## SITE INFORMATION

		Report 1	Type: Clos		RP-493	
General Site In	formation:		1. 18 1			
Site:		Woolley Fee	deral #7			
Company:		COG Opera	ting LLC			
	ship and Range	Unit K	Sec 21	T17S	R30E	
Lease Number	*•	API-30-015-	31258			
County:		Eddy Count	y			
GPS:			32.81272° N			103.98012° W
Surface Owner	r:	Federal				
Mineral Owner	?					
Directions:			from the intersection and travel 0.3m to			and 82, travel south on CR 217 for ad.
Release Data:				مېرې، استونو کې لور درونه کې کې کې سومه	. o	and a start of an and a start of the start o
Date Released:		11/26/2010				
Type Release:		Produced Flu	uid			
Source of Cont		2 1/2 nipple a	at road crossing			
Fluid Released.		70 bbls				
Fluids Recover	ed:	50 bbls				
Official Comm	unication:					
Name:	Pat Ellis				Ike Tavare	ez
Company:	COG Operating, L	LC			Tetra Tech	ווייי <u>י</u> ז
Address:	550 W. Texas Ave				1910 N. B	ia Sprina
P.O. Box						<u> </u>
City:	Midland Texas, 79	701			Midland, T	ovas
Phone number:		/01			(432) 425-	
				- · · · ·	(432) 425-	-3070
Fax:	(432) 684-7137					
Email:	pellis@conchores	ources.com			<u>like.tavare</u>	ez@tetratech.com
Ranking Criter	ia		· · · · · · · · · · · · · · · · · · ·	5	5 ou :	
Depth to Ground	dwater:		Ranking Score	1		Site Data
<50 ft			20			
50-99 ft	······································		10			
>100 ft.	-		0			0
WellHead Prote	ction:		Ranking Score	- T		Site Data
	1,000 ft., Private <200	ft.	20			
	1,000 ft., Private >200		0			0
Surface Body of	f Mator:		Ranking Score	- I		Site Data
<200 ft.	Water.		20			Sile Dala
200 ft - 1,000 ft.			10	- <del> </del>		
>1,000 ft.			0	-		0
τ	otal Ranking Score		0 able Soil RRAL <i>Total BTEX</i>	(mg/kg) TPH	* ¥ ∧¥	RECEIVED SEP 2.2 2011 NMOCD ARTESIA
	· · · · · · · · · · · · · · · · · · ·	10	50	5,000		SEL ARTESIA
						NIVIO



August 23, 2011

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, Woolley Federal #7 Flow line, Unit K, Section 21, 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 a spill from the Woolley Federal #7 Flow line located in Unit K, Section 21, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81272°, W 103.98012°. The site location is shown on Figures 1 and 2.

#### Background

On November 26, 2010, the leak was discovered on a flow line nipple and released approximately seventy (70) barrels of produced fluids. To alleviate the problem, COG personnel repaired the flow line. Fifty (50) barrels of standing fluids were recovered. The spill initiated south of a lease road in the pasture where several active flow lines are present. The spill area affected an area around several flow lines measuring approximately 20' x 90' and migrated east on the lease road for approximately 430', at a width of 15' to 25'. The initial C-141 form is enclosed in Appendix C.

#### Groundwater

No water wells were listed within Section 21. According to the *Geology and Groundwater Resources of Eddy County, New Mexico* (Report 3), one well is located in Section 34, Township 17 South, Range 31 East, with reported depth to water of 271' below surface. According to the



NMOCD groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The average depth to groundwater map is shown in Appendix B.

#### Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

#### Soil Assessment and Analytical Results

On December 30, 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. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The spill and auger hole locations are shown on Figure 3.

Referring to Table 1, all of the selected samples were below the RRAL for TPH and BTEX. In the pasture, the areas of AH-1 and AH-2 appear to have a shallow impact (0-1') to the soils, with chloride concentrations of 1,770 mg/kg and 5,780 mg/kg, respectively. The chloride concentrations declined with depth at 1-1.5' to 202 mg/kg (AH-1) and 1,060 mg/kg (AH-2). Deeper samples could not be obtained due to the dense caliche formation.

The remaining auger holes (AH-3, AH-4 and AH-6) on the lease road showed a chloride impact to the soils ranging from 430 mg/kg (AH-3) at 0-1' to 5,600 mg/kg (AH-4). Auger holes (AH-5 and AH-7) did not show a significant impact to the soils.



#### **Remediation Activities and Closure Request**

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. The excavation depths are highlighted in Table 1 and shown on Figure 4. The excavations were backfilled with clean soil to grade.

As discussed with the BLM, spills on the lease road would be handled on a case-by-case basis. The depth to groundwater in the area is reported to be greater than 300' below surface. The lease road is a well traveled road used daily by oil field related activities. Concerns were also discussed on possible historical impacts on the lease road. As requested by the BLM, the areas of AH-4 and AH-6 were scraped (approximately 1.0') to remove isolated hot spots on the road.

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

Respectfully submitted,

TEÍRÁ TECH Ike Tavarez

Project Manager

cc: Pat Ellis – COG cc: Terry Gregston – BLM

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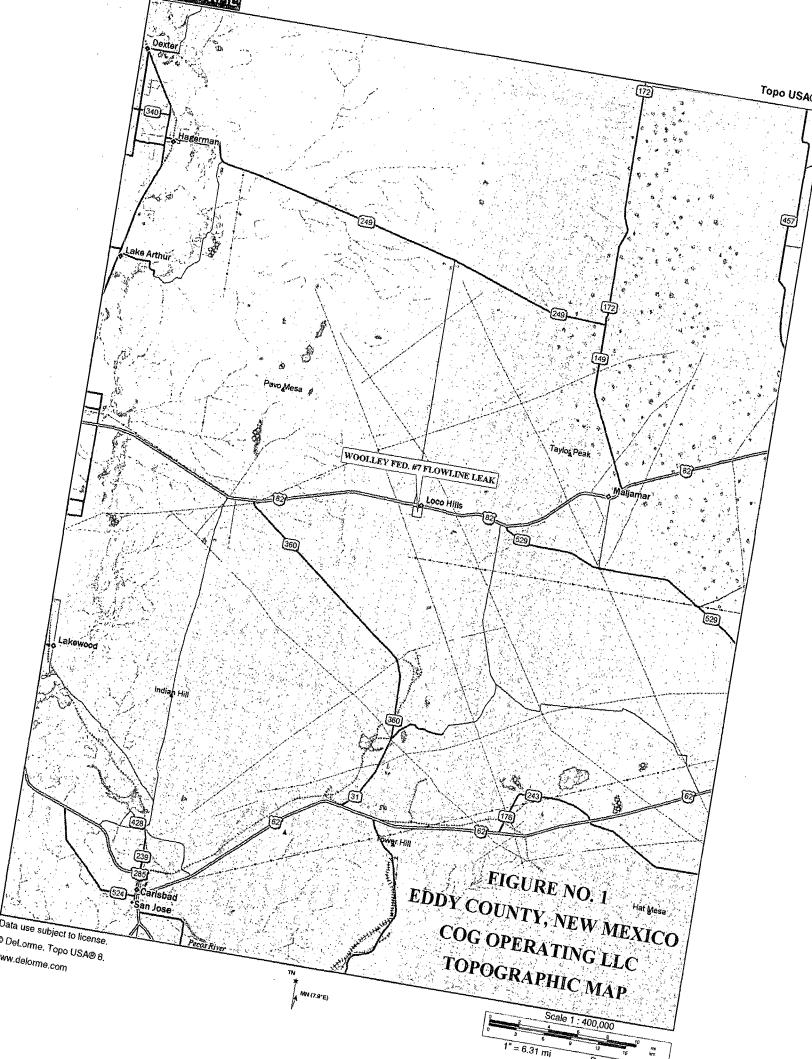
.

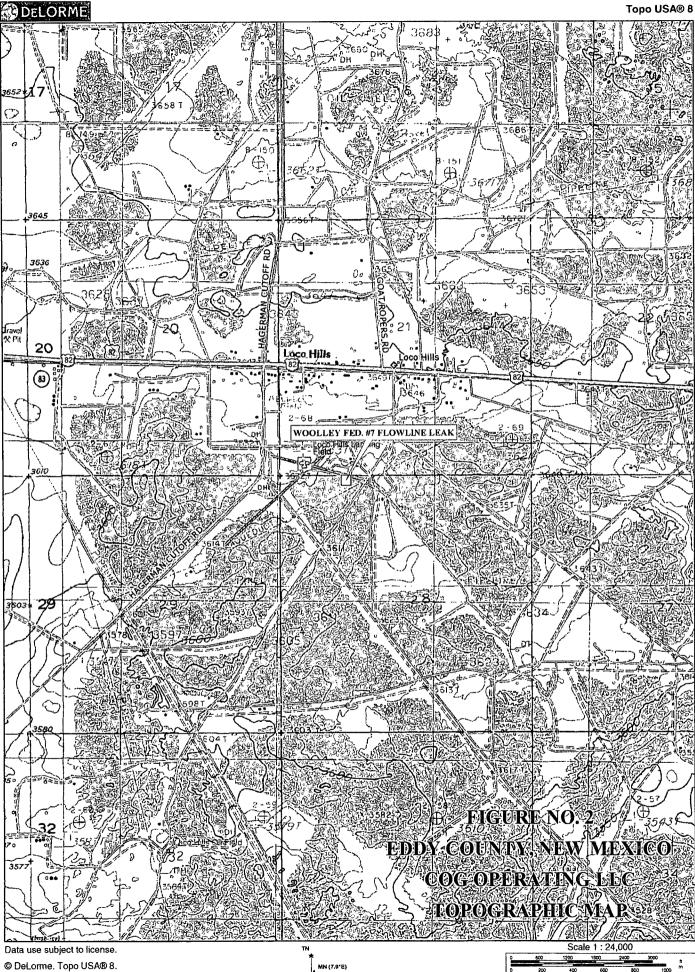
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.

