**

### Sample: 322880 - CS-1 (AH-1) South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99745 84430	Date A	cal Method: 1alyzed: Preparation:	SM 4500-Cl B 2013-03-15 2013-03-13	Prep Method: Analyzed By: Prepared By:	AR.
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride	U		<20.0	mg/Kg	5	4.00

### Sample: 322881 - CS-1 (AH-1) East Wall

Chloride			215	mg/Kg	5	4.00
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	RL
Prep Batch:	84430	Sample 1	Preparation:	2013-03-13	Prepared By:	AR
QC Batch:	99745	Date An	alyzed:	2013-03-15	Analyzed By:	$\mathbf{AR}$
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

### Sample: 322882 - CS-1 (AH-1) West Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99745 84430	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-15 2013-03-13	Prep Method: Analyzed By: Prepared By:	AR.
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	1 105		105	mg/Kg	5	4.00

Report Date: March 15, 2013	Work Order: 13030828	Page Number: 5 of 10
114-6400625	COG/SW Central TB	Eddy Co., NM

## Sample: 322883 - CS-1 (AH-1) Bottom Hole

Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method	: N/A
QC Batch:	99745	Date An	alyzed:	2013-03-15	Analyzed By:	AR
Prep Batch:	84430	Sample	Preparation:	2013-03-13	Prepared By:	AR
			$\operatorname{RL}$			
Parameter	Flag	Cert	$\operatorname{Result}$	$\mathbf{Units}$	Dilution	$\mathbf{RL}$
Chloride			8160	mg/Kg	10	4.00

Work Order: 13030828 COG/SW Central TB Page Number: 6 of 10 Eddy Co., NM

# Method Blanks

Method Blan	k (1)	QC Batch: 99745				
0	9 <b>7</b> 45 4430		Date Analyzed: QC Preparation:	2013-03-15 2013-03-13	Analyzed By Prepared By	
Parameter		Flag	Cert	$egin{array}{c} \mathrm{MDL} \ \mathrm{Result} \end{array}$	Units	$\operatorname{RL}$
Chloride		······································	·····	<3.85	mg/Kg	4

Work Order: 13030828 COG/SW Central TB

## Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

QC Batch: 99745 Prep Batch: 84430			e Analyze Preparatio		3-03-15 3-03-13				yzed By ared By	
Param	F	С	LCS Result	Units	Dil.	Spike Amoun		atrix esult R	ec.	Rec. Limit
Chloride			2790	mg/Kg		2500				35 - 115
Percent recovery is based on the spik	e resi	lt. RPI				pike duplic				
				011 0110	_					DDD
Param F	C	LCSD		Dil	Spike	Matrix	Dou	Rec.	חמס	RPD Lingit
Param F Chloride	C	Result 2640	t Units mg/Kg	Dil.	Amount 2500	Result <3.85	Rec. 106	Limit 85 - 115	$\frac{\text{RPD}}{6}$	Limit 20
Percent recovery is based on the spik					••••••••••••••••••••••••••••••••••••••					40
Matrix Spike (MS-1) Spiked Sa	mple	: 322885	i							
QC Batch: 99745			e Analyzed		3-03-15				yzed By	
Prep Batch: 84430		QC	Preparatio	m: 201	3-03-13			Prep	ared By	: AR
			MS			Spike	Ma	trix		Rec.
Param	F	$\mathbf{C}$ ]	Result	Units	Dil.	Amount	Res			Limit
Chloride			2780	mg/Kg	5	2500	21	.0 103	78	.9 - 121
Percent recovery is based on the spik	e resu	lt. RPE	) is based	on the s	pike and s	pike duplic	ate res	ult.		
		MSD			Spike	Matrix		Rec.		RPD
Param F	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	RPD	$\operatorname{Limit}$
Chloride		2640	mg/Kg	5	2500	210	97	78.9 - 121	5	20

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

Report Date: March 15, 2013	Work Order: 13030828	Page Number: 8 of 10
114-6400625	COG/SW Central TB	Eddy Co., NM

# **Calibration Standards**

Standard (CCV-1)

.

QC Batch:	99745			Date A	.nalyzed: 2	013-03-15		Analy	zed By: AR
					CCVs	$\mathbf{CCVs}$	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-15

### Standard (CCV-2)

QC Batch:	99745			Date A	analyzed: 2	013-03-15		Analy	zed By: AR
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param		Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-15

Work Order: 13030828 COG/SW Central TB Page Number: 9 of 10 Eddy Co., NM

# Appendix

## **Report Definitions**

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

## Laboratory Certifications

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

## **Standard Flags**

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

## Attachments

Work Order: 13030828 COG/SW Central TB

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Page Number: 10 of 10 Eddy Co., NM

The scanned attachments will follow this page.

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

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						Midland, Te: (432) 682-4559	<b>Spring St.</b> (as 79705 • Fax (432) 682-3946								005 (Ext. to C35)		RCRA Metals Ag As Ba Cd Cr Pb Hg Se TCLP Metals Ag As Ba Cd Vr Pd Hg Se			8	55						, TDS		یون میکنوند. میرون میرون می	
CLIENT NAM	COL	r 37				SITE MANAGE	1 Taxa	NERS		F		ERV	ATIV DD	E	TX1005		s Ba Ba			60/62	270/62						ns, pH			
PROJECT N //4-6400	0.:	1	PR C	<u> </u>	ECT	NAME: SW Central TC Cituly SAMP		F-CONTA	V. I.F.	(N/A)					5 MOD.		als Ag A ats Ag A	tiles	i Volatile:	B940/BS	mi. Vol. 8	0/608	608		oec. a (Air)	estos)	ons/Catio			
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	G.L.J. SAMP		NUMBER OF CONTAINERS	CLOTT IL	HCL HCL	HN03	ICE	NONE	RTEY R031R	TPH 8015 MOD.	PAH 8270	RCPA Met	TCLP Volatiles	TCLP Semi Volatiles	BCI CC MC Vol	GC.MS Semi. Vol. 8270/625	PCB's 808	Pest. 808/	Chloride	Gamma of Ainha Rets	PLM (Asbestos)	Major Anions/Cations, pH, TDS			
\$280	2/28		5		У	C S-1 (AH-1)	South wall	Ì	Ī				2											M						
881	7xx		3		X	CS-1 (AH-1) E							~											X						
882	7/28		5		X	CS-1 (AH-1) W	1. 19 18						/											X						
883	2/28		5		X	CS-1 (AH-1) But							-											Ý						
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Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

