		Sľ	TE INFORM	ATION		
		Report	Type: Clos	ure Repo	ort	
General Site Info	irmation:	games an area	ne and the second s			
Site:		Burch Keelv	Unit #100 - Inied	ction Line		
Company:		COG Operat	ina LLC			
Section. Townsh	nip and Range	Unit P	Sec. 18	T-17-S R	-30-E	
Lease Number:		API-30-015-0	4213		·····	
County:	· · · · · · · · · · · · · · · · · · ·	Eddy County	V .			
GPS:			32.81382° N		104.00933°	W
Surface Owner:		Federal			· · · · · · · · · · · · · · · · · · ·	
Mineral Owner:					e an an an air an an air an	
Directions:		Intersection of 300', left 0.2 m	529 and Hagerman i, turn right 0.2 mi, t	Cutoff, travel urn left 0.2 mi	west on 82 1.6 mi, turn left at to location	COG BKU Yard
	· •		<u></u>			
Release Data: 👙		The Sector			e regened M	
Date Released:		6/15/2012		and the set to strend out the set		
Type Release:		Produced Flu	iids		NOV 01 2012	
Source of Contan	nination:	Steel line rup	tured			
Fluid Released:		30 bbls			INMOCD ARTESIA	
Fluids Recovered	:	15 bbls				
Official Commun	nication:			A CARLES AND		
Name:	Pat Ellis			ll.	e Tavarez	
Company:	COG Operating 11	C		<sub>T</sub>	etra Tech	
Addroos:	EEO M. Toxon Avo	Sto 1200			910 N. Big Spring	
Address.	JJU W. Texas Ave.					
P.O. BOX						
City:	Midland Texas, 797	01		N	lidland, l'exas	
Phone number:	(432) 686-3023			(4	132) 682-4559	
Fax:	(432) 684-7137					
Email:	pellis@conchoreso	urces.com		<u>  </u>	ke.Tavarez@tetratech.com	
Ranking Criteria	ater:		Ranking Score	9. (*****) 19. (******) 19. (******) 19. (******) 19. (******) 19. (******) 19. (******) 19. (******) 19. (******) 19. (*******) 19. (*******) 19. (*********) 19. (*********) 19. (************) 19. (************************************	Site Data	
<50 ft 50-00 #			20			
>100 ft			0	······································	0	
× 100 n.	· · · · · · -	<u></u>	<b>-</b>			
WellHead Protection	on:	······	Ranking Score		Site Data	
Water Source <1,0	00 ft., Private <200 ft	· · · · · · · · · · · · · · · · · · ·	20			
Water Source >1,0	00 ft., Private >200 ft	· · · · · · · ·	0		0	
Surface Body of W	/ater:		Banking Score		Site Data	
<200 ft.			20			
200 ft - 1,000 ft.	<u></u>		10			
>1,000 ft.			0	·····	0	
Tot.	al Ranking Score:		0			
		Accepta	ble Soil RRAL (n	ng/kg)		
		Benzene	Total BTEX	TPH		
		10	50	5,000		
	and the second	and the second			na ka ka mangan ang akanan ng akanan ka mananan ka panan ng si ka ka ka ka na ka ng si	



October 17, 2012

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



### Re: Closure Report for the COG Operating LLC., Burch Keely Unit #100, Injection Line, Unit P, Section 18, 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 Burch Keely Unit #100, Injection Line, Unit P, Section 18, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.81382°, W 104.00933°. The site location is shown on Figures 1 and 2.

### Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on June 15, 2012, and released approximately thirty (30) barrels of produced water from a rupture steel line (injection line) with fifteen (15) barrels of standing fluids recovered. The spill is located in the pasture south of the lease road and measured approximately 10' x 30'. The initial C-141 form is enclosed in Appendix A.

### Groundwater

No water wells were listed within Section 18. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 325' 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 riskbased 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 July 3, 2012, Tetra Tech personnel inspected and sampled the spill area. One (1) auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, the samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected in the auger hole, with concentrations of 11,700 mg/kg at 0-1' and 10,000 mg/kg at 1-1.5' below surface. The chloride impact was not vertically defined at the site. Deeper samples could not be collected due to a dense caliche formation.

According to BLM, additional impact from the spill was not assessed or addressed as shown on Figure 4. The spill area near the release point measured approximately 10' x 30' and the additional impact reported by the BLM had migrated approximately 750 feet down a two track road, with an approximate width of 2.0' to 3.0'. Tetra Tech recommended excavation of this additional impacted area.

### **Remediation and Conclusion**

Based on the revised work plan, Tetra Tech personnel supervised the excavation of the site. The excavated areas and depths are highlighted in Table 1 and shown on Figure 4. The final excavation depths of the soil remediation were met as stated in the approved work plan. Approximately 640 cubic yards of soil were excavated and transported to the R360 facility for proper disposal.

In the area of AH-1, a trench was installed to vertically delineate the chloride impact in the area. According to the results shown on Table 1, the impact significantly declined with depth and showed a concentration of 922 mg/kg at 5.0' below surface. The excavation measured approximately 30' x 45' at a depth of 4.0' below surface. Once completed, a clay material was placed in the excavation bottom and backfilled with clean soil to grade.



In order to address the additional impact on the two track road, the area was excavated to a depth of 2.0' to 4.0' below surface. Tetra Tech field screened the samples for chloride to determine depth of the excavation.

Once excavated, Tetra Tech collected confirmation samples from the excavated areas. The confirmation samples are shown in Table 1. According to the results, the BLM approved the backfilling of the site. In addition, the two track road was reclaimed with clean material and windrows were installed to prevent erosion. The entire area was seeded with a BLM approved seed mix in order to establish regrowth in the pasture.

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

Respectfully submitted, TETRA TECH

lke Tavarez. PG

Senior Project Manager

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

## Figures

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Drawn By: leatel Marmol



Drawn By: Isabel Marmolejo







Drawn By; Isabel Marmolejo

## Tables

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# Table 1COG Operating LLC.BKU #100Eddy County, New Mexico

Comple ID	Sample Date	Sample	Soil Status		1	TPH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID		Ueptn (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	7/3/2012	0-1		X	66.2	<250	66.2	0.223	0.259	0.410	0.944	1.84	11,700
	ű	1-1.5	.)	X									10,000
T-1	10/1/2012	5	Х		-	-	-	-	-	-	-	-	922
clay cap @ 4.0'	U U	7	Х		-	-	-	-	-	-	-	-	922
	4	9	Х		-	-	-	-	-	-	-	-	884
	11	11	Х		-	-	-	-	-	-	-	-	732
	11	13	Х		-	-	-	-	-	-	-	-	471
CS-1 South Wall	10/1/2012	-	x		-	-	-	-	-	-	_	-	138
CS-1 East Wall	10/1/2012	-	Х		-	-	-	-	-	-	-	-	238
CS-1 West Wall	10/1/2012	-	Х		-	-	-	-	-	-	-	-	<20.0
CS-1 Bottom Hole	10/1/2012	4	Х		-	-	-	-	-	L	-		984

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# Table 1COG Operating LLC.BKU #100Eddy County, New Mexico