# Figures

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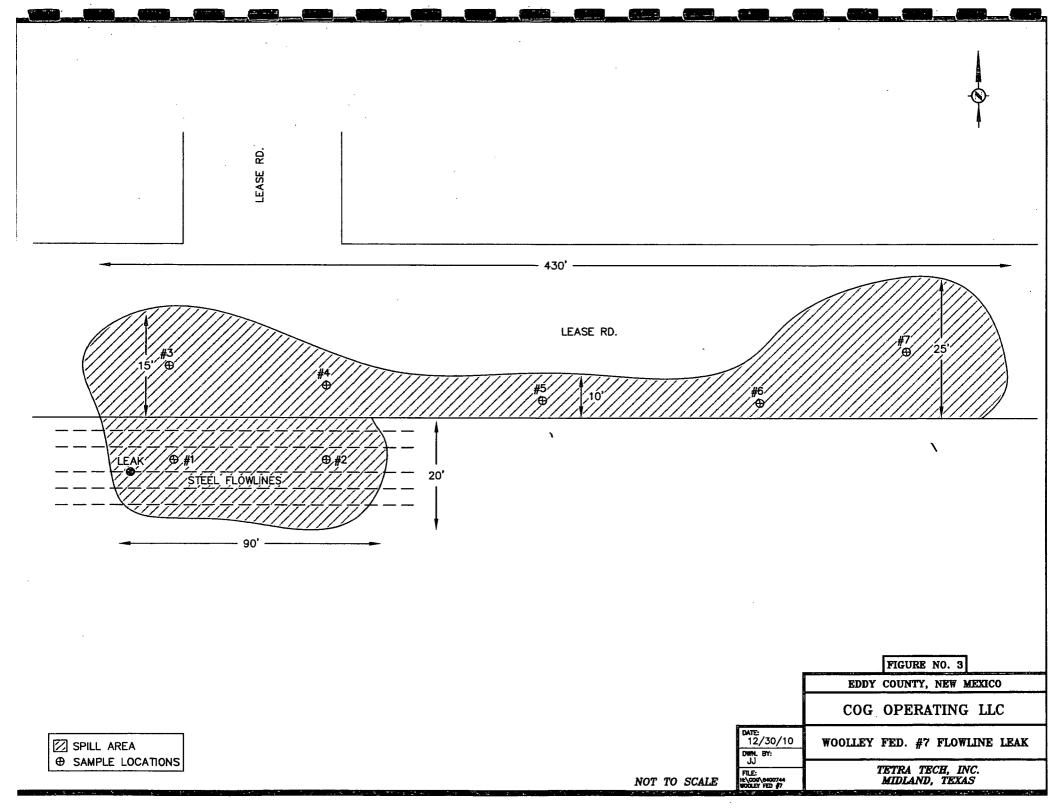


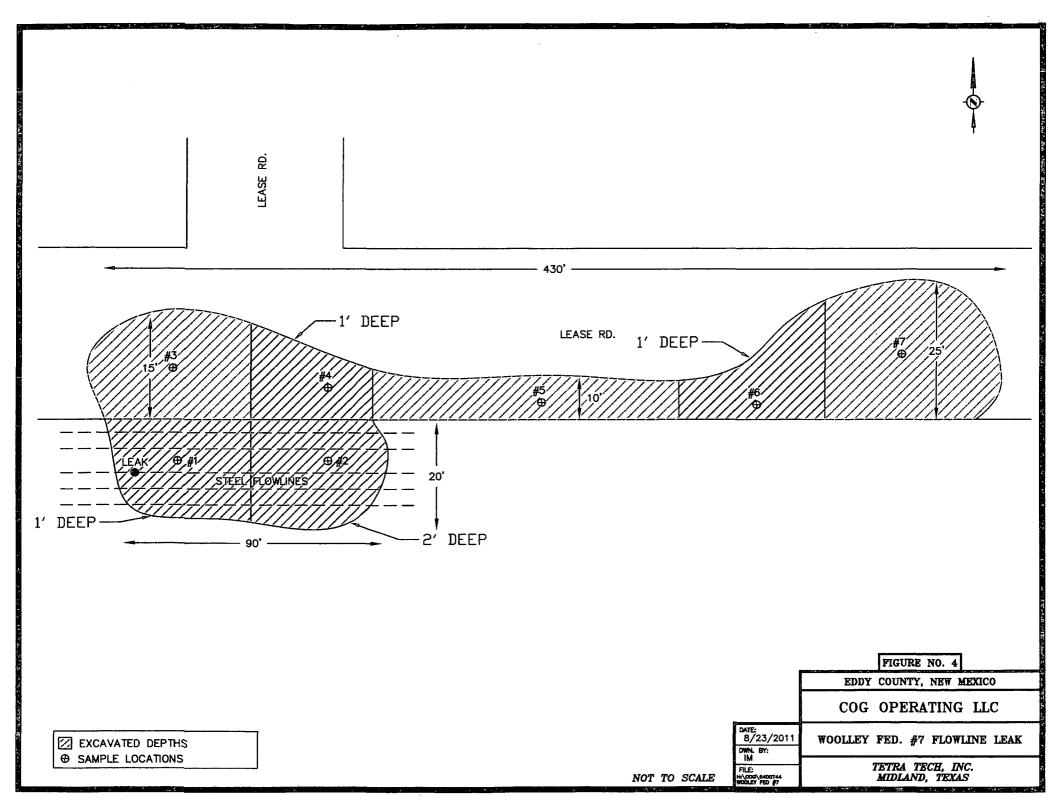


www.delorme.com

1" = 2,000.0 ft

Data Zoom 13-0





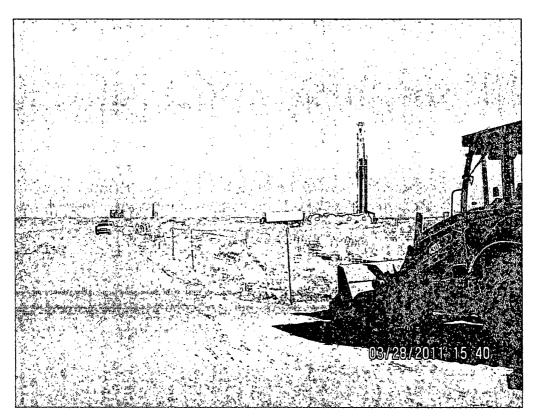
## Photos

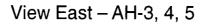
.

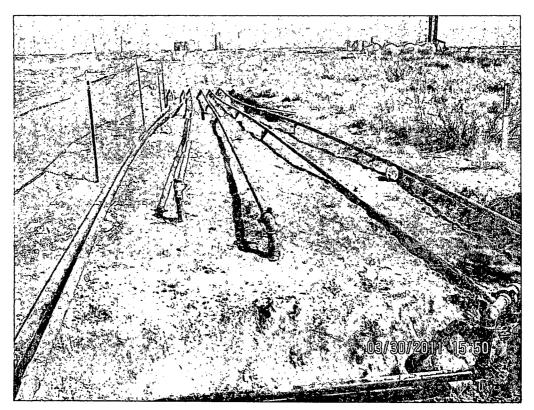
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## COG Operating LLC Woolley Federal #7 Eddy County, New Mexico





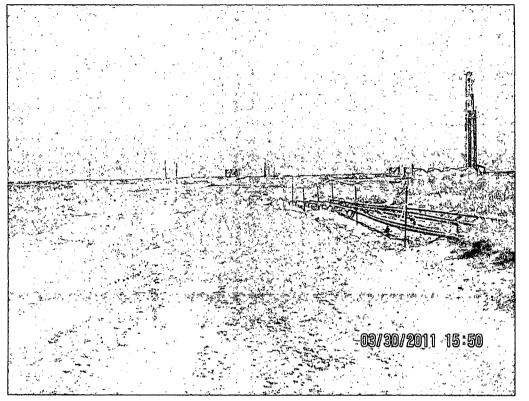


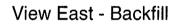
View East – AH-1, 2

6

## COG Operating LLC Woolley Federal #7 Eddy County, New Mexico







Site info and picture details

## Tables

#### Table 1 COG Operating LLC. Woolley Federal #7 (Flow line) EDDY COUNTY, NEW MEXICO

Sample	Sample	Sample	Depth	Soi	I Status	TF	PH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
ID	Date	Depth (ft)	(BEB)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Area of F	low lines	1. S. C.	· · ·		an ann an thairte an thairte an thairte an an thairte an thairte an thairte an thairte an thairte an thairte an thairte an thairte an thairte an thairte		· · · · · · · · · · · · · · · · · · ·						
AH-1	12/30/2010	0-1'			X	78.3	333.0	411.3	<0.100	<0.100	0.404	0.515	1,770
		1-1.5'		Х		-	-	-	-	-	-	-	202
		2-2.5'		X		-	-	-	-	-		-	356
		3-3.5'		X		-	-	-	-	-	-	-	489
AH-2	12/30/2010	0-1'			X	16	367	383	<0.0200	0.0834	0.145	0.279	5,780
		1-1.5'			X				-	-	-		1,060
Lease Ro	ad 👘 📜		:		i, i et .	्र संबद्ध अल्ल	4 <sup>-</sup>				n an island an island a statistication and a s		
AH-3	12/30/2010	0-1'		X		<2.00	<50.0	<50.0	-	-	-	-	430
		1-1.5'		X		-	-	-	-	-		-	1,160
AH-4	12/30/2010	~0-1'			X	<sup>°</sup> <10.0	<50.0	<50.0	_	-			5,690
		1-1.5'		X		-	-	-	-	-	-	-	2,160
AH-5	12/30/2010	0-1'		X		<2.00	59.3	59.3	<0.0200	<0.0200	<0.0200	<0.0200	617
AH-6	12/30/2010	0-1'			X	<2.00	149	149	<0.0200	<0.0200	<0.0200	<0.0200	3,500
AH-7	12/30/2010	0-1'	1.5	X		<10.0	<50.0	<50.0		-		-	<200
		1-1.5'	1.5	Х		-	-	-	-		-	-	<200
		2-2.5'	1.5	Х		-	-	-	-	-	-	-	<200
		3-3.5'	1.5	X		-	-	-	-	-	-	-	<200