## **Summary Report**

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

Report Date: March 25, 2013

Work Order: 13031527

Project Location:Eddy Co., NMProject Name:COG/SW Central TBProject Number:114-6400625

			$\operatorname{Date}$	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
323555	CS-3 (AH-3) Southeast Wall	soil	2013-03-01	00:00	2013-03-15
323556	CS-3 (AH-3) East Wall	soil	2013-03-01	00:00	2013 - 03 - 15
323557	CS-3 (AH-3) West Wall	soil	2013-03-01	00:00	2013 - 03 - 15
323558	CS-3 (AH-3) Bottom Hole	soil	2013-03-01	00:00	2013 - 03 - 15

#### Sample: 323555 - CS-3 (AH-3) Southeast Wall

Param	Flag	$\operatorname{Result}$	Units	RL
Chloride		352	mg/Kg	4

#### Sample: 323556 - CS-3 (AH-3) East Wall

Param	Flag	$\operatorname{Result}$	Units	$\mathbf{RL}$
Chloride		78.3	mg/Kg	4

#### Sample: 323557 - CS-3 (AH-3) West Wall

Param	$\operatorname{Flag}$	Result	Units	RL
Chloride		308	mg/Kg	4

#### Sample: 323558 - CS-3 (AH-3) Bottom Hole

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

Report Date: Marc	h 25, 2013	Work Order: 13031527	Page I	Page Number: 2 of 2		
Param	Flag	Result	Units	RL		
Chloride		6130	mg/Kg	4		



5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Midland Carrolton.

Texas 79703 Texas 75006

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

432 - 689 - 6301 972-242-7750

FAX 432-689-6313

Certifications

NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025 WBE HUB

## Analytical and Quality Control Report

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

Report Date: March 25, 2013

Work Order: 13031527 

Project Location: Eddy Co., NM Project Name: COG/SW Central TB Project Number: 114-6400625

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

			Date	$\operatorname{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
323555	CS-3 (AH-3) Southeast Wall	soil	2013-03-01	00:00	2013-03-15
323556	CS-3 (AH-3) East Wall	soil	2013-03-01	00:00	2013-03-15
323557	CS-3 (AH-3) West Wall	soil	2013-03-01	00:00	2013-03-15
323558	CS-3 (AH-3) Bottom Hole	soil	2013-03-01	00:00	2013 - 03 - 15

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 11 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

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

# **Report Contents**

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Sample 323556 (CS-3 (AH-3) East Wall)	4
Sample 323557 (CS-3 (AH-3) West Wall)	4
Sample 323558 (CS-3 (AH-3) Bottom Hole)	4
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QC Batch 99926 - Method Blank (1)	6
Laboratory Control Spikes	7
QC Batch 99925 - LCS (1)	7
QC Batch 99926 - LCS (1)	7
QC Batch 99925 - MS (1)	7
QC Batch 99926 - MS (1)	. 8
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QC Batch 99925 - CCV (2)	9
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# Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-15 and assigned to work order 13031527. Samples for work order 13031527 were received intact at a temperature of 18.1 C. Samples were not on ice.

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

		$\operatorname{Prep}$	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	84647	2013-03-21 at 09:58	99925	2013-03-22 at 13:45
Chloride (Titration)	SM 4500-Cl B	84647	2013-03-21 at 09:58	99926	2013-03-22 at 13:46

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 13031527.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: 13031527 COG/SW Central TB Page Number: 4 of 11 Eddy Co., NM

## **Analytical Report**

### Sample: 323555 - CS-3 (AH-3) Southeast Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99925 84647	Date <sup>®</sup> An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR.
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride	1 105	0016	352	mg/Kg	5	4.00

### Sample: 323556 - CS-3 (AH-3) East Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99925 84647	Date An	cal Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR
			$\operatorname{RL}$			
Parameter	$\mathbf{F}$ lag	$\operatorname{Cert}$	Result	Units	Dilution	$\operatorname{RL}$
Chloride			78.3	mg/Kg	5	4.00

### Sample: 323557 - CS-3 (AH-3) West Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99925 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	ÁR
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride	· · · · · · · · · · · · · · · · · · ·		308	mg/Kg	5	4.00

Report Date: March 25, 2013	Work Order: 13031527	Page Number: 5 of 11
114-6400625	COG/SW Central TB	Eddy Co., NM

## Sample: 323558 - CS-3 (AH-3) Bottom Hole

Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	99926	Date An	alyzed:	2013-03-22	Analyzed By:	AR.
Prep Batch:	84647	Sample I	Preparation:	2013-03-21	Prepared By:	AR
			$\mathbf{RL}$			
Parameter	$\operatorname{Flag}$	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	$\operatorname{RL}$
Chloride			6130	mg/Kg	10	4.00

Report Date:	March	25,	2013
114-6400625			

Work Order: 13031527 COG/SW Central TB Page Number: 6 of 11 Eddy Co., NM

# Method Blanks

Method Blank (1)	QC Batch: 99925				
QC Batch: 99925 Prep Batch: 84647		Date Analyzed: QC Preparation:	2013-03-22 2013-03-21	Analyzed By: Prepared By:	AR AR
Parameter	Flag	$\operatorname{Cert}$	$egin{array}{c} \mathrm{MDL} \ \mathrm{Result} \end{array}$	Units	RL
Chloride			<3.85	mg/Kg	4
Method Blank (1)	QC Batch: 99926				
QC Batch: 99926		Date Analyzed:	2013-03-22	Analyzed By:	AR.
Prep Batch: 84647		QC Preparation:	2013-03-21	Prepared By:	AR
			MDL	,	
Parameter	Flag	Cert	Result	Units	RL
Chloride		•	<3.85	mg/Kg	4