		Sample	Soil	Status	1	TPH (mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	(ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
CS-2 North Wall	10/2/2012	-	Х		-	-	-	-	-	-	-	-	271
CS-2 South Wall	10/2/2012	-	Х		-	-	-	-	-	-	-	-	162
CS-2 Bottom Hole	10/2/2012	2	Х		-	-		-	-	-	-	-	253
CS-3 North Wall	10/3/2012	-	X		-	-	-	-	-	-	-	-	210
CS-3 South Wall	10/3/2012	-	Х		-	-	-	-	-	-	-	-	124
CS-3 Bottom Hole	10/3/2012	2	Х		-	-	-	-	-	-	-	-	95.4
CS-4 North Wall	10/4/2012	-	X		-	-	-	-	-	-	-	-	124
CS-4 South Wall	10/4/2012	-	Х		-	-	-	-	-	-	-	-	210
CS-4 Bottom Hole	10/4/2012	2	Х		-	-	-	-	-	-	-	-	219
CS-5 North Wall	10/4/2012	-	x		-	-	-	-	-	-	-	-	243
CS-5 South Wall	10/4/2012	-	Х		-	-	-	-	-	-	-	-	281
CS-5 Bottom Hole	10/4/2012	2	Х		-	-	-	-	-		-	-	299
CS-6 North Wall	10/5/2012	-	X		-	-	-	-	-	-	-	-	309
CS-6 South Wall	10/5/2012	-	X		-	-	-	-	-	-	-	-	394
CS-6 Bottom Hole	10/5/2012	2	Х		-	-	-	-	-	-	-	-	266

# Table 1COG Operating LLC.BKU #100Eddy County, New Mexico

	O	Sample	Soil	Status	-	ГРН (mg/k	(g)	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
Sample ID	Sample Date	Uepth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	ng/kg) (mg/kg) (mg/kg)		(mg/kg)	(mg/kg)	(mg/kg)
CS-7 North Wall	10/5/2012	-	Х		-	-	-	-	-	-	-	-	329
CS-7 South Wall	10/5/2012	-	Х		-	-	-	-	-	-	_	-	361
CS-7 Bottom Hole	10/5/2012	2	Х		-	-	-	-	-		-	-	285
CS-8 North Wall	10/5/2012	-	X		-	-	-	-	-	-	-	-	242
CS-8 South Wall	10/5/2012	-	X		_	-	-	-	-	-	-	-	223
CS-8 Bottom Hole	10/5/2012	4	Х		-	-	-	-	-	-	-	-	309
CS-9 North Wall	10/9/2012	-	X		_	-	-	-	-	-	-	-	359
CS-9 South Wall	10/9/2012	-	X		-	-	-	-	-	-	-	-	272
CS-9 East Wall	10/9/2012	-	Х		-	-	-	-	-	-	-	-	233
CS-9 West Wall	10/9/2012	-	X		-	-	-	-	-	-	-	-	209
CS-9 Bottom Hole	10/9/2012	2	Х		-	-	-	-	-		-	-	359

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Not Analyzed

Clay Material

Excavated Depths

### Photos

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View West - Area of CS-2 and CS-3



View West – Area of CS-4 and CS-5



View West – Area of CS-6 and CS-7



View West – Area of CS-8



View South – Area of CS-9



Backfill



Two track road was reclaimed and windrows installed

## Appendix A

.

District IState of1625 N. French Dr., Hobbs, NM 88240Energy MineralsDistrict IIEnergy Minerals1301 W. Grand Avenue, Artesia, NM 88210Oil ConseDistrict IIIOil Conse1000 Rio Brazos Road, Aztec, NM 874101220 SourDistrict IV1220 Sour1220 S. St. Francis Dr., Santa Fe, NM 87505Santa H	f New Mexico s and Natural Resources ervation Division th St. Francis Dr. Fe, NM 87505	<b>DEIVED</b> <b>Form C-141</b> Revised October 10, 2003 <b>0 1 2012</b> Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form
Release Notification	on and Corrective Action	on
	OPERATOR	🔲 Initial Report 🛛 Final Report
Name of Company         COG Operating LLC           Address         550 W Texas Suite 1300 Midland Texas 79701	Contact Pat Ell	is
Facility Name         Burch Keely Unit #100	Facility Type Injection	Line
Surface Owner: Federal Mineral Owner		Lease No. (API#) 30-015-04213
LUCAIII	IN OF KELEASE	st/West Line County
P 18 17S 30E		Eddy
Latitude N 32.81382	2° Longitude W 104.00933°	
NATURI	E OF RELEASE	
Type of Release: Produced Water	Volume of Release 30 bbls	Volume Recovered 15 bbls
Source of Release: Steel Line	Date and Hour of Occurrence 06/15/2012	Date and Hour of Discovery 06/15/2012 10:00 a.m.
Was Immediate Notice Given?	If YES, To Whom?	e Bratcher-OCD
By Whom? Michelle Mullins	Date and Hour 06/16/2012 6:15	p.m.
Was a Watercourse Reached?	If YES, Volume Impacting the W N/A	'atercourse.
If a Watercourse was Impacted, Describe Fully.*	1	
Describe Cause of Problem and Remedial Action Taken.*		
The Burch Keely Unit #100 steel line ruptured roughly 50 yards from the new joint.	e Burch Keely Unit #279 well. We h	ave replaced the faulty joint of pipe with a
Describe Area Affected and Cleanup Action Taken.*		
Tetra Tech personnel inspected the site and collected samples to define t proper disposal. The site was then brought up to surface grade with clear NMOCD for review.	he spills extent. Soil that exceeded RI a backfill material. Tetra Tech prepare	RAL was removed and hauled away for ed a closure report and submitted it to
I hereby certify that the information given above is true and complete to regulations all operators are required to report and/or file certain release public health or the environment. The acceptance of a C-141 report by t should their operations have failed to adequately investigate and remedia or the environment. In addition, NMOCD acceptance of a C-141 report federal, state, or local law? and/or regulations.	the best of my knowledge and unders notifications and perform corrective a he NMOCD marked as "Final Report te contamination that pose a threat to does not relieve the operator of respon	tand that pursuant to NMOCD rules and actions for releases which may endanger " does not relieve the operator of liability ground water, surface water, human health nsibility for compliance with any other
	OIL CONSER	VATION DIVISION
Signature:		
Printed Name: Ike Tavarez	Approved by District Supervisor:	p
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached
Date:10-17-12Phone: (432) 682-4559Attach Additional Sheets If Necessary		

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

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

Form C-141 Revised October 10, 2003

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

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

	OPERATOR	$\square$	Initial Report	Final Report
Name of Company COG OPERATING LLC	Contact	Pat Ellis		
Address 550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077		
Facility Name Burch Keely Unit #100	Facility Type	Injection line		

Surface Owner Federal	Mineral Owner	Lease No.	(API#) 30-015-04213

### **LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	18	175	30E					Eddy
		[						

Latitude 32 48.877 Longitude 104 00.563

### NATURE OF RELEASE

Type of Release Produced water	Volume of Release 30bbls	Volume Recovered 15bbls
Source of Release Steel line	Date and Hour of Occurrence	Date and Hour of Discovery
	06/15/2012	06/15/2012 10:00 a.m.
Was Immediate Notice Given?	If YES, To Whom?	
Yes 🗌 No 🗌 Not Required	Mike	Bratcher-OCD
By Whom? Michelle Mullins	Date and Hour 06/16/2012 6:15	D.M.
Was a Watercourse Reached?	If YES, Volume Impacting the Wat	ercourse.
🗌 Yes 🖾 No		
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.*		
The Burch Keely Unit #100 steel line ruptured roughly 50 yards from the I new joint.	Burch Keely Unit #279 welf. We have	e replaced the faulty joint of pipe with a
Describe Area Affected and Cleanup Action Taken.*		

Initially 30bbls of produced water was released from the steel line and we were able to recover 15bbls with a vacuum truck. The release was contained by the roadway and measured and area of 31' x 11' in the pasture. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM for approval prior to any significant remediation work.