BEB Below Excavation Bottom

Not Analyzed

Excavation Depths

(--)

# Appendix A

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

		<u></u>	Dal			re, INIVI 073		- +:				
			Kele	ease noth	catio		orrective A	ction			_	
			())) A (()))	<u> </u>		OPERA			🛛 Initi	al Report		Final Repor
Name of Co		COG OP				Contact		at Ellis		· · · · · · ·		
Address			,	dland, TX 797	01	Telephone 1		230-00	//			
Facility Na	ne	Woolle	y Federa	1 #/		Facility Typ	e H	owline				
Surface Ow	ner Fede	ral		Mineral	Owner				Lease 1	No. NML		936-A 15-31258
I			<u></u>	LOC	ATIO	N OF RE	LEASE		I		/	
Unit Letter K	Section 21	Township 17S	Range 30E	Feet from the	Nort	h/South Line	Feet from the	East/V	Vest Line	County	Eddy	
	l	I	1	Latitude 32	48.862	2 Longita	ıde 103 59.078	J		J		
				NAT	ΓURE	E OF REL						
Type of Rele		roduced fluid					Release 70bbls			Recovered		
Source of Re		1/2 inch nipple	e at road ci	rossing		11/26/2010		e	Date and 11/26/20	Hour of D 10 2	scovery :00 p.m	
Was Immedi		$\boxtimes$		No 🗌 Not R	-			- - -	atcher( egstonl			
By Whom?	Josh Russe	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		· · · · · · · · · · · · · · · · · · ·		Date and H	Jour 11/27/2010	2:5	$\frac{2}{4}$ n m		6	1
Was a Water	course Read	ched?	Yes 🛛	No		If YES, Vo	olume Impacting t	the Wate	rcourse	CEIV	ED	
If a Waterco	urse was Im	pacted, Descr	ibe Fully.'	k						EP 22	Sôtr -	
Describe Ca	ise of Probl	em and Reme	dial Actio	n Taken.*		•			1018	OCD A	HIF	
2 ½ inch nip	ole failed at	the road cross	sing; the n	ipple has been re	placed	and the line ha	s been returned ba	ack into	serv			
Describe Are	a Affected	and Cleanup /	Action Tal	cen.*								
				nd we were able southeast of the he release is the v clineate any poss cant remediation		ver 50bbls with n the pasture. 7 v Federal Tank itamination fro	Iour 11/27/2010 olume Impacting t s been returned ba n a vacuum truck. The lease road has Battery, Unit C, S m the release and	The spi s had bee Sec.28-T we will	II area me en scraped 17S-R30E present a i	asured 10' , back-drag , Eddy Cou emediatior	x 420' e ged, and inty NM i work p	ast of the d returned to 1). Tetra Tech dan to the
regulations a public health should their or the enviro	ll operators or the enviro operations h nment. In a	are required t ronment. The ave failed to a	o report an acceptanc idequately CD accep	nd/or file certain ce of a C-141 rep investigate and	release ort by t remedia	notifications a he NMOCD m ate contaminati	knowledge and u nd perform correc arked as "Final R on that pose a thr e the operator of r	tive acti eport" de eat to gre	ons for rel ces not rel cund wate	eases whic ieve the op r, surface w	h may e erator o vater, hu	ndanger f liability ıman health
Signature:	>	ī	7	5			OIL CONS	SERV	ATION	DIVISI	<u>ON</u>	
Printed Nam	e:	Josh	Russo	······································		Approved by	District Supervise	or:				
Title:	itle: HSE Coordinator					Approval Da	e:	E	Expiration	Date:		
E-mail Addr	ess:	jrusso@conc	horesourc	es.com		Conditions of	Approval:			Attached		
	2/06/2010 tional She	Pl ets If Nccess		432-212-2399		· · · · · · · · · · · · · · · · · · ·					<u></u>	

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 Notific	cation	and Co	rrective A	ction	N TARA INT INT		
	(	OPERAT	TOR		Initia	l Report	🛛 Final Report
Name of Company COG Operating LLC	and the second se	Contact Pat					
Address 550 W. Texas, Suite 1300 Midland, Texas 7970 Facility Name Woolley Federal #7			lo. (432) 270-0 e Flowline	077			
		acinty Typ	· · · · · · · · · · · · · · · · · · ·				
Surface Owner: Federal Mineral C	Owner				Lease No. NMLC-028936-A (API#) 30-015-31258		
LOCA	ATION	OF REI	LEASE				
Unit LetterSectionTownshipRangeFeet from theK2117S30E	North/S	South Line	Feet from the	East/Wes	t Line	County	Eddy
Latitude N 32.8		-		2°			
	<u>FURE (</u>	OF RELI		117		1.50	
Type of Release: Produced Fluid Source of Release: 2 ½ inch nipple at road crossing			Release 70 bbls our of Occurrenc			ecovered 50 Hour of Disc	
		11/26/2010			/26/201		
Was Immediate Notice Given?	equired	If YES, To		Mike Bratc	ber0	CD	
-	equireu			Terry Gregs	ston-B	LM	
By Whom? Josh Russo Was a Watercourse Reached?			our 11/27/2010	2:54 p.m	1.		
Yes X No		N/A	lume Impacting t	ne waterco	urse.	-CI	EIVED \
If a Watercourse was Impacted, Describe Fully.*		****	<u></u>	· · · · · · · · · · · · · · · · · · ·	7	REG	a 2, 2011
N/A						SEP	EIVED 22 2011 CD ARTESIA
Describe Cause of Problem and Remedial Action Taken.* 2 <sup>1</sup> / <sub>2</sub> inch nipple failed at the road crossing; the nipple has been rep	placed and	l the line ha	s been returned ba	ack into serv		LAU	
Describe Area Affected and Cleanup Action Taken.*							
Tetra Tech inspected site and collected samples to define spills ex was then brought up to surface grade with clean backfill material.							
I hereby certify that the information given above is true and comp regulations all operators are required to report and/or file certain r public health or the environment. The acceptance of a C-141 reports should their operations have failed to adequately investigate and re or the environment. In addition, NMOCD acceptance of a C-141 federal, state, or local laws and/or regulations.	release not ort by the remediate	tifications ai NMOCD m contaminati	nd perform correc arked as "Final R on that pose a thre	tive actions eport" does eat to groun	s for rele not reliend water.	eases which r eve the opera , surface wat	may endanger ator of liability er, human health
Signature:			OIL CON	SERVAT	ΓΙΟΝ	DIVISIO	N
Printed Name: Ike Tavarez Agent In Coc	<u>(</u> ) A	pproved by	District Supervise	or:			
Title: Project Manager	A	pproval Dat	e:	Exp	iration I	Date:	
E-mail Address: Ike.Tavarez@TetraTech.com           Date:         8/23/1/         Phone: (432) 682-4559           * Attach Additional Sheets If Necessary	C	onditions of	Approval:			Attached	

## Appendix B

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#### Water Well Data Average Depth to Groundwater (ft) COG - Woolley Federal #7 Eddy County, New Mexico

	16 So	outh	2	29 East			16 \$	South	;	30 East	:		16	South	3	1 East
	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
10 0	29	28	27	26	25	30	- 29	28	27	26	25	30	29	28	27	26
1	32	33	34	35	36	31	32	33	34	35	36	31 <b>290</b>	32	33	34	35
	17 Se	outh	2	29 East	t		17 :	South	:	30 East			17 :	South	3	1 Eas
3	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
30	29 210	28	<b>80</b> 27	26	25	30	29	28	27	26	25	30	29	28	27	26
31	<b>208'</b> 32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35
				153		L					-				271	
}	18 S		3	29 East		6	18 : 5	South	3	30 East	1	6	18	South	3	2 2
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
		16	15	14	-											
8	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14 317
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
0	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26
1	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35
	<u> </u>	<u> </u>														261

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

# Appendix C

## **Summary Report**

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

Report Date: January 13, 2011

## Work Order: 11010508

Project Location:Eddy County, NMProject Name:COG/Wooley Fed. #7Project Number:114-6400744

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
254686	AH-1 0-1'	soil	2010-12-30	00:00	2011-01-05
254687	AH-1 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254688	AH-1 2-2.5'	soil	2010-12-30	00:00	2011-01-05
254689	AH-1 3-3.5'	soil	2010-12-30	00:00	2011-01-05
254693	AH-2 0-1'	soil	2010-12-30	00:00	2011-01-05
254694	AH-2 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254695	AH-3 0-1'	soil	2010-12-30	00:00	2011-01-05
254696	AH-3 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254697	AH-4 0-1'	soil	2010-12-30	00:00	2011 - 01 - 05
254698	AH-4 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254699	AH-5 0-1'	soil	2010-12-30	00:00	2011 - 01 - 05
254700	AH-6 0-1'	soil	2010-12-30	00:00	2011-01-05
254701	AH-7 0-1' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254702	AH-7 1-1.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254703	AH-7 2-2.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254704	AH-7 3-3.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05

		]	BTEX	TPH DRO - NEW	TPH GRO	
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
254686 - AH-1 0-1'	< 0.100	< 0.100	0.404	0.515	333	78.3
254693 - AH-2 0-1'	< 0.0200	0.0834	0.145	0.279	367	16.0
254695 - AH-3 0-1'					<50.0	<2.00
254697 - AH-4 0-1'					<50.0	<10.0
254699 - AH-5 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	59.3	<2.00
254700 - AH-6 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	149	<2.00
254701 - AH-7 0-1' 1.5 BEB					<50.0	<10.0

#### Sample: 254686 - AH-1 0-1'

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Report Date: Janua	ary 13, 2011	Work Order: 11010508	Page	Number: 2 of 3
Param	Flag	Result	Units	RL
Chloride	······································	1770	mg/Kg	4.00
Sample: 254687	- AH-1 1-1.5'			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		202	mg/Kg	4.00
Sample: 254688	- AH-1 2-2.5'			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		356	mg/Kg	4.00
Sample: 254689	- AH-1 3-3.5'			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		489	mg/Kg	4.00
Sample: 254693	- AH-2 0-1'			
Param	Flag	Result	Units	$\operatorname{RL}$
Chloride		5780	mg/Kg	4.00
Sample: 254694	- AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		1060	mg/Kg	4.00
Sample: 254695	- AH-3 0-1'			
Param	Flag	Result	Units	$\operatorname{RL}$
Chloride		430	mg/Kg	4.00
Sample: 254696	- AH-3 1-1.5'			
Param	Flag	$\operatorname{Result}$	Units	$\mathbf{RL}$
Chloride	·····	1160	mg/Kg	4.00

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TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296 This is only a summary. Please, refer to the complete report package for quality control data.