Work Order: 13031527 COG/SW Central TB

Page Number: 7 of 11 Eddy Co., NM

## Laboratory Control Spikes

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

QC Batch: 99925 Prep Batch: 84647			e Analyzed Preparatio		3-03-22 3-03-21				yzed By ared By	
Param	$\mathbf{F}$	С	LCS Result	Units	Dil.	Spike Amount		ıtrix sult R	ec.	Rec. Limit
Chloride			2750	mg/Kg		2500	<:			85 - 115
Percent recovery is based on the spil	œ resu	lt. RPI	) is based o	on the sp	oike and sp	ike duplica	ate resu	ılt.		
		LCSE	)		Spike	Matrix		Rec.		RPD
Param	r C	Result		Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		2560	mg/Kg	1	2500	<3.85	102	85 - 115	7	20
Laboratory Control Spike (LCS	-1)									
QC Batch: 99926 Prep Batch: 84647			e Analyzed Preparatio		3-03-22 3-03-21				yzed By ared By	
			LCS		ĩ	Spike	Ma	ıtrix		Rec.
Param	F	С	Result	Units	Dil.	Amount		sult R		Limit
Chloride			2680	mg/Kg	1	2500	<3	3.85 10	07 8	35 - 115
Percent recovery is based on the spil	æ resu	lt. RPI	) is based o	on the sp	oike and sp	ike duplica	ate resu	lt.		
		LCSE	)		Spike	Matrix		Rec.		RPD
Param H	° C	Resul	t Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
Chloride		2610	mg/Kg	1	2500	<3.85	104	85 - 115	3	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: 323557

QC Batch:	99925	Date Analyzed:	2013-03-22	Analyzed By:	$\mathbf{AR}$
Prep Batch:	84647	QC Preparation:	2013-03-21	Prepared By:	$\mathbf{AR}$

Report Date: March 25, 2013 114-6400625		Work Order: 13031527 COG/SW Central TB						F	Page N	umber: Eddy (	8 of 11 Co., NM	
				MS			Spike	M	atrix			Rec.
Param		F	C	Result	Units	Dil.	Amount		esult	Rec		Limit
Chloride				2830	mg/Kg	5	2500		308	101	78	9 - 121
Percent recovery is based on the	spike	e rest	ılt. RPI	<b>D</b> is based	on the s	pike and s	spike dupli	cate re	sult.			
			MSD			Spike	Matrix		$\mathbf{Re}$	e.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Lin}$	nit	RPD	$\operatorname{Limit}$
Chloride			2880	mg/Kg	5	2500	308	103	78.9 -	· 121	2	20
Percent recovery is based on the Matrix Spike (MS-1) Spike	-		: 32356			-						
	-		: 32356' Dat			3-03-22 3-03-21					zed By red By	
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926	-		: 32356' Dat	7 e Analyzeo Preparatio			Spike	M			red By	: AR
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926	ed Sa	mple	: 32356' Dat QC	7 e Analyzec Preparatic MS		3-03-21	Spike Amount				red By	
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926 Prep Batch: 84647	ed Sa		: 32356' Dat QC	7 e Analyzec Preparatic MS Result	on: 201		Spike Amount 2500	Re	ıtrix	Prepa	red By	: AR Rec. Limit
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926 Prep Batch: 84647 Param Chloride	d Sa	mple F	: 32356' Dat QC C	7 Te Analyzeo Preparatio MS Result 7290	on: 201 Units mg/Kg	.3-03-21 Dil. 10	Amount 2500	Re 48	atrix sult	Prepa Rec.	red By	: AR Rec.
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926 Prep Batch: 84647 Param	d Sa	mple F	: 32356' Dat QC C	7 Te Analyzeo Preparatio MS Result 7290	on: 201 Units mg/Kg	Dil. 10 Dike and s	Amount 2500 spike duplic	Re 48	atrix sult 850 sult,	Prepa Rec. 98	red By	: AR Rec. Limit 9 - 121
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99926 Prep Batch: 84647 Param Chloride	d Sa	mple F	: 32356' Dat QC C	7 Preparatio MS Result 7290 D is based of	on: 201 Units mg/Kg	.3-03-21 Dil. 10	Amount 2500	Re 48	atrix sult	Prepa Rec. 98	red By	: AR Rec. Limit

-

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

Work Order: 13031527 COG/SW Central TB

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Page Number: 9 of 11 Eddy Co., NM

## **Calibration Standards**

### Standard (CCV-1)

QC Batch:	99925			Date A	nalyzed: 2	2013-03-22	Analyzed By:			
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date	
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride				mg/Kg	100	99.8	100	85 - 115	2013-03-22	

### Standard (CCV-2)

QC Batch:	99925	Date Analyze				2013-03-22		Analyzed By: AR		
					CCVs	CCVs	CCVs	Percent		
					True	Found	Percent	Recovery	Date	
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	$\operatorname{Limits}$	Analyzed	
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-22	

### Standard (CCV-1)

QC Batch:	99926			Date A	analyzed:	2013-03-22		Analyzed By: AR		
					$\mathrm{CCVs}$	CCVs	CCVs	Percent		
					True	Found	Percent	Recovery	Date	
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride				mg/Kg	100	99.3	99	85 - 115	2013-03-22	

### Standard (CCV-2)

QC Batch:	99926		Date Analyzed:			2013-03-22		Analyzed By: AR		
					CCVs	CCVs	CCVs	Percent		
					True	Found	Percent	Recovery	Date	
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	$\operatorname{Limits}$	Analyzed	
Chloride				mg/Kg	100	101	101	85 - 115	2013-03-22	

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Work Order: 13031527 COG/SW Central TB Page Number: 10 of 11 Eddy Co., NM

## Appendix

### **Report Definitions**

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

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

## Standard Flags

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

## Attachments

Work Order: 13031527 COG/SW Central TB Page Number: 11 of 11 Eddy Co., NM

The scanned attachments will follow this page.