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

Signature:	<u>OIL CONSER</u>	VATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:	
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval:	Attached
Date: 06/22/2012 Phone: 432-212-2399		

\* Attach Additional Sheets If Necessary

# Appendix B

### Water Well Data Average Depth to Groundwater (ft) COG - BKU #100 Steel line Eddy County, New Mexico

	16 Sc	outh	2	29 East			16	South	;	30 East	t		16	South	3	B1 East	
6	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	╡
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	
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	ł
	17 Sc	outh	2	29 East	:		17	South		30 East			17	South	3	1 East	
	5	4	3	2	1	6	5	4	3	2	1	6	5	4	з	2	ľ
	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	
3	17	16	15	14	13	18 SITE	17	16	15	14	13	18	17	16	15	14	┥
9	20	21	22	80 23	24	19	20	21	22	23	24	19	20	21	22	23	+
)	29 <b>210</b>	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	ľ
1	32	33	34	35 153	36	31	32	33	34	35	36	31	32	33	34 271	35	ŧ
	18 Sc	outh	2	29 East			18 :	South	3	0 East			18 :	South	3	1 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	
3	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14	ľ
9	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	1
)	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26	ź
i	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	ł
	L	L									1				1	261	Т

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New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Site Location

- 1

## Appendix C

### **Summary Report**

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

Project Location:Eddy Co., NMProject Name:COG/BKU #100Project Number:114-6401448

Date Date Time Sample Description Matrix Taken Taken Received CS-9 North Wall 00:00 2012-10-15 311790 soil 2012-10-09 CS-9 South Wall 2012-10-15 311791 soil 2012-10-09 00:00 CS-9 East Wall 2012-10-15 311792 soil 2012-10-09 00:00 CS-9 West Wall 2012-10-15 311793 soil 2012-10-09 00:00 CS-9 Bottom Hole 2' 2012-10-15 311794 soil 2012-10-09 00:00

Sample: 311790 - CS-9 North Wall

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		359	mg/Kg	4

### Sample: 311791 - CS-9 South Wall

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		272	mg/Kg	4

#### Sample: 311792 - CS-9 East Wall

Param	Flag	Result	Units	RL
Chloride		233	mg/Kg	4

### Sample: 311793 - CS-9 West Wall

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: October 19, 2012

Work Order: 12101518

Report Date: October 19, 2012		Work Order: 12101518	Pa	Page Number: 2 of 2	
Param	Flag	Result	Units	RL	
Chloride		209	mg/Kg	4	

### Sample: 311794 - CS-9 Bottom Hole 2'

Param	Flag	Result	Units	RL
Chloride		359	mg/Kg	4



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

9 Lubbock, Texas 79424 800-378-1296 806-El Paso, Texas 79922 915-Midland, Texas 79703 432-Suite 100 Carroliton, Texas 75006 972-E-Mail: tab@traceanalysis.com WEB: www.traceanalysis.com

915-585-3443 FAX 915-585-4944 432-689-6301 FAX 432-689-6313 972-242-7750

FAX:806+794+1298

806-794-1296

### 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: October 19, 2012

Work Order: 12101518

Project Location:Eddy Co., NMProject Name:COG/BKU #100Project Number:114-6401448

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
311790	CS-9 North Wall	soil	2012-10-09	00:00	2012-10-15
311791	CS-9 South Wall	soil	2012-10-09	00:00	2012-10-15
311792	CS-9 East Wall	soil	2012-10-09	00:00	2012-10-15
311793	CS-9 West Wall	soil	2012-10-09	00:00	2012-10-15
311794	CS-9 Bottom Hole 2'	soil	2012-10-09	00:00	2012-10-15

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

Michael

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

### **Report Contents**

Case Narrative	3
Analytical Report         Sample 311790 (CS-9 North Wall)         Sample 311791 (CS-9 South Wall)         Sample 311792 (CS-9 East Wall)         Sample 311793 (CS-9 West Wall)	4 4 4 4
Sample 311794 (CS-9 Bottom Hole 2')	5
Method Blanks         QC Batch 95875 - Method Blank (1)         QC Batch 95876 - Method Blank (1)           QC Batch 95876 - Method Blank (1)	<b>6</b> 6 6
Laboratory Control Spikes	7
QC Batch 95875 - LCS (1)	777
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### Case Narrative

Samples for project COG/BKU #100 were received by TraceAnalysis, Inc. on 2012-10-15 and assigned to work order 12101518. Samples for work order 12101518 were received intact at a temperature of 4.8 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	$\operatorname{Batch}$	Date
Chloride (Titration)	SM 4500-Cl B	81204	2012-10-18 at 10:08	95875	2012-10-18 at 16:23
Chloride (Titration)	SM 4500-Cl B	81204	2012-10-18 at 10:08	95876	2012-10-18 at 16:24

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 12101518 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: October 19, 2012 114-6401448 Work Order: 12101518 COG/BKU #100 Page Number: 4 of 10 Eddy Co., NM

### **Analytical Report**

### Sample: 311790 - CS-9 North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95875 81204	Analytic Date An Sample I	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-18 2012-10-18	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			359	mg/Kg	5	4.00

### Sample: 311791 - CS-9 South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95875 81204	Analytic Date An Sample I	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-18 2012-10-18	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			272	mg/Kg	5	4.00

### Sample: 311792 - CS-9 East Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95875 81204	Analytic Date An Sample I	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-18 2012-10-18	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			233	mg/Kg	5	4.00

Report Date: October 19, 2012 114-6401448		Wo	Work Order: 12101518 COG/BKU #100			Page Number: 5 of 10 Eddy Co., NM		
Sample: 31	1793 - CS-9 West Wall							
Laboratory:	Midland							
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A		
QC Batch:	95876	Date Ar	alyzed:	2012-10-18	Analyzed By:	AR		
Prep Batch:	81204	Sample	Preparation:	2012-10-18	Prepared By:	AR		
			RL					
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$		
Chloride			209	mg/Kg	5	4.00		

### Sample: 311794 - CS-9 Bottom Hole 2'

Chloride			359	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81204	Sample	Preparation:	2012-10-18	Prepared By:	AR
QC Batch:	95876	Date An	alyzed:	2012-10-18	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

Method Blanks												
Method Blank (1)	QC Batch: 95875											
QC Batch: 95875 Prep Batch: 81204		Date Analyzed: QC Preparation:	2012-10-18 2012-10-18	Analyzed By: Prepared By:	AR AR							
Parameter	Flag	Cert	MDL Result	Units	$\mathbf{RL}$							
Chloride			<3.85	mg/Kg	4							
Method Blank (1)	QC Batch: 95876											
QC Batch: 95876 Prep Batch: 81204		Date Analyzed: QC Preparation:	2012-10-18 2012-10-18	Analyzed By: Prepared By:	AR AR							
Parameter	Flag	Cert	MDL Result	Units	$\mathbf{RL}$							
Chloride			<3.85	mg/Kg	4							

Work Order: 12101518 COG/BKU #100 Page Number: 6 of 10 Eddy Co., NM

Report Date: October 19, 2012 114-6401448 Report Date: October 19, 2012 114-6401448 .