Page Number: 3 of 3 Work Order: 11010508 Report Date: January 13, 2011 Sample: 254697 - AH-4 0-1' Units RLParam Result Flag 4.00 5690 Chloride mg/Kg Sample: 254698 - AH-4 1-1.5' Param Flag Result Units RLChloride 2160 mg/Kg 4.00 Sample: 254699 - AH-5 0-1' Flag Units RLResult Param 617 mg/Kg 4.00 Chloride Sample: 254700 - AH-6 0-1' RLParam Flag Result Units Chloride 3500 mg/Kg 4.00 Sample: 254701 - AH-7 0-1' 1.5 BEB Units RLParam Flag Result Chloride <200 mg/Kg 4.00 Sample: 254702 - AH-7 1-1.5' 1.5 BEB Param Result Units  $\mathbf{RL}$ Flag 4.00 Chloride <200 mg/Kg Sample: 254703 - AH-7 2-2.5' 1.5 BEB Param Units RLFlag Result Chloride 4.00 <200 mg/Kg Sample: 254704 - AH-7 3-3.5' 1.5 BEB Param Flag Result Units RLChloride <200 mg/Kg 4.00

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**WBENC:** 237019

HUB:1752439743100-86536NCTRCAWFWB38444Y0909

Certifications

**DBE:** VN 20657

### **NELAP** Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 El Paso: T104704221-08-TX LELAP-02002 Midland: T104704392-08-TX

### Analytical and Quality Control Report

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

Report Date: January 13, 2011

Work Order: 11010508

Project Location:Eddy County, NMProject Name:COG/Wooley Fed. #7Project Number:114-6400744

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
254686	AH-1 0-1'	soil	2010-12-30	00:00	2011-01-05
254687	AH-1 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254688	AH-1 2-2.5'	soil	2010-12-30	00:00	2011-01-05
254689	AH-1 3-3.5'	soil	2010-12-30	00:00	2011-01-05
254693	AH-2 0-1'	soil	2010-12-30	00:00	2011-01-05
254694	AH-2 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254695	AH-3 0-1'	soil	2010-12-30	00:00	2011-01-05
254696	AH-3 1-1.5'	soil	2010-12-30	00:00	2011-01-05
254697	AH-4 0-1'	soil	2010-12-30	00:00	2011-01-05
254698	AH-4 1-1.5'	soil	2010-12-30	00:00	2011-01-05

	0				
			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
254699	AH-5 0-1'	soil	2010-12-30	00:00	2011-01-05
254700	AH-6 0-1'	soil	2010-12-30	00:00	2011-01-05
254701	AH-7 0-1' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254702	AH-7 1-1.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254703	AH-7 2-2.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05
254704	AH-7 3-3.5' 1.5 BEB	soil	2010-12-30	00:00	2011-01-05

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

Michael Alp

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

Standard Flags

 ${\bf B}\,$  - The sample contains less than ten times the concentration found in the method blank.

## **Case Narrative**

Samples for project COG/Wooley Fed. #7 were received by TraceAnalysis, Inc. on 2011-01-05 and assigned to work order 11010508. Samples for work order 11010508 were received intact at a temperature of 3.0 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	65908	2011-01-12 at 10:10	76857	2011-01-12 at 10:10
Chloride (Titration)	SM 4500-Cl B	65759	2011-01-05 at 10:41	76737	2011-01-07 at 10:25
Chloride (Titration)	SM 4500-Cl B	65759	2011-01-05 at 10:41	76738	2011-01-07 at 10:25
TPH DRO - NEW	S 8015 D	65801	2011-01-06 at 15:19	76742	2011-01-06 at 15:19
TPH GRO	S 8015 D	65793	2011-01-06 at 11:27	76727	2011-01-06 at 11:27

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 11010508 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

## **Analytical Report**

#### Sample: 254686 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 76857 65908		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2011-01-12 2011-01-12	Prep Method: Analyzed By: Prepared By:	S 5035 ME ME
			$\mathbf{RL}$			
Parameter		Flag	Result	Units	Dilution	RL
Benzene			<0.100	mg/Kg	5	0.0200
Toluene			<0.100	mg/Kg	5	0.0200
Ethylbenzene	3		0.404	mg/Kg	5	0.0200
Xylene			0.515	mg/Kg	5	0.0200

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		5.87	mg/Kg	5	5.00	117	52.8 - 137
4-Bromofluorobenzene (4-BFB)		5.92	mg/Kg	5	5.00	118	38.4 - 157

#### Sample: 254686 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76737 65759	Analytical Method: Date Analyzed: Sample Preparation	2011-01-07	Prep Method: Analyzed By: Prepared By:	AR
_		RL			-
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1770	mg/Kg	100	4.00

#### Sample: 254686 - AH-1 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	TPH DRO - NEW 76742	Analytical Metho Date Analyzed: Sample Preparati	2011-01-06	Prep Method: Analyzed By: Prepared By:	'
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
DRO	Tiag	333	mg/Kg	5	50.0

Report Date: 114-6400744	January 13, 20				: 11010508 ey Fed. #7			mber: 5 of 23 County, NM
Surrogate	Flag	Result	Units	Dilu	tion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1	152	mg/Kg		5	100	152	70 - 130
Sample: 254	686 - AH-1 0-	1'						
, , , , , , , , , , , , , , , , , , ,	Midland		Anglution	Mathad	S 8015 D		Duon Mot	hod: S 5035
	TPH GRO 76727		Analytical Date Anal		2011-01-06		Prep Met Analyzed	
•	65793			reparation:	2011-01-00		Prepared	
			$\mathbf{RL}$					
Parameter	Fla	g	Result		Units		Dilution	RL
GRO			78.3		mg/Kg	· · · · · · · · · · · · · · · · · · ·	20	2.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluer	ie (TFT)		22.2	mg/Kg	20	20.0	111	48.5 - 152
4-Bromofluoro	benzene (4-BFI	3)	22.5	mg/Kg	20	20.0	112	42 - 159

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76737 65759	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	AR
_		RL			
Parameter	Flag	$\operatorname{Result}$	Units	Dilution	$\operatorname{RL}$
Chloride		202	mg/Kg	50	4.00

#### Sample: 254688 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	AR
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		356	mg/Kg	50	4.00

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<sup>1</sup>High surrogate recovery due to peak interference.

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 6 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

#### Sample: 254689 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method	: SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	AR
Prep Batch:	65759	Sample Preparatio	n: 2011-01-05	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		489	mg/Kg	50	4.00

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#### Sample: 254693 - AH-2 0-1'

Laboratory: Midla	and							
Analysis: BTE			Analytical N	Aethod:	S 8021B		Prep Metho	d: S 5035
QC Batch: 76857	7		Date Analy	zed:	2011-01-12		Analyzed B	y: ME
Prep Batch: 65908	3		Sample Prej	paration:	2011-01-12		Prepared By	y: ME
			RL					
Parameter	Flag		Result		Units	Ľ	Dilution	$\operatorname{RL}$
Benzene			< 0.0200		mg/Kg		1	0.0200
Toluene			0.0834		mg/Kg		1	0.0200
Ethylbenzene			0.145		mg/Kg		1	0.0200
Xylene			0.279		mg/Kg		1	0.0200
						Spike	Percent	Recovery
Surrogate		Flag	$\operatorname{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (T	FT)		2.49	mg/Kg	1	2.00	124	52.8 - 137
4-Bromofluorobenz	ene (4-BFB)		2.38	mg/Kg	1	2.00	119	38.4 - 157

#### Sample: 254693 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	AR
Prep Batch:	65759	Sample Preparation	: 2011-01-05	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		5780	mg/Kg	100	4.00

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 7 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

#### Sample: 254693 - AH-2 0-1'

Dilution RI
5 50.
e Percent Recovery nt Recovery Limits
159 70 - 130

#### Sample: 254693 - AH-2 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 76727 65793		Analytical Date Anal Sample Pr		S 8015 D 2011-01-06 2011-01-06		Prep Meth Analyzed Prepared 1	By: ME
			$\operatorname{RL}$					
Parameter	Flag		$\mathbf{Result}$		$\mathbf{Units}$	D	ilution	RL
GRO			16.0		mg/Kg		1	2.00
						Spike	Percent	Recovery
Surrogate		Flag	$\operatorname{Result}$	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		2.43	mg/Kg	1	2.00	122	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		2.35	mg/Kg	1	2.00	118	42 - 159

#### Sample: 254694 - AH-2 1-1.5'

Chloride		1060	mg/Kg	100	4.00
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	
Laboratory:	Midland				

<sup>2</sup>High surrogate recovery due to peak interference.