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

COG ECT NO.: U.O. BER DATE TIME HIME DATE TIME HIME DATE TIME HIME DATE TIME HIME DATE TIME HIME DATE TIME DATE DATE TIME DATE		is Request of C	hain of Custo	ody R	leo	co	orc	t	$\vdash$								GE:	0.05	<u> </u>	(	DF:	/	
1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 98			<u> </u>		····			<u></u>	-				(							o.)			
<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		1910 N. Midland	Big Spring St. , Texas 79705							5 (Ext. to C35)	Cr Ph Ho Se	d Vr Pd Hg Se									DS		
<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	COG	ILe		NERS	F					TX100	s Ba Co	s Ba C		\$	260/624	270/625					ns, pH, 7		
<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	PROJECT NO .:	PROJECT NAME		F CONTA	(N)				8	5 MOD.	als Ao A	als Ag A	iles	Volatile	. 8240/8	mi. Vol. 8	0/608		BC.	i (Allt)	ns/Catio		
$\frac{55}{5}\frac{3}{1} = \frac{5}{5} \times \frac{(5-3)(AH-3)South Fast mail}{5} = \frac{1}{1}$	LAB I.D. NUMBER DATE	TIME WATRIX	مرافقها والعربي والمراجع من العربي والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع والعربي والمراجع والم AMPLE IDENTIFICATION	NUMBER O	FILTERED HCL	HNO3	ICE	NONE	BTEX 8021	TPH 801	PAH 8270 RCRA Met	TCLP Met	TCLP Volai	TCLP Sem	GC.MS Vol	GC.MS Se	PCB's 808	Chloride	Gamma Sp	PLM (Asbe	Major Anic		
55 3/. 5 X CS-3 (AH-3) East wall 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2355.5 3/,	5 × CS-3 (AH	-31 South Fast well	;														Ý					$\Box$
57 % 5 X CS-3 (AH-3) West wall 1 358 3% 5 X CS-3 (AH-3) Botton hole 1	556 1/	5 x CS-3 (AH-	3) East Grall											_				1		1			
358 3/, 5 x CS-3 (Ait-3) Boits-hole_ 1	557 %	5 X CS-3 (4H-	1) West wall	!	_													Х				_	
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## **Summary Report**

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

Report Date: March 15, 2013

Work Order: 13030829

Project Location:Eddy Co., NMProject Name:COG/SW Central TBProject Number:114-6400625

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
322884	CS-2 (AH-2) North Wall	soil	2013-03-01	00:00	2013-03-08
322885	CS-2 (AH-2) South Wall	soil	2013-03-01	00:00	2013-03-08
322886	CS-2 (AH-2) East Wall	soil	2013-03-01	00:00	2013-03-08
322887	CS-2 (AH-2) Bottom Hole	soil	2013-03-01	00:00	2013-03-08

#### Sample: 322884 - CS-2 (AH-2) North Wall

Param	Flag	Result	Units	RL
Chloride		215	mg/Kg	4

#### Sample: 322885 - CS-2 (AH-2) South Wall

Param	Flag	Result	Units	RL
Chloride		210	mg/Kg	4

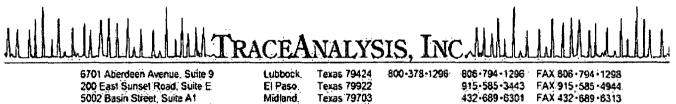
#### Sample: 322886 - CS-2 (AH-2) East Wall

Param	Flag	Result	Units	RL
Chloride		653	mg/Kg	4

#### Sample: 322887 - CS-2 (AH-2) Bottom Hole

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

Report Date: Marc	h 15, 2013	Work Order: 13030829		Page Number: 2 of 2	
Param	Flag	Result	Units	RL	
Chloride		4300	mg/Kg	4	



(BioAquatic) 2501 Mayes Rd., Suite 100

Carrolton.

Texas 75006 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

972-242-7750

## Certifications

NELAP DoD LELAP WBE HUB NCTRCA DBE Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

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

Report Date: March 15, 2013

Work Order: 13030829 

Project Location: Eddy Co., NM COG/SW Central TB Project Name: Project Number: 114-6400625

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
322884	CS-2 (AH-2) North Wall	soil	2013-03-01	00:00	2013-03-08
322885	CS-2 (AH-2) South Wall	soil	2013-03-01	00:00	2013-03-08
322886	CS-2 (AH-2) East Wall	soil	2013-03-01	00:00	2013-03-08
322887	CS-2 (AH-2) Bottom Hole	soil	2013-03-01	00:00	2013-03-08

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 11 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael as

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

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## Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-08 and assigned to work order 13030829. Samples for work order 13030829 were received intact at a temperature of 5.8 C.

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

		$\operatorname{Prep}$	Prep	QC	Analysis
Test	Method	$\operatorname{Batch}$	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	84430	2013-03-13 at 10:25	99745	2013-03-15 at 14:12
Chloride (Titration)	SM 4500-Cl B	84430	2013-03-13 at 10:25	99746	2013-03-15 at 14:13

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 13030829 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: 13030829 COG/SW Central TB Page Number: 4 of 11 Eddy Co., NM

# **Analytical Report**

#### Sample: 322884 - CS-2 (AH-2) North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99745 84430	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-15 2013-03-13	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	Cert	RL Result	Units	Dilution	$\operatorname{RL}$
Chloride	- 0		215	mg/Kg	5	4.00

### Sample: 322885 - CS-2 (AH-2) South Wall

Laboratory:MidlandAnalysis:Chloride (Titration)QC Batch:99745Prep Batch:84430		Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-15 2013-03-13	Prep Method: Analyzed By: Prepared By:	AR.
			$\operatorname{RL}$			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride			210	mg/Kg	5	4.00

### Sample: 322886 - CS-2 (AH-2) East Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99746 84430	Date A	cal Method: nalyzed: Preparation:	SM 4500-Cl B 2013-03-15 2013-03-13	Prep Method: Analyzed By: Prepared By:	ÁR
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride			653	mg/Kg	5	4.00

Report Date: March 15, 2013	Work Order: 13030829	Page Number: 5 of 11
114-6400625	COG/SW Central TB	Eddy Co., NM

### Sample: 322887 - CS-2 (AH-2) Bottom Hole

Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	99746	Date An	alyzed:	2013-03-15	Analyzed By:	AR
Prep Batch:	84430	Sample I	Preparation:	2013-03-13	Prepared By:	AR.
			$\operatorname{RL}$			
Parameter	Flag	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	RL
Chloride			4300	mg/Kg	10	4.00