Work Order: 12101518 COG/BKU #100

### Laboratory Control Spikes

### Laboratory Control Spike (LCS-1)

Chloride

QC Batch:	95875		D	ate Analyze	ed: 2012-	-10-18			Analyzed B	y: AR
Prep Batch:	81204		Q	C Preparati	ion: 2012-	-10-18			Prepared B	y: AR
				LCS			Spike	Matrix		Rec.
Param		$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit

mg/Kg

1

2500

<3.85

106

85 - 115

AR

AR

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

2650

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2560	mg/Kg	1	2500	<3.85	102	85 - 115	3	20

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

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

QC Batch:	95876	Date Analyzed:	2012-10-18	Analyzed By:	AR
Prep Batch:	81204	QC Preparation:	2012-10-18	Prepared By:	AR

			LCS			Spike	Matrix		Rec.
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	85 - 115

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2710	mg/Kg	1	2500	<3.85	108	85 - 115	5	20

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

Matrix Spil	ke (MS-1)	Spiked Sample: 311792		
QC Batch:	95875	Date Analyzed:	2012-10-18	Analyzed By:
Prep Batch:	81204	QC Preparation:	2012-10-18	Prepared By:

Report Date: October 19, 2012 114-6401448	Work Order: 12101518 COG/BKU #100							Page Number: 8 of 10 Eddy Co., NM			
Param		F	С	MS Result	Units	Dil.	Spike Amount	Ma Re	atrix esult R	lec.	Rec. Limit
Chloride				2740	mg/Kg	5	2500	2	233 1	.00 78	8.9 - 121
Percent recovery is based on the s	spike	e resi	ılt. RP	D is based	on the s	spike and s	pike dupli	cate re	sult.		
			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2860	mg/Kg	5	2500	233	105	78.9 - 12	1 4	20
Matrix Spike (MS-1) Spiked QC Batch: 95876 Prep Batch: 81204	d Sa	mple	:: 31179 Dat QC	4 te Analyze Preparati	d: 201 on: 201	12-10-18 12-10-18			An Pre	alyzed By epared By	y: AR 7: AR
Param		F	С	MS Result	Units	Dil.	Spike Amount	Ma Re	atrix sult R	.ec.	Rec. Limit
Chloride				2880	mg/Kg	5	2500	3	59 1	01 78	.9 - 121
Percent recovery is based on the s	pike	resu	lt. RPI	) is based	on the s	pike and s	pike duplic	cate res	sult.		
			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2770	mg/Kg	5	2500	359	96	78.9 - 12	1 4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.
Report Date: October 19, 2012 114-6401448 Work Order: 12101518 COG/BKU #100

# **Calibration Standards**

Standard (CCV-1)

QC Batch:	95875			Date A	Analyzed: 2	2012-10-18		Analy	zed By: AR
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	99.5	100	85 - 115	2012-10-18

#### Standard (CCV-2)

QC Batch:	95875			Date A	Analyzed: 2	2012-10-18		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	101	101	85 - 115	2012-10-18

#### Standard (CCV-1)

QC Batch:	95876			Date A	Analyzed: 2	2012-10-18		Analy	zed By: AR
					CCVs	CCVs Found	CCVs	Percent	Dete
					Irue	rouna	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	100	100	85 - 115	2012-10-18

### Standard (CCV-2)

QC Batch:	95876			Date A	nalyzed:	2012-10-18		Analy	zed By: AR
Param		Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride				mg/Kg	100	99.6	100	85 - 115	2012-10-18

Work Order: 12101518 COG/BKU #100 Page Number: 10 of 10 Eddy Co., NM

## Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample 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.
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

## Attachments

The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

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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: October 15, 2012

Work Order: 12100815

Project Location:	Eddy Co., NM
Project Name:	COG/BKU #100
Project Number:	114-6401448

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
311225	Trench-1 5' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311226	Trench-1 7' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311227	Trench-1 9' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311228	Trench-1 11' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311229	Trench-1 13' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311230	CS-1 South Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311231	CS-1 East Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311232	CS-1 West Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311233	CS-1 Bottom Hole 4' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311234	CS-2 North Wall	soil	2012-10-02	00:00	2012-10-08
311235	CS-2 South Wall	soil	2012-10-02	00:00	2012-10-08
311236	CS-2 Bottom Hole 2'	soil	2012-10-02	00:00	2012-10-08
311237	CS-3 North Wall	soil	2012-10-03	00:00	2012-10-08
311238	CS-3 South Wall	soil	2012-10-03	00:00	2012-10-08
311239	CS-3 Bottom Hole 2'	soil	2012-10-03	00:00	2012-10-08
311240	CS-4 North Wall	soil	2012-10-04	00:00	2012-10-08
311241	CS-4 South Wall	soil	2012-10-04	00:00	2012-10-08
311242	CS-4 Bottom Hole 2'	soil	2012-10-04	00:00	2012-10-08
311243	CS-5 North Wall	soil	2012-10-04	00:00	2012-10-08
311244	CS-5 South Wall	soil	2012-10-04	00:00	2012-10-08
311245	CS-5 Bottom Hole 2'	soil	2012-10-04	00:00	2012-10-08
311246	CS-6 North Wall	soil	2012-10-05	00:00	2012-10-08
311247	CS-6 South Wall	soil	2012-10-05	00:00	2012-10-08
311248	CS-6 Bottom Hole 2'	soil	2012-10-05	00:00	2012-10-08
311249	CS-7 North Wall	soil	2012-10-05	00:00	2012-10-08
311250	CS-7 South Wall	soil	2012-10-05	00:00	2012-10-08
311251	CS-7 Bottom Hole 2'	soil	2012-10-05	00:00	2012-10-08
311252	CS-8 North Wall	soil	2012-10-05	00:00	2012-10-08
311253	CS-8 South Wall	soil	2012-10-05	00:00	2012-10-08
311254	CS-8 Bottom Hole 4'	soil	2012-10-05	00:00	2012-10-08

Report Date: Octo	ber 15, 2012	Work Order: 12100815	Page 1	Number: 2 of 5
Sample: 311225	- Trench-1 5' (AH-1)			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		922	mg/Kg	4
Sample: 311226	- Trench-1 7' (AH-1)			
Param	Flag	Result	Units	RL
Chloride		922	mg/Kg	4
Sample: 311227 -	- Trench-1 9' (AH-1)			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		884	mg/Kg	4
Sample: 311228 -	• Trench-1 11' (AH-1)			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		732	mg/Kg	4
Sample: 311229 -	Trench-1 13' (AH-1)			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride	<u>_</u>	471	mg/Kg	4
Sample: 311230 -	CS-1 South Wall (AH	I-1)		
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		138	mg/Kg	4
Sample: 311231 -	CS-1 East Wall (AH-	1)		
Param	Flag	Result	Units	RL
Chloride		238	mg/Kg	4
Sample: 311232 -	CS-1 West Wall (AH	-1)		
Param	Flag	Result	Units	RL
Chloride		<20.0	mg/Kg	4

Report Date: Octo	ber 15, 2012	Work Order: 12100815		Number: 3 of 5
Sample: 311233	- CS-1 Bottom Hole 4' (.	AH-1)		
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride	<u>~</u>	984	mg/Kg	4
<u> </u>				
Sample: 311234	- CS-2 North Wall			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride	·····	271	mg/Kg	4
Sample: 311235	- CS-2 South Wall			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		162	mg/Kg	4
Sample: 311236	- CS-2 Bottom Hole 2'			
Param	Flag	Result	Units	RL
Chloride		253	mg/Kg	4
Sample: 311237	- CS-3 North Wall			
Param	Filag	Result	Units	
		210	mg/Kg	4
Sample: 311238	- CS-3 South Wall			
Param	Flag	Result	Units	RL
Chloride		124	mg/Kg	4
Sample: 311239	- CS-3 Bottom Hole 2'			
Param	Flag	Result	Units	RL
Chloride		95.4	mg/Kg	4
Sample: 311240	- CS-4 North Wall			
Donom	Flor	Derrik	TT: (	זת
raram Chloride	riag	124	Units	
Unionae		144	mg/ ng	4