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 8 of 23
114-6400744	COG/Woolcy Fed. #7	Eddy County, NM

#### Sample: 254695 - AH-3 0-1'

Chloride		430	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	$\mathbf{AR}$
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

#### Sample: 254695 - AH-3 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 76742 65801	<b>EW</b>	Date A	nalyzed: 2	8015 D 011-01-06 011-01-06	Prep M Analyz Prepare	• •
T Tep Daten.	00001		RL		011-01-00	Терак	A Dy. Kg
Parameter	F	lag	Result	Un	its	Dilution	$\mathbf{RL}$
DRO			<50.0	mg/	Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		102	mg/Kg	1	100	102	70 - 130

#### Sample: 254695 - AH-3 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 76727 65793		Analytical Date Anal Sample Pr		S 8015 D 2011-01-06 2011-01-06		Prep Meth Analyzed Prepared I	By: ME
			RL					
Parameter	Flag		$\operatorname{Result}$		Units	D	ilution	$\mathbf{RL}$
GRO		····	<2.00		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)		2.40	mg/Kg	1	2.00	120	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		2.21	mg/Kg	1	2.00	110	42 - 159

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 9 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

#### Sample: 254696 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76737	Date Analyzed:	2011-01-07	Analyzed By:	$\mathbf{AR}$
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		1160	mg/Kg	100	4.00

#### Sample: 254697 - AH-4 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76738 65759	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		5690	mg/Kg	100	4.00

#### Sample: 254697 - AH-4 0-1'

Laboratory:	Midland						
Analysis:	TPH DRO - N	IEW	Analyti	cal Method:	5 8015 D	Prep M	lethod: N/A
QC Batch:	76742		Date A	nalyzed: 2	2011-01-06	Analyz	ed By: kg
Prep Batch:	65801		Sample	Preparation:	2011-01-06	Prepare	ed By: kg
			RL				
Parameter	F	lag	$\operatorname{Result}$	U	nits	Dilution	$\operatorname{RL}$
DRO	······································		<50.0	mg	/Kg	1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		106	mg/Kg	1	100	106	70 - 130

#### Sample: 254697 - AH-4 0-1'

Laboratory: Analysis:	Midland TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	76727	Date Analyzed:	2011-01-06	Analyzed By:	
Prep Batch:	65793	Sample Preparation:	2011-01-06	Prepared By:	ME

Report Date: January 13, 2011 114-6400744			Work Order: 11010508 COG/Wooley Fed. #7		Page Number: 10 of 23 Eddy County, NM			
Parameter	Flag		RL Result		Units	D	vilution	$\mathbf{RL}$
GRO			<10.0		mg/Kg		5	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (T 4-Bromofluorobenz		<u> </u>	$\begin{array}{c} 5.90 \\ 5.57 \end{array}$	mg/Kg mg/Kg	5 5	$5.00 \\ 5.00$	118 111	48.5 - 152 42 - 159

#### Sample: 254698 - AH-4 1-1.5'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 76738	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	ÁR	
		RL				
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	$\mathbf{RL}$	
Chloride		<b>2160</b> n	mg/Kg	100	4.00	

#### Sample: 254699 - AH-5 0-1'

.

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 76857 65908		Analytical M Date Analy: Sample Prej	zed:	S 8021B 2011-01-12 2011-01-12		Prep Meth Analyzed Prepared 1	By: ME
			$\operatorname{RL}$					
Parameter	Flag		Result		Units	Di	lution	$\operatorname{RL}$
Benzene			< 0.0200		mg/Kg		1	0.0200
Toluene			< 0.0200		mg/Kg		1	0.0200
Ethylbenzene	;		< 0.0200		mg/Kg		1	0.0200
Xylene			< 0.0200		mg/Kg		1	0.0200
<i>a</i>		_				Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		2.49	mg/Kg	1	2.00	124	52.8 - 137
4-Bromofluor	obenzene (4-BFB)		2.33	mg/Kg	1	2.00	116	38.4 - 157

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 11 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

#### Sample: 254699 - AH-5 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76738	Date Analyzed:	2011-01-07	Analyzed By:	AR
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Chloride		617	mg/Kg	100	4.00

#### Sample: 254699 - AH-5 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 76742 65801	IEW	Date Ar	cal Method: nalyzed: Preparation:	S 8015 D 2011-01-06 2011-01-06	Prep M Analyz Prepare	• •
Parameter	F	lag	RL Result	_	Units	Dilution	RL
DRO			59.3	m	g/Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		106	mg/Kg	1	100	106	70 - 130

#### Sample: 254699 - AH-5 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 76727 65793		Analytical Date Anal Sample Pr		S 8015 D 2011-01-06 2011-01-06		Prep Meth Analyzed Prepared I	By: ME
	,		RL					
Parameter	Flag		$\mathbf{Result}$		Units	D	ilution	$\mathbf{RL}$
GRO		······	<2.00		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)		2.19	mg/Kg	1	2.00	110	48.5 - 152
4-Bromofluor	obenzene (4-BFB)		2.03	mg/Kg	1	2.00	102	42 - 159

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 12 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

#### Sample: 254700 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 76857 65908			Analytical I Date Analy Sample Pre	zed:	S 8021B 2011-01-12 2011-01-12		Prep Meth Analyzed I Prepared I	By: ME
				$\mathbf{RL}$					
Parameter		Flag		Result		Units	Ð	ilution	$\mathbf{RL}$
Benzene				< 0.0200		mg/Kg		1	0.0200
Toluene				< 0.0200		mg/Kg		1	0.0200
Ethylbenzene	<u>)</u>			< 0.0200		mg/Kg		1	0.0200
Xylene				< 0.0200		mg/Kg		1	0.0200
							Spike	Percent	Recovery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)			2.65	mg/Kg	1	2.00	132	52.8 - 137
4-Bromofluor	obenzene (4-BF	PB)		2.51	mg/Kg	1	2.00	126	38.4 - 157

#### Sample: 254700 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76738 65759	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Chloride		3500	mg/Kg	100	4.00

#### Sample: 254700 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 76742 65801	ĭEW	Date A	cal Method: nalyzed: Preparation:	S 8015 D 2011-01-06 2011-01-06	Prep M Analyz Prepare	
Parameter	F	lag	RL Result		Jnits	Dilution	RL
DRO			149	mg	g/Kg	1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		128	mg/Kg	1	100	128	70 - 130

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### Sample: 254700 - AH-6 0-1'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 76727 65793		Analytical Date Anal Sample Pr		S 8015 D 2011-01-06 2011-01-06		Prep Meth Analyzed Prepared I	By: ME
			$\operatorname{RL}$					
Parameter	Flag		$\mathbf{Result}$		Units	D	ilution	$\operatorname{RL}$
GRO			<2.00		mg/Kg		1	2.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)		2.30	mg/Kg	1	2.00	115	48.5 - 152
4-Bromofluor	robenzene (4-BFB)		2.12	mg/Kg	1	2.00	106	42 - 159

#### Sample: 254701 - AH-7 0-1' 1.5 BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76738 65759	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

#### Sample: 254701 - AH-7 0-1' 1.5 BEB

Laboratory:	Midland						
Analysis:	sis: TPH DRO - NEW		Analytical Method: S 8015 D Date Analyzed: 2011-01-06		Prep Method: N/A		
QC Batch:					2011-01-06	Analyz	ed By: kg
Prep Batch: 65801			Sample Preparation: 2011-01-06		Prepared By: kg		
			RL				
Parameter	eter Flag		$\mathbf{Result}$	Ui	nits	Dilution	$\operatorname{RL}$
DRO			<50.0	mg/Kg		1	50.0
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane	······	98.0	mg/Kg	1	100	98	70 - 130

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## Sample: 254701 - AH-7 0-1' 1.5 BEB

Laboratory: Midland Analysis: TPH GRO QC Batch: 76727 Prep Batch: 65793		Analytical Date Anal Sample Pr		S 8015 D 2011-01-06 2011-01-06		Prep Meth Analyzed Prepared I	By: ME
Parameter Flag		RL Result		Units	D	ilution	RL
GRO		<10.0		mg/Kg		5	2.00
Surrogate Trifluorotoluene (TFT)	Flag	Result 5.79	Units mg/Kg	Dilution 5	Spike Amount 5.00	Percent Recovery 116	Recovery Limits 48.5 - 152
4-Bromofluorobenzene (4-BFB)		5.39	mg/Kg	5	5.00	108	42 - 159
Sample: 254702 - AH-7 1-1.5 Laboratory: Midland Analysis: Chloride (Titration QC Batch: 76738		Analyt	tical Methoo Analyzed:	l: SM 4500- 2011-01-0		Prep Mo Analyze	1

Prep Batch: 6	65759	Sample Preparation:	2011-01-05	Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200 r	ng/Kg	50	4.00

## Sample: 254703 - AH-7 2-2.5' 1.5 BEB

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 76738 65759	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-01-07 2011-01-05	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Chloride		<200	mg/Kg	50	4.00

## Sample: 254704 - AH-7 3-3.5' 1.5 BEB

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	76738	Date Analyzed:	2011-01-07	Analyzed By:	AR
Prep Batch:	65759	Sample Preparation:	2011-01-05	Prepared By:	AR

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Parameter Chloride	Flag	RL Result <200	Units mg/Kg	Dil	ution 50	RL 4.00
Method Blank (1)	QC Batch: 76727					
	QC Datch. 10121					
QC Batch: 76727 Prep Batch: 65793		Date Analyzed: QC Preparation:	2011-01-06 2011-01-06		Analyze Prepare	
Parameter	Flag	Res		Units		RL
GRO	· · · · · · · · · · · · · · · · · · ·	<1	.65	mg/Kg		2
Surrogate	Flag	Result Unit		Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) 4-Bromofluorobenzene		1.73 mg/k 1.61 mg/k	<b>v</b>	2.00 2.00	86 80	67.6 - 150 52.4 - 130
Method Blank (1) QC Batch: 76737 Prep Batch: 65759	QC Batch: 76737	Date Analyzed: QC Preparation:	2011-01-07 2011-01-05		Analyz Prepare	
		M	DL			
Parameter	Flag	Res		Units		$\operatorname{RL}$
Chloride		<2	.18	mg/Kg		4
Method Blank (1)	QC Batch: 76738					
QC Batch: 76738 Prep Batch: 65759		Date Analyzed: QC Preparation:			Analyz Prepare	ed By: AR ed By: AR
Parameter	Flag	MI Res	DL	Units		RL
Chloride	Tiag	<2		mg/Kg		4
Method Blank (1)	QC Batch: 76742					
QC Batch: 76742 Prep Batch: 65801		Date Analyzed: QC Preparation:	2011-01-06 2011-01-06			zed By: kg red By: kg