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Report Date: March 15 114-6400625	5, 2013		ler: 13030829 7 Central TB	Page Number: 6 of 11 Eddy Co., NM			
Method B	lanks						
Method Blank (1)	QC Batch: 99745						
QC Batch: 99745 Prep Batch: 84430		Date Analyzed: QC Preparation:	2013-03-15 2013-03-13		Analyzed By: Prepared By:	AR AR	
Parameter	Flag	Cert		MDL Result	Units	RL	
Chloride				<3.85	mg/Kg	4	
Method Blank (1)	QC Batch: 99746						
QC Batch: 99746 Prep Batch: 84430		Date Analyzed: QC Preparation:	2013-03-15 2013-03-13		Analyzed By: Prepared By:	AR AR	
Parameter	Flag	Cert		MDL Result	Units	$\mathbf{RL}$	
Chloride			·······	<3.85	mg/Kg	4	

### Work Order: 13030829 COG/SW Central TB

Page Number: 7 of 11 Eddy Co., NM

## Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

QC Batch: 99745 Prep Batch: 84430				e Analyzed Preparatic		3-03-15 3-03-13				lyzed By pared By	
Param		F	C	LCS Result	Units	Dil.	Spike Amount	Re		Rec.	Rec. Limit
Chloride				2790	mg/Kg	11	2500	<	3.85	112	85 - 115
Percent recovery is based on the s	pike	resu	lt. RPI	) is based o	on the sp	oike and sp	oike duplica	ate resu	ılt.		
Param	F	С	LCSI Resul		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2640	mg/Kg	1	2500	<3.85	106	85 - 115	6	20
Laboratory Control Spike (LC QC Batch: 99746	CS-1	ι)		e Analyzed		3-03-15				lyzed By	
Prep Batch: 84430			QC	Preparatio	n: 2013	3-03-13			Prej	pared By	: AR
Param Chloride		F	C	LCS Result 2650	Units mg/Kg	Dil.	Spike Amount 2500	Re		lec. 06 8	Rec. Limit 35 - 115
Percent recovery is based on the s	oike	resu	lt. RPI	) is based o	on the sr	ike and sp	ike duplica	te resu	ılt.		
Param Chloride	F	C	LCSE Result 2460	Units	Dil.	Spike Amount 2500	Matrix Result <3.85	Rec.	Rec. Limit 85 - 115	RPD 7	RPD Limit 20
			2400	mg/Kg	L	2000	<u></u>	90	00 - 110	1	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: 322885
----------------------------	----------------

QC Batch:	99745	Date Analyzed:	2013-03-15	Analyzed By:	AR
Prep Batch:	84430	QC Preparation:	2013-03-13	Prepared By:	AR

Report Date: March 15, 2013 114-6400625	Work Order: 13030829 COG/SW Central TB									Page N		8 of 11 Co., NM
Param		F	С	MS Result	Units	Dil.	Spike Amount		atrix esult	Rec		Rec. Limit
Chloride		T.	0	2780	mg/Kg	$\frac{D11}{5}$	2500		210	103		9 - 121
Percent recovery is based on the s	spike	e rest	ılt. RPI	D is based		pike and s	spike duplie	cate re	esult.			
			MSD			Spike	Matrix		R	lec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.		mit	RPD	$\operatorname{Limit}$
Chloride			2640	mg/Kg	5	2500	210	97	78.9	- 121	5	20
v	-		ılt. RPJ :: 32288		on the s	рике алц я	улке цари		.5(11).			
QC Batch: 99746	-		:: 32288 Dat		d: 201	3-03-15 3-03-13	тары			•-	vzed By ured By	
Matrix Spike (MS-1) Spike QC Batch: 99746	-		:: 32288 Dat	7 te Analyze Preparatio	d: 201	3-03-15				•-	ured By	AR
Matrix Spike (MS-1) Spike QC Batch: 99746	-		:: 32288 Dat QC	7 te Analyze	d: 201	3-03-15	Spike Amount	Μ	atrix esult	•-	ured By	
Matrix Spike (MS-1) Spike QC Batch: 99746 Prep Batch: 84430	-	mple	:: 32288 Dat QC	7 te Analyze Preparati MS	d: 201 on: 201	3-03-15 3-03-13	Spike	M	atrix	Prepa	ured By	AR
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99746 Prep Batch: 84430 Param	d Sa	mple F	:: 32288 Dat QC C	7 te Analyze Preparatio MS Result 6640	d: 201 on: 201 Units mg/Kg	3-03-15 3-03-13 Dil. 10	Spike Amount 2500	M Ri 4	atrix esult 300	Prepa Rec.	ured By	: AR Rec. Limit
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99746 Prep Batch: 84430 Param Chloride	d Sa	mple F	:: 32288 Dat QC C	7 te Analyze Preparatio MS Result 6640	d: 201 on: 201 Units mg/Kg	3-03-15 3-03-13 Dil. 10	Spike Amount 2500	M Ri 4	atrix esult 300 esult.	Prepa Rec.	ured By	: AR Rec. Limit
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99746 Prep Batch: 84430 Param Chloride	d Sa	mple F	: 32288 Dat QC C	7 Ee Analyzee Preparatie MS Result <u>6640</u> D is based	d: 201 on: 201 Units mg/Kg	3-03-15 3-03-13 Dil. 10 pike and s	Spike Amount 2500 spike duplic	M Ri 4	atrix esult 300 esult. R	Prepa Rec. 94	ured By	AR Rec. Limit 9 - 121

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

Work Order: 13030829 COG/SW Central TB Page Number: 9 of 11 Eddy Co., NM

# **Calibration Standards**

Standard (CCV-1)

QC Batch:	99745		Date Analyzed: 2013-03-15					Analyzed By: AR			
					CCVs	CCVs	CCVs	Percent	D. /		
					True	Found	$\mathbf{Percent}$	Recovery	Date		
Param		Flag	$\operatorname{Cert}$	$\mathbf{U}\mathbf{n}\mathbf{i}\mathbf{t}\mathbf{s}$	Conc.	Conc.	Recovery	Limits	Analyzed		
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-15		

### Standard (CCV-2)

QC Batch:	99745			Date A	malyzed: 2	013-03-15	Analyzed By: AR		
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	$\operatorname{Limits}$	Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-15

### Standard (CCV-1)

QC Batch:	99746			Date A	malyzed:	2013-03-15		Analy	zed By: AR
					$\rm CCVs$	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	99.8	100	85 - 115	2013-03-15

### Standard (CCV-2)

QC Batch: 9	9746	Date Analyze				2013-03-15		Analy	zed By: AR
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2013-03-15

Work Order: 13030829 COG/SW Central TB Page Number: 10 of 11 Eddy Co., NM

## Appendix

### **Report Definitions**

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
$\operatorname{SDL}$	Sample Detection Limit

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

## Standard Flags

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

## Attachments

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Work Order: 13030829 COG/SW Central TB Page Number: 11 of 11 Eddy Co., NM

The scanned attachments will follow this page.