Report Date: Octobe	er 15, 2012	Work Order: 12100815	Page	Number: 4 of 5
Report Date:     October 15, 2012     Work Order:     12100815     Page       Sample:     311241 - CS-4     South Wall        Param     Flag     Result     Units       Chloride     210     mg/Kg       Sample:     311242 - CS-4     Bottom Hole 2'       Param     Flag     Result     Units       Chloride     219     mg/Kg   Sample: 311243 - CS-5 North Wall Param Flag Result Units Chloride 243 mg/Kg Sample: 311244 - CS-5 South Wall Param Flag       Param     Flag     Result     Units       Chloride     281     mg/Kg   Sample: 311245 - CS-5 Bottom Hole 2' Param Flag Result Units Chloride 299 mg/Kg Sample: 311245 - CS-6 North Wall Param Flag Result Units   Sample: 311246 - CS-6 North Wall Param Flag Result Units Chloride 309 mg/Kg Sample: 311247 - CS-6 South Wall Param Flag Result Units Chloride 309 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Chloride 304 mg/Kg Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Sample: 311248 - CS-6 Bottom Hole 2' Param Flag Result Units Sample: 311248 - CS-6 Bottom Hole 2' P				
Param	Flag	Result	Units	RL
Chloride		210	mg/Kg	4
Sample: 311242 - 0	CS-4 Bottom Hole 2'			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		219	mg/Kg	4
Sample: 311243 - (	CS-5 North Wall			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		243	mg/Kg	4
Sample: 311244 - 0	CS-5 South Wall			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		281	mg/Kg	4
Sample: 311245 - ( Param	CS-5 Bottom Hole 2' Flag	Result	Units	RL
Chloride		299	mg/Kg	4
Sample: 311246 - (	CS-6 North Wall			
Param	Flag	Result	Units	RL
		309	mg/Kg	4
Sample: 311247 - (	CS-6 South Wall			
Param	Flag	Result	Units	RL
Chloride		394	mg/Kg	4
Sample: 311248 - (	CS-6 Bottom Hole 2'			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		266	mg/Kg	4

Report Date: October 15, 2012       Work Order: 12100815         Sample: 311249 - CS-7 North Wall         Param       Flag       Result       Unit         Chloride       329       mg/K         Sample: 311250 - CS-7 South Wall       Param       Flag       Result       Unit         Chloride       361       mg/K         Sample: 311251 - CS-7 Bottom Hole 2'       Param       Flag       Result       Unit         Chloride       285       mg/K         Sample: 311252 - CS-8 North Wall       Param       Flag       Result       Unit         Chloride       242       mg/Ki         Sample: 311253 - CS-8 South Wall       Param       Flag       Result       Unit         Chloride       242       mg/Ki         Sample: 311254 - CS-8 Bottom Hole 4'       Sample: 311254 - CS-8 Bottom Hole 4'				Number: 5 of 5
Sample: 311249 -	CS-7 North Wall			
Param	Flag	Result	Units	RL
Chloride		329	mg/Kg	4
Sample: 311250 -	· CS-7 South Wall			
Param	Flag	Result	Units	$\operatorname{RL}$
Chloride		361	mg/Kg	4
Sample: 311251 -	· CS-7 Bottom Hole 2'			
Param	Flag	Result	Units	RL
Chloride		285	mg/Kg	. 4
Sample: 311252 -	· CS-8 North Wall			
Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		242	mg/Kg	4
Sample: 311253 -	CS-8 South Wall			
Param	Flag	Result	Units	RL
Chloride		223	mg/Kg	4
Sample: 311254 -	CS-8 Bottom Hole 4'			
Param	Flag	Result	Units	RL
Chloride		309	mg/Kg	4



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: October 15, 2012

# Work Order: 12100815

Project Location:Eddy Co., NMProject Name:COG/BKU #100Project Number:114-6401448

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
311225	Trench-1 5' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311226	Trench-1 7' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311227	Trench-1 9' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311228	Trench-1 11' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311229	Trench-1 13' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311230	CS-1 South Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311231	CS-1 East Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311232	CS-1 West Wall (AH-1)	soil	2012-10-01	00:00	2012-10-08
311233	CS-1 Bottom Hole 4' (AH-1)	soil	2012-10-01	00:00	2012-10-08
311234	CS-2 North Wall	soil	2012-10-02	00:00	2012-10-08
311235	CS-2 South Wall	soil	2012-10-02	00:00	2012-10-08
311236	CS-2 Bottom Hole 2'	soil	2012-10-02	00:00	2012-10-08
311237	CS-3 North Wall	soil	2012-10-03	00:00	2012-10-08
311238	CS-3 South Wall	soil	2012-10-03	00:00	2012-10-08
311239	CS-3 Bottom Hole 2'	soil	2012-10-03	00:00	2012-10-08
311240	CS-4 North Wall	soil	2012-10-04	00:00	2012-10-08
311241	CS-4 South Wall	soil	2012-10-04	00:00	2012-10-08
311242	CS-4 Bottom Hole 2'	soil	2012-10-04	00:00	2012-10-08

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
311243	CS-5 North Wall	soil	2012-10-04	00:00	2012-10-08
311244	CS-5 South Wall	soil	2012-10-04	00:00	2012-10-08
311245	CS-5 Bottom Hole 2'	soil	2012-10-04	00:00	2012-10-08
311246	CS-6 North Wall	soil	2012-10-05	00:00	2012-10-08
311247	CS-6 South Wall	soil	2012-10-05	00:00	2012-10-08
311248	CS-6 Bottom Hole 2'	soil	2012-10-05	00:00	2012-10-08
311249	CS-7 North Wall	soil	2012-10-05	00:00	2012-10-08
311250	CS-7 South Wall	soil	2012-10-05	00:00	2012-10-08
311251	CS-7 Bottom Hole 2'	soil	2012-10-05	00:00	2012-10-08
311252	CS-8 North Wall	soil	2012-10-05	00:00	2012-10-08
311253	CS-8 South Wall	soil	2012-10-05	00:00	2012-10-08
311254	CS-8 Bottom Hole 4'	soil	2012-10-05	00:00	2012-10-08

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

Michael april

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

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# **Case Narrative**

Samples for project COG/BKU #100 were received by TraceAnalysis, Inc. on 2012-10-08 and assigned to work order 12100815. Samples for work order 12100815 were received intact at a temperature of 3.7 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	81080	2012-10-14 at 12:23	95699	2012-10-15 at 12:32
Chloride (Titration)	SM 4500-Cl B	81080	2012-10-14 at 12:23	95700	2012-10-15 at 12:34
Chloride (Titration)	SM 4500-Cl B	81080	2012-10-14 at 12:23	95701	2012-10-15 at 12:34

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 12100815 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: October 15, 2012 114-6401448

#### Work Order: 12100815 COG/BKU #100

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# **Analytical Report**

#### Sample: 311225 - Trench-1 5' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95699 81080		Analy Date A Sampl	tical Method: Analyzed: e Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
				RL			
Parameter	F	lag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride				922	mg/Kg	5	4.00

#### Sample: 311226 - Trench-1 7' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95699 81080	Analytic Date An Sample 2	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cart	RL Besult	Units	Dilution	RI.
Chloride	riag	Cert	922	mg/Kg	5	4.00

#### Sample: 311227 - Trench-1 9' (AH-1)

Trep Daten.	01000	Dampie		2012-10-14	i repared by.	mu
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			884	mg/Kg	5	4.00

Report Date 114-6401448	: October 15, 2012	Work Order: 1210081 COG/BKU #100		100815 ±100	Page Number: Eddy Co	7 of 21 o., NM
Sample: 31	1228 - Trench-1 11' (AH-1	)				
Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95699	Date An	alyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample	Preparation:	2012-10-14	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			732	mg/Kg	5	4.00

## Sample: 311229 - Trench-1 13' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95699 81080	Analytic Date An Sample	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flor	Cort	RL	IInita	Dilution	τα
Chloride	riag	Cert	471	mg/Kg	5	4.00