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			MDL				
	Flag		Result		Uı	nits	ł
DRO			<14.6		mg	/Kg	
				S.	oike	Percent	Recove
Surrogate Flag	Result	Units	Dilution		iount	Recovery	Limit
n-Tricosane	85.1	mg/Kg	1		00	85	70 - 1
		0	·····				
Method Blank (1) QC Ba	tch: 76857						
QC Batch: 76857		Date Anal	yzed: 2011-0	)1-12		Anal	yzed By: M
Prep Batch: 65908		QC Prepar					ared By: M
		A. T. T. Day				1.00	, n.
<b>D</b>			MDL				_
Parameter	Flag		Result <0.0150			nits	F
Benzene Toluene			<0.0150 <0.00950			g/Kg r/Kg	0
Ethylbenzene			<0.00950 <0.0106			g/Kg g/Kg	0
Xylene			< 0.0100			g/Kg	0
- K.J. KOALO						0/ **8	
a	<b>m</b> 1	<b>D</b> .	<b>**</b> •		Spike	Percent	Recove
Surrogate	Flag	Result		Dilution	Amount	· · · ·	
Trifluorotoluene (TFT)		1.75	mg/Kg	1	2.00	88	66.6 - 1
4-Bromofluorobenzene (4-BFB)		1.77	mg/Kg	1	2.00	88	55.4 - 1
Laboratory Control Spike (L QC Batch: 76727 Prep Batch: 65793	LC		ration: 2011-0	91-06 Spike	Ma	Prep	yzed By: M ared By: M Rec.
Param GRO	Resu			Amount			Limit
r · 10/1 1	15.	01		20.0	<1	· · · · · · · · · · · · · · · · · · ·	69.9 - 95
		RPD is bas	sed on the spik	e and spike	duplicate	result.	
	spike result.					Rec.	RF
Percent recovery is based on the	LCSD		Spike				
Percent recovery is based on the Param	LCSD Result	Units	Dil. Amoun	t Result	Rec.	Limit	
Percent recovery is based on the	LCSD		-				
Percent recovery is based on the Param	LCSD Result 15.6	Units mg/Kg	Dil.         Amoun           1         20.0	t Result <1.65	Rec. 78	Limit 69.9 - 95.4	
Percent recovery is based on the Param GRO Percent recovery is based on the	LCSD Result 15.6 spike result. LCS	Units mg/Kg RPD is bas LCSI	$\begin{array}{c c} \text{Dil.} & \text{Amoun} \\ \hline 1 & 20.0 \\ \hline \text{sed on the spike} \\ \end{array}$	$\frac{\text{t}}{<1.65}$ e and spike	Rec. 78 duplicate Spike	Limit 69.9 - 95.4 result. LCS LCSI	1 24 D Rec.
Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate	LCSD Result 15.6 spike result. LCS Resu	Units mg/Kg RPD is bas LCSI It Resul	Dil. Amoun <u>1</u> 20.0 sed on the spike t Units	at Result <1.65 e and spike Dil. A	Rec. 78 duplicate Spike mount	Limit 69.9 - 95.4 result. LCS LCSI Rec. Rec.	1 20 D Rec. Limit
Percent recovery is based on the Param <sup>-</sup> GRO	LCSD Result 15.6 spike result. LCS	Units mg/Kg RPD is bas LCSI It Resul 1.80	$\begin{array}{c c} \text{Dil.} & \text{Amoun} \\ \hline 1 & 20.0 \\ \hline \text{sed on the spike} \\ \end{array}$	t Result <1.65 e and spike Dil. An 1	Rec. 78 duplicate Spike	Limit 69.9 - 95.4 result. LCS LCSI	1 20 D Rec.

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Laboratory Control Spike (L	CS-1)											
QC Batch: 76737		Date An	alyzed:	2011-01-0	)7		Ana	dyzed By	y: AR			
Prep Batch: 65759			paration:	2011-01-0				pared By				
_	LCS				Spike	Mat			Rec.			
Param	Resu		Units	Dil.	Amount	Resu			Limit			
Chloride	96.0		ng/Kg	1	100	<2.		7	85 - 115			
Percent recovery is based on the s	spike result.	RPD is b	based on f	the spike a	nd spike du	plicate rea	sult.					
	LCSD			Spike	Matrix		Rec.		RPD			
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit			
Chloride	104	mg/Kg	1	100	<2.18	104	85 - 115	7	20			
abanatany Control Spike (I	CR 1)			-								
Laboratory Control Spike (L	·											
QC Batch: 76738		Date An		2011-01-0				lyzed By				
Prep Batch: 65759		QC Prep	paration:	2011-01-0	)5		Prej	pared By	: AR			
	LCS				Spike	Mat			Rec.			
Param	Resu		Units	Dil.	Amount	Resu			Limit			
Chloride	103	s r	ng/Kg	1	100	<2.1	18 10	)3 8	85 - 115			
Percent recovery is based on the s	spike result.	RPD is b	based on f	the spike a	nd spike du	plicate re	sult.					
	LCSD			Spike	Matrix		Rec.		RPD			
						D	Limit	RPD	Limit			
Param	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.		101 12				
		Units mg/Kg		Amount 100	Result <2.18	Rec. 107	85 - 115	4	20			
Chloride	Result 107	mg/Kg	1	100	<2.18	107	85 - 115					
Chloride Percent recovery is based on the s	Result 107 spike result.	mg/Kg	1	100	<2.18	107	85 - 115					
Chloride Percent recovery is based on the s Laboratory Control Spike (L4	Result 107 spike result.	mg/Kg RPD is b	1 pased on t	100 the spike a	<2.18 nd spike du	107	85 - 115 sult.	4	20			
Chloride Percent recovery is based on the s Laboratory Control Spike (Lo QC Batch: 76742	Result 107 spike result.	mg/Kg RPD is b Date Ar	1 pased on t nalyzed:	100 the spike a 2011-01-	<2.18 nd spike du 06	107	85 - 115 sult. An	4 alyzed E	20 By: kg			
Chloride Percent recovery is based on the s Laboratory Control Spike (Lo QC Batch: 76742	Result 107 spike result.	mg/Kg RPD is b Date Ar	1 pased on t	100 the spike a 2011-01-	<2.18 nd spike du 06	107	85 - 115 sult. An	4	20 By: kg			
•	Result 107 spike result. T CS-1) LCS	mg/Kg RPD is b Date Ar QC Prej	1 pased on t nalyzed:	100 the spike a 2011-01- 2011-01-	<2.18 nd spike du 06 06 Spike	107 plicate re: Matrix	85 - 115 sult. An Pro	4 alyzed E epared B	20 By: kg By: kg Rec.			
Chloride Percent recovery is based on the s Laboratory Control Spike (LG QC Batch: 76742 Prep Batch: 65801 Param	Result 107 spike result. CS-1) LCS Resul	mg/Kg RPD is t Date Ar QC Prej t U	1 pased on t nalyzed: paration:	100 the spike a 2011-01- 2011-01- Dil.	<2.18 nd spike du 06 06 Spike Amount	107 plicate res Matrix Result	85 - 115 sult. An Pro Rec.	4 alyzed E epared B I	20 By: kg By: kg Rec. Limit			
Chloride Percent recovery is based on the s Laboratory Control Spike (LG QC Batch: 76742 Prep Batch: 65801 Param	Result 107 spike result. T CS-1) LCS	mg/Kg RPD is t Date Ar QC Prej t U	1 pased on t nalyzed: paration:	100 the spike a 2011-01- 2011-01-	<2.18 nd spike du 06 06 Spike	107 plicate re: Matrix	85 - 115 sult. An Pro	4 alyzed E epared B I	20 By: kg By: kg Rec. Limit			
Chloride Percent recovery is based on the s Laboratory Control Spike (Lo QC Batch: 76742 Prep Batch: 65801 Param DRO	Result 107 spike result. CS-1) LCS Resul 200	mg/Kg RPD is b Date Ar QC Prej t U m	1 pased on t nalyzed: paration: Jnits g/Kg	100 the spike a 2011-01- 2011-01- Dil. 1	<2.18 nd spike du 06 06 Spike Amount 250	107 plicate res Matrix Result <14.6	85 - 115 sult. An Pro Rec. 80	4 alyzed E epared B I	20 By: kg By: kg Rec. Limit			
Chloride Percent recovery is based on the s Laboratory Control Spike (Lo QC Batch: 76742 Prep Batch: 65801 Param DRO Percent recovery is based on the s	Result 107 spike result. CS-1) LCS Resul 200	mg/Kg RPD is b Date Ar QC Prej	1 passed on t paration: <u>Juits</u> <u>g/Kg</u> passed on t	100 the spike a 2011-01- 2011-01- Dil. 1 the spike a Spike	<2.18 nd spike du 06 06 Spike Amount 250	107 plicate res Matrix Result <14.6	85 - 115 sult. An Pro Rec. 80	4 alyzed E epared B I	20 By: kg By: kg Rec. Limit			
Chloride Percent recovery is based on the s Laboratory Control Spike (Lo QC Batch: 76742	Result 107 spike result. CS-1) LCS Resul 200 spike result. LCSD Result	mg/Kg RPD is b Date Ar QC Prej t U m	1 passed on t paration: <u>Juits</u> <u>g/Kg</u> passed on t	100 the spike a 2011-01- 2011-01- Dil. 1 the spike a	<2.18 nd spike du 06 06 Amount 250 nd spike du Matrix	107 plicate res Matrix Result <14.6	85 - 115 sult. An Pro Rec. 80 sult.	4 alyzed E epared B I	20 By: kg By: kg Rec. Limit 5 - 144.1			