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

					13030	829						_														
Analysis Request of Chain of Custody Record							PAGE: OF: /														[					
									_										EST hod N	lo.)						
					Midland, Tex	Spring St.							05 (Ext. to C35)		Cd Cr Pb Hg Se									TDS		
CLIENT NAME: SITE MANAGER:						SE SE				VATIN	/E	TX1005		As Ba Cd As Ba Cd			10010	9270/625					Ξ			
PROJECT N	<u> </u>		PRC	JECT	NAME:		TAIN	+	, 					1	As Ba	2	tiles		1,827 1,827	11				ations,		
114-640			6	<u> 6,-5</u>	W Cental TB Latery C		- Ś	NXX NXX					5 MC		als Ac	iles.	i Vola		. 824 Di. Vo	0/608	808	DBC.	(Air)	Anions/Cati		
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP. GRAB	. Galay C SAMPL	E IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HNU3	ICE	NONE		BTEX 8021B TPH 8015 MOD.	100	RCRA Metals Ag	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS VOI. 824U/A GC.MS Serni. Vol.	PCB's 8080/608	Past. 808/608	Gamma Spec.	Alpha Beta (Air) Di M (Ashestos)	Major Anio		
22884	3/1		5	×	CS-2(AH-Z) No	with wall															, 	X				
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886	3/		2	X	CS-2 (AH-2) Ens	wall	ľ															<u>A</u>		_		
887	3/		\ \	/	<u>CS-2 (AH-2) So.</u> <u>CS-2 (AH-2) Ens</u> CS-2 (AH-2) Bo+	ion hole	(															X				
. <u>.</u>				-					_																	
					Date: 3/8/13	RECEIVED BY: Signature)					3/8	4.3	, ,										Π			
	KAC.				Time: 1445	1 XAM	Concernant of the		Dal Tin	18:	74	ý	2	1	AMPLE	15	K	ic-	stal	m	K		Da Tin			
RELINQUISHE					Date:	AECEIVED BY: (Signature)			Da: Tin	ne:					AMPLI FEDEI HAND	ς ΄			BUS UPS				AIRBI			
RELINQUISHE					Date: Time:	RECEIVED BY: (Signature)			Da: Tin						ETRA					ON:				Results	by:	
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SAMPLE CON	DITION WHEN	RECEIVED			REMARKS:	und all																	ł			A4

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

## **Summary Report**

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

Report Date: March 25, 2013

Work Order: 13031529

Project Location:	Eddy Co., NM
Project Name:	COG/SW Central TB
Project Number:	114-6400625

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
323563	CS-4 (AH-4) North Wall	soil	2013-03-08	00:00	2013-03-15
323564	CS-4 (AH-4) South Wall	soil	2013-03-08	00:00	2013-03-15
323565	CS-4 (AH-4) East Wall	soil	2013-03-08	00:00	2013-03-15
323566	CS-4 (AH-4) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323567	CS-4 (AH-4) West Wall	soil	2013-03-11	00:00	2013-03-15
323568	CS-5 (AH-7) North Wall	soil	2013-03-08	00:00	2013-03-15
323569	CS-5 (AH-7) East Wall	soil	2013-03-08	00:00	2013 - 03 - 15
323570	CS-5 (AH-7) West Wall	soil	2013-03-08	00:00	2013-03-15
323571	CS-5 (AH-7) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323572	CS-5 (AH-7) South Wall	soil	2013-03-11	00:00	2013-03-15

#### Sample: 323563 - CS-4 (AH-4) North Wall

Param	$\operatorname{Flag}$	Result	$\mathbf{U}\mathbf{nits}$	RL
Chloride		364	mg/Kg	4

#### Sample: 323564 - CS-4 (AH-4) South Wall

Param	Flag	Result	Units	RL
Chloride		3740	mg/Kg	4

#### Sample: 323565 - CS-4 (AH-4) East Wall

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

Report Date: March 25, 2013		Work Order: 13031529	Page Number: 2 of 2		
Param	$\mathbf{Flag}$	Result	Units	$\operatorname{RL}$	
Chloride		2490	mg/Kg	4	
Sample: 323566	- CS-4 (AH-4) Botto	n hole			
Param	Flag	Result	Units	RL	
Chloride		519	mg/Kg	4	
Sample: 323567	- CS-4 (AH-4) West	Wall			
Param	Flag	Result	Units	RL	
Chloride		4850	mg/Kg	4	
Sample: 323568	- CS-5 (AH-7) North	Wall			
Param	Flag	Result	Units	RL	
Chloride		349	mg/Kg	4	
Sample: 323569	- CS-5 (AH-7) East V	Vall			
Param	Flag	Result	Units	RL	
Chloride		1140	mg/Kg	4	
Sample: 323570	- CS-5 (AH-7) West	Wall			
Param	- CS-5 (AH-7) West <sup>v</sup> Flag	<b>Wall</b> Result	Units	RL	
Param			Units mg/Kg	RL 4	
Param Chloride		Result 162			
Param Chloride Sample: 323571 Param	Flag	Result 162	mg/Kg Units	4 RL	
Param Chloride Sample: 323571 Param	Flag - CS-5 (AH-7) Botton	Result 162 n hole	mg/Kg	4	
Param Chloride Sample: 323571 Param Chloride	Flag - CS-5 (AH-7) Botton	Result 162 n hole <u>Result</u> 2040	mg/Kg Units	4 RL	
Param Chloride Sample: 323571 Param Chloride	Flag - CS-5 (AH-7) Botton Flag	Result 162 n hole <u>Result</u> 2040	mg/Kg Units	4 RL	