## Sample: 311230 - CS-1 South Wall (AH-1)

Chloride	Fiag	Cert	138	mg/Kg	5	4.00
Parameter	Flor	Cort	RL	Unite	Dilution	DI
Analysis: QC Batch: Prep Batch:	Chloride (Titration) 95699 81080	Analytic Date An Sample I	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Laboratory:	Midland					

## Sample: 311231 - CS-1 East Wall (AH-1)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95699	Date Analyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample Preparation:	2012-10-14	Prepared By:	AR

Report Date: October 15, 2012 114-6401448		Work Order: 12100815 COG/BKU #100			Page Number: 8 of 21 Eddy Co., NM	
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride			238	mg/Kg	5	4.00

## Sample: 311232 - CS-1 West Wall (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95699 81080	Analytic Date An Sample	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride	U		<20.0	mg/Kg	5	4.00

### Sample: 311233 - CS-1 Bottom Hole 4' (AH-1)

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95699 81080	Analyt Date A Sample	ical Method: analyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			984	mg/Kg	5	4.00

#### Sample: 311234 - CS-2 North Wall

Laboratory:MidlandAnalysis:Chloride (Titration)QC Batch:95699Prep Batch:81080		Anal Date Samj	ytical Method: Analyzed: ple Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			271	mg/Kg	5	4.00

Report Date 114-6401448	: October 15, 2012	Wo	rk Order: 12 COG/BKU #	100815 100	Page Number: 9 Eddy Co	9 of 21 o., NM
Sample: 31	1235 - CS-2 South Wall					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Analytic Date An Sample	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			162	mg/Kg	5	4.00

#### Sample: 311236 - CS-2 Bottom Hole 2'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Analytic Date An Sample 1	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride		· · · · · · · · · · · · · · · · · · ·	253	mg/Kg	5	4.00

#### Sample: 311237 - CS-3 North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Analytic Date An Sample	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
<b>D</b>		<b>a</b> .	RL		<b>D</b> .4	
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			210	mg/Kg	5	4.00

#### Sample: 311238 - CS-3 South Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95700	Date Analyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample Preparation:	2012-10-14	Prepared By:	AR

Report Date: October 15, 2012 114-6401448		Work Order: 12100815 COG/BKU #100			Page Number: 10 of 21 Eddy Co., NM	
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			124	mg/Kg	5	4.00

## Sample: 311239 - CS-3 Bottom Hole 2'

Chloride			95.4	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Sample I	Preparation:	2012-10-14	Prepared By:	AR
QC Batch:	95700	Date Analyzed:		2012-10-15	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

#### Sample: 311240 - CS-4 North Wall

Chloride			124	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Date Analyzed: Sample Preparation:		2012-10-14	Prepared By:	AR
QC Batch:	95700			2012-10-15	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

#### Sample: 311241 - CS-4 South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Ar Da Sa	nalytical Method: ate Analyzed: ample Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	· Cer	RL t Result	Units	s Dilution	$\mathbf{RL}$
Chloride			210	mg/Kg	g5	4.00

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#### Sample: 311242 - CS-4 Bottom Hole 2'

Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch: 95700		Date Analyzed:		2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample Preparation: 2		2012-10-14	Prepared By:	AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			219	mg/Kg	5	4.00

### Sample: 311243 - CS-5 North Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Analyti Date A Sample	cal Method: nalyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Donomotor	Flor	Cont	RL	Ĭ In:to	Dilution	DI
Chloride	riag	Cert	243	mg/Kg	5	4.00

#### Sample: 311244 - CS-5 South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95700 81080	Analytic Date An Sample I	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			281	mg/Kg	5	4.00

#### Sample: 311245 - CS-5 Bottom Hole 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95701	Date Analyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample Preparation:	2012-10-14	Prepared By:	AR

Report Date: October 15, 2012 114-6401448		Wo	Work Order: 12100815 COG/BKU #100			r: 12 of 21 y Co., NM
Parameter	Flag	RL Cert Result Units			Dilution	$\mathbf{RL}$
Chloride	<u>_</u>		299	mg/Kg	5	4.00

## Sample: 311246 - CS-6 North Wall

Chloride			309	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Sample 1	Preparation:	2012-10-14	Prepared By:	AR
QC Batch:	95701	Date Analyzed:		2012-10-15	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

## Sample: 311247 - CS-6 South Wall

Chloride			394	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Sample Preparation:		2012-10-14	Prepared By:	AR
QC Batch: 95701		Date Analyzed:		2012-10-15	Analyzed By:	AR
Analysis: Chloride (Titration)		Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

#### Sample: 311248 - CS-6 Bottom Hole 2'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95701 81080	An Da Sai	alytical Method: te Analyzed: nple Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter	Flag	g Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			266	mg/Kg	5	4.00

Report Date 114-6401448	: October 15, 2012	Work Order: 12100815 COG/BKU #100			Page Number: 1 Eddy Co	3 of 21 o., NM
Sample: 31	1249 - CS-7 North Wall					
Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytical Method: S		SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95701	Date An	alyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample	Preparation:	2012-10-14	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			329	mg/Kg	5	4.00
				<u> </u>		

#### Sample: 311250 - CS-7 South Wall

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95701 81080	Analytic Date An Sample	al Method: alyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			361	mg/Kg	5	4.00

#### Sample: 311251 - CS-7 Bottom Hole 2'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 95701 81080	Analytic Date An Sample 3	cal Method: aalyzed: Preparation:	SM 4500-Cl B 2012-10-15 2012-10-14	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			$\mathbf{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			285	mg/Kg	5	4.00

#### Sample: 311252 - CS-8 North Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95701	Date Analyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	Sample Preparation:	2012-10-14	Prepared By:	AR

Report Date: Octobe 114-6401448	r 15, 2012	Wo	rk Order: 1210081 COG/BKU #100		Page Numbe Edd	r: 14 of 21 y Co., NM
Parameter	Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	$\mathbf{RL}$
Chloride			242	mg/Kg	5	4.00

## Sample: 311253 - CS-8 South Wall

Chloride			223	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Sample	Preparation:	2012-10-14	Prepared By:	AR
QC Batch:	95701	Date A	nalyzed:	2012-10-15	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analyti	cal Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

## Sample: 311254 - CS-8 Bottom Hole 4'

Chloride			309	mg/Kg	5	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	81080	Sample 1	Preparation:	2012-10-14	Prepared By:	AR
QC Batch:	95701	Date An	alyzed:	2012-10-15	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

Report Date: October 15, 2012 114-6401448 Work Order: 12100815 COG/BKU #100 Page Number: 15 of 21 Eddy Co., NM

# Method Blanks

Method Blank (1)	QC Batch: 95699				
QC Batch: 95699 Prep Batch: 81080		Date Analyzed: QC Preparation:	2012-10-15 2012-10-14	Analyze Prepare	d By: AR d By: AR
Parameter Chloride	Flag	Cert	M Re <3	IDL sult Units 3.85 mg/Kg	RL 4
Method Blank (1)	QC Batch: 95700				
QC Batch: 95700		Date Analyzed:	2012-10-15	Analyze	d By: AR
Prep Batch: 81080		QC Preparation:	2012-10-14	Prepared	d By: AR
			М	DL	
Parameter	Flag	Cert	Res	sult Units	RL
Chloride			<:	3.85 mg/Kg	4
Method Blank (1)	QC Batch: 95701				
QC Batch: 95701		Date Analyzed:	2012-10-15	Analyze	Bv: AR
Prep Batch: 81080		QC Preparation:	2012-10-14	Preparec	By: AR
			М	DL	
Parameter	Flag	Cert	Res	sult Units	RL
Chloride	·····		<3	8.85 mg/Kg	4