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	LCS Result	LCSD Result	. 1	Units	Dil.	Am	ike ount	Re	CS ec.	LCSD Rec.		Rec. Limit	
n-Tricosane	117	120	n	ng/Kg	1	1	00	1	17	120		70 - 130	
Laboratory Control Sp QC Batch: 76857 Prep Batch: 65908	ike (LC	2S-1)		nalyzed: eparation							yzed By ared By		
T tep Daten: 03906			QUTI	eparation	1. 2011-0.	1-12				riepa	iteu Dy	. ME	
Param		LC Resu	ılt	Units	Dil.	Spil Amo	unt	Ma Res	sult	Rec.		Rec. Limit	
Benzene		2.1		mg/Kg	1	2.0			$\begin{array}{c} 0150 \\ 0950 \end{array}$	110		.9 - 115	
Toluene Ethylbenzene		2.0 1.9		mg/Kg mg/Kg	1 1	2.0 2.0			0950 0106	101 98		.9 - 113 .4 - 107	
Xylene		5.8		mg/Kg	1	6.0			0930	98		.1 - 107	
Percent recovery is based	on the s			-,					_				
2 creent recovery is subca	on the b			bubea o	_			piicauc					
D		LCSD	<b>T</b> T •/	D.1	Spike		trix	ъ		ec.	ממת	RPD	
Param Benzene		Result 2.30	Units mg/Kg	$\frac{\text{Dil.}}{1}$	Amount 2.00		sult 0150	Rec. 115		nit - 115	RPD 5	Limit 20	
Toluene		$2.30 \\ 2.10$	mg/Kg		2.00 2.00		0150	$115 \\ 105$		- 113 - 113	3 4	$\frac{20}{20}$	
Ethylbenzene		2.08	mg/Kg		2.00 2.00		0106	103		- 107	5	20 20	
Xylene		6.18	mg/Kg	•	6.00		0930	103		- 107	$\overline{5}$	20	
Percent recovery is based	on the si	oike result.			n the spike	e and sp	oike du	plicate	result.				
<b>j</b>					1	•		-		T COT		<b>D</b>	
Cumorata		LC		CSD	Units	Dil.	Spi Amo		LCS	LCSI Rec.		Rec. Limit	
Surrogate Trifluorotoluene (TFT)		Resu		esult 1.65	mg/Kg	<u> </u>	2.0		<u>Rec.</u> 86	82		$\frac{1.2 - 114}{1.2 - 114}$	
4-Bromofluorobenzene (4-	BFB)	1.8			mg/Kg	1	2.0		91	87		.8 - 121	
Matrix Spike (MS-1) QC Batch: 76727 Prep Batch: 65793	Spiked	Sample: 2	Date A QC Pr	nalyzed: eparation	2011-0	1-06					zed By ared By		
		$\mathbf{M}$		<b></b>		-	ike		ıtrix	-		Rec.	
Param		Res		Units	Dil.		ount		sult	Rec.		Limit	
GRO		15.		mg/Kg	1		).0		1.65	77	61	.8 - 114	
Percent recovery is based	on the sp	pike result.	RPD is	based of	n the spike	e and sp	ike du	plicate	result.				
		MSD			Spike	Ma	trix		Re	c.		RPD	
Param		Result	Units	Dil.	Amoun		sult	Rec.	Lin		RPD	Limit	
GRO		15.6	mg/K	g 1	20.0	<1	.65	78	61.8 -	• 114	1	20	

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

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MS Re		Rec. Limit
Trifluorotoluene (TFT)	2.49	2.47	mg/Kg	1	2	124	12		50 - 162
4-Bromofluorobenzene (4-BFB)	2.45	2.44	mg/Kg	1	$\frac{1}{2}$	122	12		50 - 162
Matrix Spike (MS-1) Spiked Sa	ample: 25469	96							
QC Batch: 76737 Prep Batch: 65759		te Analyzed: C Preparation					•	yzed B ared B	•
2	MS	TT . */.	D.1	Spike		atrix	D		Rec.
Param	Result	Units	Dil.			esult 160	Rec 99		Limit 85 - 115
Chloride	11100	mg/Kg	100	10000	· .• .•		99		611 - 60
Percent recovery is based on the spik	MSD		Spike	Matri	x	Re		222	RPD
Param		Jnits Dil.	Amount 10000	Resul 1160		Lim		RPD 5	Limit 20
									20
Chloride Percent recovery is based on the spik					duplicate 1	85 - 1 result.	110		
Chloride Percent recovery is based on the spik	ample: 25470 Da	D is based of	n the spike a 2011-01-	and spike 07 05	duplicate 1	result.	Analy	yzed B ared B	y: AR y: AR
ChloridePercent recovery is based on the spikMatrix Spike (MS-1)Spiked SaQC Batch:76738Prep Batch:65759	ample: 25470 Da QC MS	D is based of 04 te Analyzed: C Preparation	n the spike a 2011-01- 1: 2011-01-0	and spike 07 05 Spike	duplicate 1	result. atrix	Analy Prepa	yzed B ared B	y: AR y: AR Rec.
ChloridePercent recovery is based on the spikMatrix Spike (MS-1)Spiked SaQC Batch:76738Prep Batch:65759Param	e result. RP ample: 25470 Da QC MS Result	D is based of 04 te Analyzed: C Preparation Units	n the spike a 2011-01- n: 2011-01-0 Dil.	and spike 07 05 Spike Amour	duplicate 1 Ma nt Re	result. atrix esult	Analy Prepa Rec	yzed B ared By	y: AR y: AR Rec. Limit
ChloridePercent recovery is based on the spikMatrix Spike (MS-1)Spiked SaQC Batch:76738Prep Batch:65759	e result. RP ample: 25470 Da QC MS Result 9430	D is based of 04 te Analyzed: C Preparation Units mg/Kg	2011-01-0 2011-01-0 n: 2011-01-0 Dil. 100	and spike 07 05 Spike Amour 10000	duplicate 1 Ma at Re 0 <	atrix esult 218	Analy Prepa	yzed B ared By	y: AR y: AR Rec.
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride	e result. RP ample: 25470 Da QC MS Result 9430	D is based of 04 te Analyzed: C Preparation Units mg/Kg	2011-01-0 2011-01-0 n: 2011-01-0 Dil. 100 n the spike a	and spike 07 05 Spike Amour 10000	duplicate 1 Ma nt Re 0 < duplicate 1	atrix esult 218	Analy Prepa Rec 94	yzed B ared By	y: AR y: AR Rec. Limit
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride	te result. RP ample: 25470 Da QC MS Result 9430 te result. RP MSD	D is based of 04 te Analyzed: C Preparation Units mg/Kg	2011-01-0 2011-01-0 n: 2011-01-0 Dil. 100	and spike 07 05 Spike Amoun 10000 and spike	Ma nt Re duplicate n	atrix esult 218 result.	Analy Prepa Rec 94 c.	yzed B ared By	y: AR y: AR Rec. Limit 85 - 115
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride         Percent recovery is based on the spik	te result. RP ample: 25470 Da QC MS Result 9430 te result. RP MSD Result U	D is based of 04 te Analyzed: C Preparation Units mg/Kg D is based of	2011-01- 2011-01- 1: 2011-01- Dil. 100 n the spike a Spike	and spike 07 05 Amour 10000 and spike Matri:	Ma nt Re duplicate 1 duplicate 1 x t Rec.	esult. esult 218 result. Rec	Analy Prepa Rec 94 c. nit	yzed By ared By 	y: AR y: AR Rec. Limit 85 - 115 RPD
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride         Percent recovery is based on the spik         Param         Chloride         Percent recovery is based on the spik         Percent recovery is based on the spik	ample: 25470 Da QC MS Result 9430 a result. RP MSD Result U 10000 m	D is based of 4 te Analyzed: C Preparation Units mg/Kg D is based of Jnits Dil. g/Kg 100 D is based of	n the spike a 2011-01-0 n: 2011-01-0 Dil. 100 n the spike a Spike Amount 10000	and spike 07 05 Spike Amour 10000 and spike Matri: Resul <218	Ma nt Re duplicate 1 duplicate 1 k t Rec. 100	atrix esult 218 result. Rec Lim 85 - 1	Analy Prepa Rec 94 c. nit	yzed B ared B :. RPD	y: AR y: AR Rec. Limit 85 - 115 RPD Limit
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride         Percent recovery is based on the spik         Param         Chloride         Percent recovery is based on the spik         Percent recovery is based on the spik	ie result. RP ample: 25470 Da QC MS Result 9430 ie result. RP MSD Result U 10000 m ie result. RP ample: 25466 Da	D is based of 4 te Analyzed: C Preparation Units mg/Kg D is based of Jnits Dil. g/Kg 100 D is based of	2011-01- 2011-01- 2011-01- Dil. 100 n the spike a Spike Amount 10000 n the spike a 2011-01-	and spike 07 05 Spike Amoun 10000 and spike Matri: Resul <218 and spike	Ma nt Re duplicate 1 duplicate 1 k t Rec. 100	atrix esult 218 result. Rec Lim 85 - 1	Analy Prepa Rec 94 c. nit 115	yzed B ared B :. RPD	y: AR y: AR Rec. Limit 85 - 115 RPD Limit 20 By: kg
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride         Percent recovery is based on the spik         Param         Chloride         Percent recovery is based on the spik         Param         Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)       Spiked Sa         QC Batch:       76742         Prep Batch:       65801	ample: 25470 Da QC MS Result 9430 ce result. RP MSD Result U 10000 m ce result. RP ample: 25466 Da QC MS	D is based of 4 te Analyzed: C Preparation Units mg/Kg D is based of Jnits Dil. g/Kg 100 D is based of 64 ate Analyzed C Preparation	2011-01-0 2011-01-0 2011-01-0 Dil. 100 n the spike a Spike Amount 10000 n the spike a : 2011-01-0 n: 2011-01-0	and spike 07 05 Spike Amoun 10000 and spike Matri: Resul <218 and spike 06 06 06 Spike	Ma nt Re duplicate n duplicate n t Rec. 100 duplicate n	result. 218 result. Rec Lim 85 - 1 result.	Analy Prepa Rec 94 c. nit 115 Ana Prep	yzed B ared B  RPD 6	y: AR y: AR Rec. Limit 85 - 115 RPD Limit 20 By: kg By: kg Rec.
Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)         Spiked Sa         QC Batch:       76738         Prep Batch:       65759         Param         Chloride         Percent recovery is based on the spik         Param         Chloride         Percent recovery is based on the spik         Matrix Spike (MS-1)       Spiked Sa         QC Batch:       76742	ample: 25470 Da QC MS Result 9430 ce result. RP MSD Result U 10000 m ce result. RP ample: 25466 Da QC	D is based of 4 te Analyzed: C Preparation <u>Units</u> D is based of Jnits Dil. g/Kg 100 D is based of 54 ate Analyzed	2011-01- 2011-01- 2011-01- Dil. 100 n the spike a Spike Amount 10000 n the spike a 2011-01-	and spike 07 05 Spike Amoun 10000 and spike Matri: Resul <218 and spike	Ma nt Re duplicate n duplicate n t Rec. 100 duplicate n	result. 218 result. Rec Lim 85 - 1 result.	Analy Prepa Rec 94 c. nit 115	yzed B ared B :. RPD 6	y: AR y: AR Rec. Limit 85 - 115 RPD Limit 20 By: kg By: kg