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Certifications

WBE HUB NCTRCA 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: March 25, 2013

Work Order: 13031529

Project Location:Eddy Co., NMProject Name:COG/SW Central TBProject Number:114-6400625

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
323563	CS-4 (AH-4) North Wall	soil	2013-03-08	00:00	2013-03-15
323564	CS-4 (AH-4) South Wall	soil	2013-03-08	00:00	2013-03-15
323565	CS-4 (AH-4) East Wall	soil	2013-03-08	00:00	2013-03-15
323566	CS-4 (AH-4) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323567	CS-4 (AH-4) West Wall	soil	2013-03-11	00:00	2013-03-15
323568	CS-5 (AH-7) North Wall	soil	2013-03-08	00:00	2013-03-15
323569	CS-5 (AH-7) East Wall	soil	2013-03-08	00:00	2013 - 03 - 15
323570	CS-5 (AH-7) West Wall	soil	2013-03-08	00:00	2013 - 03 - 15
323571	CS-5 (AH-7) Bottom hole	soil	2013-03-08	00:00	2013-03-15
323572	CS-5 (AH-7) South Wall	soil	2013-03-11	00:00	2013-03-15

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 13 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

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

# **Report Contents**

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### Case Narrative

Samples for project COG/SW Central TB were received by TraceAnalysis, Inc. on 2013-03-15 and assigned to work order 13031529. Samples for work order 13031529 were received intact at a temperature of 18.1 C. Samples were not on ice.

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

		Prep	$\operatorname{Prep}$	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	84647	2013-03-21 at 09:58	99926	2013-03-22 at 13:46
Chloride (Titration)	SM 4500-Cl B $$	84647	2013-03-21 at 09:58	99927	2013-03-22 at 13:47

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 13031529 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.

Report Date: March 25, 2013 114-6400625

## **Analytical Report**

#### Sample: 323563 - CS-4 (AH-4) North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99926 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride			364	ıng/Kg	5	4.00

#### Sample: 323564 - CS-4 (AH-4) South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99926 84647	Date A	cal Method: 1alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			3740	mg/Kg	10	4.00

#### Sample: 323565 - CS-4 (AH-4) East Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99926 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	ÁR
Parameter	Flag	Cert	RL Result	Units	Dilution	$\mathbf{RL}$
Chloride			2490	mg/Kg	10	4.00

Report Date: March 25, 2013	Work Order: 13031529	Page Number: 6 of 13
114-6400625	COG/SW Central TB	Eddy Co., NM

#### Sample: 323566 - CS-4 (AH-4) Bottom hole

Laboratory:	Midland					<b>N7</b> / 4
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	,
QC Batch:	99926	.Date An	alyzed:	2013-03-22	Analyzed By:	$\mathbf{AR}$
Prep Batch:	84647	Sample 1	Preparation:	2013-03-21	Prepared By:	AR
-		-	-		•	
			$\operatorname{RL}$			
Parameter	Flag	Cert	$\operatorname{Result}$	Units	Dilution	$\mathbf{RL}$
Chloride			519	mg/Kg	5	4.00

#### Sample: 323567 - CS-4 (AH-4) West Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99926 84647	Date An	al Method: alyzed: <sup>P</sup> reparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR.
Parameter	Flag	Cert	RL Result	Units	Dilution	$\mathbf{RL}$
Chloride			4850	mg/Kg	10	4.00

#### Sample: 323568 - CS-5 (AH-7) North Wall

Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	99927	Date An	alyzed:	2013-03-22	Analyzed By:	AR.
Prep Batch:	84647	Sample 1	Preparation:	2013-03-21	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			349	mg/Kg	5	4.00

#### Sample: 323569 - CS-5 (AH-7) East Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	99927	Date Analyzed:	2013-03-22	Analyzed By:	AR
Prep Batch:	84647	Sample Preparation:	2013-03-21	Prepared By:	AR

Report Date: March 2 114-6400625	5, 2013		k Order: 1303152 G/SW Central TI		Page Numb Eddy	er: 7 of 13 y Co., NM
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	RL
Chloride			1140	mg/Kg	5	4.00

#### Sample: 323570 - CS-5 (AH-7) West Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99927 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	AR.
			$\operatorname{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\operatorname{RL}$
Chloride			162	mg/Kg	5	4.00

#### Sample: 323571 - CS-5 (AH-7) Bottom hole

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99927 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	Prep Method: Analyzed By: Prepared By:	
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\operatorname{RL}$
Chloride			2040	mg/Kg	10	4.00

#### Sample: 323572 - CS-5 (AH-7) South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 99927 84647	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-03-22 2013-03-21	<i>v v</i>	AR
			$\mathbf{RL}$			
Parameter	Flag	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	$\operatorname{RL}$
Chloride			737	mg/Kg	5	4.00

.

COG/SW Central TB Eddy Co., NM 114-6400625 Method Blanks Method Blank (1) QC Batch: 99926 QC Batch: 99926 Date Analyzed: 2013-03-22 Analyzed By: AR Prep Batch: QC Preparation: Prepared By: AR 84647 2013-03-21 MDL Parameter Flag  $\operatorname{Cert}$ Result Units - $\mathbf{RL}$ mg/Kg Chloride <3.85 4 Method Blank (1) QC Batch: 99927 QC Batch: Date Analyzed: Analyzed By: AR 99927 2013-03-22 Prepared By:  $\mathbf{AR}$ Prep Batch: 84647 QC Preparation: 2013-03-21 MDL Units  $\mathbf{RL}$ Parameter Flag  $\operatorname{Cert}$ Result