Report Date: October 15, 2012 114-6401448

#### Work Order: 12100815 COG/BKU #100

## Laboratory Control Spikes

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

QC Batch:	95699			Dat	e Analyzec	l: 201	2-10-15			Ana	alyzed B	y: AR
Prep Batch:	81080			$\mathbf{QC}$	Preparatio	on: 201	2-10-14			Pre	pared By	y: AR
					LCS			Spike	М	atrix		Rec.
Param			$\mathbf{F}$	С	Result	Units	Dil.	Amount	R	esult I	Rec.	Limit
Chloride					2680	mg/Kg	1	2500	<	3.85	107	85 - 115
Percent recov	very is based on the sp	ike	resu	lt. RPI	) is based of	on the sp	oike and sp	oike duplica	ate res	ult.		
				LCSI	)		Spike	Matrix		Rec.		RPD
Param		F	C	Resul	t Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride				2640	mg/Kg	1	2500	<3.85	106	85 - 115	2	20
Laboratory	Control Spike (LC	S-1	.)									
QC Batch:	95700			Dat	e Analyzed	: 2013	2-10-15			Ana	lyzed B	y: AR
Prep Batch:	81080			QC	Preparatio	n: 2011	2-10-14			Pre	pared By	7: AR
					LCS			Spike	Ma	atrix		Rec.
Param			F	С	Result	Units	Dil.	Amount	Re	sult l	Rec.	Limit
Chloride					2590	mg/Kg	1	2500	<	3.85	104	85 - 115
Percent recov	very is based on the sp	ike	resu	lt. RPI	) is based o	on the sp	ike and sp	ike duplica	te rest	ılt.		
				LCSD	ł		Spike	Matrix		Rec.		RPD
Param		F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride				2700	mg/Kg	1	2500	<3.85	108	85 - 115	4	20

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

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

QC Batch:	95701	Date Analyzed:	2012-10-15	Analyzed By:	AR
Prep Batch:	81080	QC Preparation:	2012-10-14	Prepared By:	AR

Report Date: October 15, 2012 114-6401448			Work Order: 12100815 F COG/BKU #100						Page	age Number: 17 of 21 Eddy Co., NM		
				LCS			Spike	N	<b>l</b> atrix		Rec.	
Param		F	C	Result	Units	Dil.	Amoun	t F	Result	Rec.	Limit	
Chloride				2690	mg/K	<u>g 1</u>	2500		<3.85	108	85 - 115	
Percent recovery is based on the	spike	e resi	ılt. RP	D is based	on the s	spike and s	spike dupli	cate re	sult.			
			LCSI	)		Spike	Matrix		Rec.		RPD	
Param	$\mathbf{F}$	С	Resu	lt Units	5 Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
Chloride			2550	mg/K	g 1	2500	<3.85	102	85 - 11	5 5	20	
Percent recovery is based on the	spik	e rest	ılt. RP	D is based	on the s	pike and a	spike dupli	cate re	sult.			
-	-					-	• •					
Matrix Spike (MS-1) Spike	d Sa	mple	: 31123	4								
OC Batch: 95699			Dat	te Analyze	d 201	12-10-15			Δn	alvzed B	W AR	
Prep Batch: 81080			QC	Preparati	ion: 201	12-10-10			Pre	epared B	v: AR	
			•								J	
				240			a	хτ.	, <b>.</b>		D	
Daram		F	C	MS	Unita	Dil	Spike	Ma	utrix		Rec.	
Chloride		r	0	2750	mg/Kg	<u></u> 5	2500		$\frac{5010}{71}$	$\frac{1}{20}$ 7	89 - 121	
Demonst recommunic based on the			14 DD		mg/115				· · · · ·	<u> </u>	0.0 - 121	
Percent recovery is based on the	зріке	e resu	lit. RP	D is based	on the s	pike and s	spike auplie	cate res	suit.			
			MSD			Spike	Matrix		Rec.		RPD	
Param	F	C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
Chloride			2820	mg/Kg	5	2500	271	102	78.9 - 12	1 2	20	
Percent recovery is based on the s	spike	e resu	lt. RPI	D is based	on the s	pike and s	pike duplic	eate res	sult.			
-	-					-						
Matrix Spike (MS-1) Spike	d Sa	mple	: 31124	4								
OC Batch: 95700			Dat	e Analwza	d. 201	2_10 15			An	alwood B		
Prep Batch: 81080				Prenarati	on 201	2-10-15			Pre	enared B	y: AR	
			<b>~</b> {~	roparati	.011, 201	<b>U</b> 10 14			110	pared bj	y. 2110	
							<i></i>				_	
D		T)	~	MS	<b>TT</b> */	<b>D</b> .1	Spike	Ma	trix		Rec.	
Param Chlorida		r	<u> </u>	Result	Units	<u></u>	Amount	Ke	sult R	ec.	Limit	
				2190	mg/rg	0	2000	Z	. 10		5.9 - 121	
Percent recovery is based on the s	spike	e resu	ut. RPI	J is based	on the s	pike and s	pike duplic	ate res	sult.			
			MSD			Spike	Matrix		Rec.		RPD	
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
Chloride			2730	mg/Kg	5	2500	281	98	78.9 - 12	1 2	20	
Parcent recovery is based on the	mile	roeu		) is based	on the a	nilio and a	nika dunlia	oto rec		······································		

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

Report Date: October 15, 2012 114-6401448		Work CO	Order: 1 G/BKU	l2100815 #100			Page Nu	ımber: 1 Eddy C	18 of 21 o., NM	
Matrix Spike (MS-1) Spiked Samp	le: 311254									
QC Batch: 95701 Prep Batch: 81080	Date QC∶	Date Analyzed: 2012-10-15 QC Preparation: 2012-10-14						Analyzed By: AR Prepared By: AR		
Param F	CF	MS Result	Units	Dil.	Spike Amount	Mat Res	rix ult Rec	] . I	Rec. Jimit	
Chloride		2600	mg/Kg	5	2500	30	9 92	78.	9 - 121	
Percent recovery is based on the spike rea	sult. RPD	is based	on the s	pike and s	pike duplie	cate resi	alt.			
	MSD			Spike	Matrix		Rec.		RPD	
Param F C	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit	
Chloride	2690	mg/Kg	5	2500	309	95	78.9 - 121	3	20	

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

Report Date: October 15, 2012 114-6401448

# **Calibration Standards**

## Standard (CCV-1)

QC Batch:	95699			Date A	Analyzed:	2012-10-15		Analy	zed By: AR
					CCVs True	CCVs Found	CCVs Percent	Percent	Date
					Inte	round	rercent	necovery	Dave
Param		Flag	$\mathbf{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2012-10-15

## Standard (CCV-2)

QC Batch:	95699			Date A	Analyzed:	2012-10-15		Analy	zed By: AR
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	99.4	99	85 - 115	2012-10-15

### Standard (CCV-1)

QC Batch:	95700			Date A	Analyzed: 2	2012-10-15		Analy	zed By: AR
					CCVs	$\mathrm{CCVs}$	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	2012-10-15

## Standard (CCV-2)

QC Batch:	95700			Date A	nalyzed:	2012-10-15		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	2012-10-15

Report Date: 0 114-6401448	October 15, 20	)12		Work Orde COG/B	Page Number: 20 of 21 Eddy Co., NM				
Standard (CC	CV-1)								
QC Batch: 95	701		Date A	Analyzed: 2	2012-10-15		Analy	zed By: AR	
				CCVs	CCVs	CCVs	Percent	Dete	
D	Elem	Cont	Tinita	Gana	Found	Percent	Recovery	Date	
raram Clinit	riag	Cert	Units		Conc.			Analyzed	
Standard (CC	CV-2)								
QC Batch: 95	701		Date A	analyzed: 2	012-10-15		Analy	zed By: AR	
				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	2012-10-15	