Report Date: January 13, 2011	Work Order: 11010508	Page Number: 20 of 23
114-6400744	COG/Wooley Fed. #7	Eddy County, NM

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

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		162	mg/Kg	1	250	<14.6	65	11.7 - 152.3	1	20
Percent recovery is ba	ased on the sj	pike result.	RPD is	based on	the spike	and spike d	uplicate	result.		
	MS	MSD				Spike	Ν	AS MS	SD	Rec.
Surrogate	$\operatorname{Result}$	Result	τ	Units	Dil.	Amount	R	ec. Re		Limit
n-Tricosane	106	106	m	ıg/Kg	1	100	1	06 10	)6	70 - 130
Matrix Spike (MS-	1) Spiked	Sample: 2	55031							
QC Batch: 76857			Date A	nalyzed:	2011-01-	-12		An	alyzed By	y: ME
Prep Batch: 65908			QC Pre	paration	2011-01-	-12		Pre	epared By	: ME
		MS	5			Spike	Ma	trix		Rec.
Param		Rest		Units	Dil.	Amount	Res	ult Re	c.	Limit
Benzene		3 2.4	8 n	ng/Kg	1	2.00	<0.0	0150 12	4 80	).5 - 112
Toluene		2.2	5 n	ng/Kg	1	2.00	<0.0	0950 11	2 82	2.4 - 113
Ethylbenzene		2.2		ng/Kg	1	2.00	<0.0	)106 11	2 83	8.9 - 114
Xylene		6.7	7 n	ng/Kg	1	6.00	0.14	443 11	0 8	4 - 114
Percent recovery is ba	ased on the sp	pike result.	RPD is	based on	the spike	and spike d	uplicate	result.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	$\operatorname{Result}$	Rec.	$\operatorname{Limit}$	RPD	Limit
Benzene	4	2.40	mg/Kg	1	2.00	< 0.0150	120	80.5 - 112	3	20
Toluene		2.21	mg/Kg	1	2.00	< 0.00950	110	82.4 - 113	2	20
Ethylbenzene		2.22	mg/Kg	1	2.00	< 0.0106	111	83.9 - 114	1	20

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

		MS	MSD			Spike	MS	MSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	56	2.35	2.42	mg/Kg	1	2	118	121	41.3 - 117
4-Bromofluorobenzene (4-BFB)		2.29	2.38	mg/Kg	1	2	114	119	35.5 - 129

## Standard (CCV-1)

QC Batch: 76727

Date Analyzed: 2011-01-06

Analyzed By: ME

<sup>&</sup>lt;sup>3</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>4</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>5</sup>Surrogate out due to peak interference.

<sup>&</sup>lt;sup>6</sup>Surrogate out due to peak interference.

Report Dat 114-640074	e: January 13 4	3, 2011		Vork Order: 110 OG/Wooley Fe	Page Number: 21 of Eddy County, N						
Danam	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed				
Param GRO	riag	mg/Kg	1.00	0.914	91	80 - 120	2011-01-06				
		0/0									
Standard	(CCV-2)										
QC Batch:	76727		Date Ana	lyzed: 2011-0	1-06	Anal	yzed By: ME				
Descent		TI:4-	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date				
Param GRO	Flag	Units mg/Kg	Conc. 1.00	<u> </u>	Recovery 91	Limits 80 - 120	Analyzed 2011-01-06				
Standard QC Batch:			Date Ana	lyzed: 2011-0	1-06	Anal	yzed By: ME				
			$\mathrm{CCVs}$	$\rm CCVs$	$\operatorname{CCVs}$	Percent					
_			True ~	Found	Percent	Recovery	Date				
Param GRO	Flag	Units mg/Kg	<u>Conc.</u> 1.00	Conc. 0.976	Recovery 98	Limits 80 - 120	Analyzed 2011-01-06				
Standard QC Batch:	. ,		Date Ana	lyzed: 2011-0	1-07	Anal	yzed By: AR				
			ICVs	ICVs	ICVs	Percent					
			True	Found	Percent	Recovery	Date				
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
Chloride		mg/Kg	100	97.9	98	85 - 115	2011-01-07				
Standard	(CCV-1)										
QC Batch:	76737		Date Ana	lyzed: 2011-0	1-07	Anal	yzed By: AR				
Denne	<b>D</b> 1	<b>T</b> T - 16 -	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date				
Param Chloride	Flag	Units mg/Kg	<u>Conc.</u> 100	Conc. 102	Recovery 102	Limits 85 - 115	Analyzed 2011-01-07				
Standard QC Batch:			<u> </u>	lyzed: 2011-0			yzed By: AR				

Report Dat 114-640074	te: January 13 4	3, 2011		/ork Order: 110 OG/Wooley Fe		umber: 22 of 23 dy County, NM			
			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Chloride	<u>,                                     </u>	mg/Kg	100	109	109	85 - 115	2011-01-07		
Standard	(CCV-1)								
QC Batch:	76738		Date Ana	lyzed: 2011-01	1-07	Anal	yzed By: AR		
			CCVs	CCVs	CCVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Chloride	0	mg/Kg	100	90.9	91	85 - 115	2011-01-07		
Standard	(CCV-2)								
QC Batch:	76742		Date Ana	alyzed: 2011-0	Ana	alyzed By: kg			
			CCVs	CCVs	$\operatorname{CCVs}$	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
DRO		mg/Kg	250	251	100	80 - 120	2011-01-06		
Standard	(CCV-3)								
QC Batch:	76742		Date Ana	alyzed: 2011-0	Analyzed By:				
			CCVs	CCVs	$\mathrm{CCVs}$	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
DRO		mg/Kg	250	224	90	80 - 120	2011-01-06		
Standard	(CCV-4)								
QC Batch:	76742		Date Ana	alyzed: 2011-0	1-06	Ana	lyzed By: kg		
			CCVs	CCVs	CCVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
DRO		mg/Kg	250	227	91	80 - 120	2011-01-06		
Standard	(CCV-1)								
QC Batch:	76857		Date Anal	lyzed: 2011-01	-19	Anal	yzed By: ME		

Report Date: Ja 114-6400744	nuary 13, 201	11		k Order: 11010 G/Wooley Fed.	Page Number: 23 of 23 Eddy County, NM							
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date					
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed					
Benzene		mg/Kg	0.100	0.114	114	80 - 120	2011-01-12					
Toluene		mg/Kg	0.100	0.102	102	80 - 120	2011-01-12					
Ethylbenzene		mg/Kg	0.100	0.0987	99	80 - 120	2011-01-12					
Xylene		mg/Kg	0.300	0.295	98	80 - 120	2011-01-12					
Standard (CCV	√-2)											
QC Batch: 7685	57		Date Analyz	ed: 2011-01-1	Anal	yzed By: ME						
			CCVs	CCVs	$\operatorname{CCVs}$	Percent						
			True	Found	Percent	Recovery	Date					
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed					
Benzene		mg/Kg	0.100	0.111	111	80 - 120	2011-01-12					
Toluene		mg/Kg	0.100	0.103	103	80 - 120	2011-01-12					
Ethylbenzene		mg/Kg	0.100	0.101	101	80 - 120	2011 - 01 - 12					
Xylene		mg/Kg	0.300	0.302	101	80 - 120	2011-01-12					
Standard (CCV	√-3)											
QC Batch: 7685	57		Date Analyz	ed: 2011-01-1	12	Analy	yzed By: ME					
			CCVs	CCVs	$\mathrm{CCVs}$	Percent						
			True	Found	Percent	Recovery	Date					
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed					
Benzene		mg/Kg	0.100	0.112	112	80 - 120	2011-01-12					
Toluene		mg/Kg	0.100	0.104	104	80 - 120	2011-01-12					
Ethylbenzene		mg/Kg	0.100	0.101	101	80 - 120	2011-01-12					
Xylene		mg/Kg	0.300	0.297	99	80 - 120	2011-01-12					

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	<b>TETRATECH</b> 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946												10 (EXt. to U35)	d Cr Pb Hg Se	r Pd Hg									TDS					
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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.