Chloride

Report Date: March 25, 2013

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mg/Kg

<3.85

4

Report Date: March 25, 2013 114-6400625

Work Order: 13031529 COG/SW Central TB Page Number: 9 of 13 Eddy Co., NM

### Laboratory Control Spikes

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

QC Batch: 99926 Prep Batch: 84647				e Analyzec Preparatic		3-03-22 3-03-21				lyzed By bared By	
Param		F	С	LCS Result	Units	Dil.	Spike Amount	Re		Rec.	Rec. Limit
Chloride				2680	mg/Kg		2500			107	35 - 115
Percent recovery is based on	the spike	resu	lt. RPI	) is based	on the sp	oike and sp	oike duplica	ate resi	ılt.		
Param	F	С	LCSE Result		Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	f RPD
Chloride			2610	mg/Kg	1	2500	< 3.85	104	85 - 115	3	20
Laboratory Control Spike QC Batch: 99927 Prep Batch: 84647	e (LCS-1	.)		e Analyzec Preparatic		3-03-22 3-03-21				lyzed By bared By	
Param		F	С	LCS Result	Units	Dil.	Spike Amount	Re		lec.	Rec.
Chloride				2500	mg/Kg		2500			.00 8	35 - 115
Percent recovery is based on	the spike	resu	lt. RPI	) is based (	on the sp	oike and sp	ike duplica	te resu	ilt.		
			LCSE	•		Spike	Matrix		Rec.		RPD
Param	F	C	Result		Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2700	$\mathrm{mg/Kg}$	1	2500	<3.85	108	85 - 115	8	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: 323567	

QC Batch:	99926	Date Analyzed:	2013-03-22	Analyzed By:	$\mathbf{AR}$
Prep Batch:	84647	QC Preparation:	2013-03-21	Prepared By:	AR.

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Param		F	С	MS Result	Units	Dil.	Spike Amount		atrix esult	Rec.		Rec. Limit		
Chloride				7290	mg/Kg	10	2500	4	850	98	78.	9 - 121		
Percent recovery is based on the	spike	resi	ılt. RPI	D is based	on the s	pike and s	spike duplie	cate re	sult.					
Param	F	С	MSD Result	; Units	Dil.	Spike Amount	Matrix Result	Rec.		ec. mit	RPD	RPD Limit		
Chloride			7610	mg/Kg	<u>; 10</u>	2500	4850	110	78.9	- 121	4	20		
Percent recovery is based on the														
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927		mple		2 ze Analyze Preparati		.3-03-22 3-03-21					zed By red By:			
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927 Prep Batch: 84647 Param		mple F	Dat QC	e Analyze Preparati MS Result	ion: 201 Units	.3-03-21 Dil.	Spike Amount	Re	atrix	Prepa Rec.	red By: I	AR Rec. Limit		
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927 Prep Batch: 84647 Param <u>Chloride</u>	ed Sa	<u>F</u>	Dat QC C	e Analyze Preparati MS Result 3200	ion: 201 Units mg/Kg	.3-03-21 Dil. 5	Amount 2500	Re	sult '37	Prepa	red By: I	AR. Rec.		
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927 Prep Batch: 84647 Param	ed Sa	<u>F</u>	Dat QC C	e Analyze Preparati MS Result 3200	ion: 201 Units mg/Kg	.3-03-21 Dil. 5	Amount 2500	Re	sult '37	Prepa Rec.	red By: I	AR Rec. Limit		
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927 Prep Batch: 84647 Param <u>Chloride</u>	ed Sa	<u>F</u>	Dat QC C	e Analyze Preparati MS Result 3200	ion: 201 Units mg/Kg	.3-03-21 Dil. 5	Amount 2500	Re	sult '37	Prepa Rec. 98	red By: I	AR Rec. Limit		
<b>Matrix Spike (MS-1)</b> Spike QC Batch: 99927 Prep Batch: 84647 Param Chloride	ed Sa	<u>F</u>	Dat QC C ılt. RPI	e Analyze Preparati MS Result 3200 D is based	Units <u>Units</u> <u>mg/Kg</u> on the s Dil.	.3-03-21 Dil. 5 pike and s	Amount 2500 pike duplic	Re	sult 37 sult. Re	Prepa Rec. 98 ec. mit	red By: I	AR. Rec. Jimit 9 - 121		

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

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Report Date:	March	25,	2013
114-6400625			

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### **Calibration Standards**

#### Standard (CCV-1)

QC Batch: 9	9926		Date A	Analyzed: 2	2013-03-22		Analy	zed By: AR
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			$\mathrm{mg/Kg}$	100	99.3	99	85 - 115	2013-03-22
Standard (C	CV-2)							
QC Batch: 99	9926		Date A	analyzed: 2	2013-03-22		Analy	zed By: AR
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recoverv	Limits	Analyzed

Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-03-22

#### Standard (CCV-1)

QC Batch:	99927			Date A	nalyzed: 2	013-03-22		Analy	zed By: AR
					$\mathrm{CCVs}$	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2013-03-22

#### Standard (CCV-2)

QC Batch: 99	927		Date A	nalyzed: 2	013-03-22		Analy	zed By: AR
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2013-03-22

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### Appendix

#### **Report Definitions**

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

#### Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis

### Standard Flags

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

### Attachments

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The scanned attachments will follow this page.

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

Alysis Request of Chain of Custody TETRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 SITE MANAGER: <u>Ile</u> <u>Teucrez</u> PROJECT NAME:									1	1 1	() 				IS R ecify			T d No	.)		
Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946	VERS								1		י) דד			зре Т	ecny	/ Me	uno	2140	·/		
E: COG : PROJECT NAME: PROJECT NAME:	VERS							PAH 8270 PAH 8270	d Cr Pb Hg Se	d Vr Pd Hg Se										pH, TDS	
: PROJECT NAME:	₹ I			SER		VE			Ba C	Ba C			0/624	0/625						, PH,	
		$\vdash$	Ţ			[			g As	SA B		tiles	0/826	ol. 827						ations	
DATE TIME XI WOODS SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	HCL	HNO3	ICE	NONE		BTEX 8021B	PAH 8270	<b>RCRA Metals A</b>	TCLP Metals A	TCLP Volatiles	TCLP Semi Volatiles	GC.MS Vol. 824	GC.MS Semi. V	PCB's 8080/608	Pest. 808/608	Chlonde )	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations,	
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18 5 × (5-4 (AH-4) Botto- bale	1															ý					
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8 5 X CS-5 (AHS) North wall	,															X					
18 5 × (3-5 (14-7) East well	!															`	X				
1 S X CO- (AND) West Wall	,															b	4				
18 5 X 25.5 AH-7) Bother Lole	/							_								`	<u>}</u>				
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