Report Date: October 15, 2012 114-6401448

Work Order: 12100815 COG/BKU #100 Page Number: 21 of 21 Eddy Co., NM

## Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample 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.
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

## Attachments

The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

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## **Summary Report**

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

Project Location:Eddy Co., NMProject Name:COG/BKU #100Project Number:114-6401448

Report Date: July 20, 2012

Work Order: 12070517

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
302733	AH-1 0-1'	soil	2012-07-03	00:00	2012-07-05
302734	AH-1 1-1.5"	soil	2012-07-03	00:00	2012-07-05

		]	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)
302733 - AH-1 0-1'	0.223	0.259	0.410	0.944	<250 qs	66.2 Qs

#### Sample: 302733 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		11700	mg/Kg	4

#### Sample: 302734 - AH-1 1-1.5"

Param	Flag	Result	Units	$\mathbf{RL}$
Chloride		10000	mg/Kg	4



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

806-794-1296 FAX 806-794-1298 915-585-3443 FAX 915-585-4944 432-689-6301 FAX 432-689-6313 972-242-7750

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

## Analytical and Quality Control Report (Corrected Report)

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

Report Date: July 20, 2012

Work Order: 12070517

Project Location:Eddy Co., NMProject Name:COG/BKU #100Project Number:114-6401448

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
302733	AH-1 0-1'	soil	2012-07-03	00:00	2012-07-05
302734	AH-1 1-1.5"	soil	2012-07-03	00:00	2012-07-05

#### Report Corrections (Work Order 12070517)

• 7/18/12: Removed 48-hour flag from BTEX.

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

Michael april

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

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## **Case Narrative**

Samples for project COG/BKU #100 were received by TraceAnalysis, Inc. on 2012-07-05 and assigned to work order 12070517. Samples for work order 12070517 were received intact at a temperature of 4.0 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	78843	2012-07-11 at 15:36	92978	2012-07-11 at 15:36
Chloride (Titration)	SM 4500-Cl B	78690	2012-07-06 at 08:44	92800	2012-07-06 at 14:52
TPH DRO - NEW	S 8015 D	78748	2012-07-09 at 09:00	92862	2012-07-09 at 11:00
TPH GRO	S 8015 D	78843	2012-07-11 at 15:36	92979	2012-07-11 at 15:36

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 12070517 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: July 20, 2012 114-6401448

#### Work Order: 12070517 COG/BKU #100

 $\mathbf{RL}$ 

50.0

Dilution

5

# **Analytical Report**

#### Sample: 302733 - AH-1 0-1'

Laboratory:	Lubbock		۸.	n a lasti a a l	Mathad.	0.04	101 D			Dura Mathad		5025
Analysis:	D1 DA 02078			naiyucai ata Anab	Method:	201	121D 9.07 '	11		A nalwood Bw	: 5 71	2030 M
Prep Batch	78843		Sa	ate Anal ample Pr	yzeu. eparation	201	2-07-1 2-07-1	11		Prenared By	21 71	M
r rop Batom			~~		oparation					Tioparoa 255.		
						$\mathbf{RL}$						
Parameter		Flag		Cert	]	Result		Units		Dilution		RL
Benzene				1		0.223		mg/Kg		1	0.	0200
Toluene				1		0.259		mg/Kg		1	0.	0200
Ethylbenzene	9			1		0.410		mg/Kg		1	0.	0200
Xylene				1		0.944		mg/Kg		11	0.	0200
									Spike	Percent	Reco	overy
Surrogate			Flag	Cert	Result	Uni	$\mathbf{ts}$	Dilution	Amount	Recovery	Lin	nits
Trifluorotolue	ene (TFT)				1.89	mg/	Kg	1	2.00	94	70 -	130
4-Bromofluor	obenzene (4-BFB)	Qar	Qar		2.90	mg/	Kg	1	2.00	145	70 -	130
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration 92800 78690	ı)		Analy Date Samp	tical Met Analyzed le Prepar	hod: : ation:	SM 2012 2012	4500-Cl B 2-07-06 2-07-06		Prep Metho Analyzed B Prepared B	od: l y: l y: l	N/A AR AR
						RL						
Parameter		Flag		Cert	I	Result		Units		Dilution		RL
Chloride					1	1700		mg/Kg		10		4.00
Sample: 30	2733 - AH-1 0-1'											
Laboratory:	Midland											
Analysis:	TPH DRO - NEW			Anal	ytical Me	thod:	S 8	015 D		Prep Metho	d: I	N/A
QC Batch:	92862			Date	Analyzed	d:	201	2-07-09		Analyzed B	y: (	CW
Prep Batch:	78748			Samp	ole Prepa	ration:	201	2-07-09		Prepared B	y: (	CW
						RL						

Result

<250

Units

mg/Kg

Flag

Qs

Parameter

DRO

 $\mathbf{Cert}$ 

2

Report Date: 114-6401448	), 2012			Page N	Page Number: 6 of 18 Eddy Co., NM				
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qar		260	mg/Kg	5	100	260	49.3 - 157.5

#### Sample: 302733 - AH-1 0-1'

Laboratory: Analysis:	Lubbock TPH GRO		A	analytica	al Method:	S 8015	D		Prep Method	: S 5035
Prep Batch: 78843				Sample Preparation: 20			7-11		Prepared By	ZLM
						$\mathbf{RL}$				
Parameter		Flag		Cert	R	lesult	Units	ł	Dilution	$\mathbf{RL}$
GRO		Qs		1		66.2	mg/Kg		1	2.00
<b>G</b>			151	Claut	D	¥7	Dilation	Spike	Percent	Recovery
Surrogate	(22222)		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)				1.57	mg/Kg	1	2.00	78	70 - 130
4-Bromofluor	obenzene (4-BFB)	Qsr	Qsr		2.84	mg/Kg	1	2.00	142	70 - 130

#### Sample: 302734 - AH-1 1-1.5"

Chloride			10000	mg/Kg	10	4.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Prep Batch:	78690	Sample I	Preparation:	2012-07-06	Prepared By:	AR
QC Batch:	92800	Date An	alyzed:	2012-07-06	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland					

Report Date: July 20, 2012	Work Order: 12070517	Page Number: 7 of 18
114-6401448	COG/BKU #100	Eddy Co., NM
		······································

## Method Blanks

Method Bla	ank (1)	QC Batch: 92800				
QC Batch: Prep Batch:	92800 78690		Date Analyzed: QC Preparation:	2012-07-06 2012-07-06	Analyzed By: Prepared By:	AR AR
				MDL		
Parameter		Flag	Cert	Result	Units	RL
Chloride				<3.85	mg/Kg	4

Method Bla	ank (1)	QC Batch: 92862					
QC Batch: Prep Batch:	92862 78748		Date Analyzed: QC Preparation:	2012-07-09 2012-07-09		Analyzed By: Prepared By:	CW CW
					MDL		

Parameter		Fl	ag	Cert	Re	sult	Units	$\mathbf{RL}$
DRO		,		2	<14.5		mg/Kg	50
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Becovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	52 - 160.8

### Method Blank (1) QC Batch: 92978

QC Batch: 92978		D	ate Analyzed:	2012-07-11	Analyzed By:	ZLM
Prep Batch:	78843	Q	C Preparation:	2012-07-11	Prepared By:	ZLM
				MDL		
Parameter		Flag	Cert	Result	Units	RL
Benzene			1	< 0.00365	mg/Kg	0.02
Toluene			1	< 0.00816	mg/Kg	0.02
Ethylbenzene	;		1	< 0.00560	mg/Kg	0.02
Xylene			1	0.0126	mg/Kg	0.02

Report Date: July 20, 2012 114-6401448		·	Work Ord COG/E	Page Number: 8 of 18 Eddy Co., NM				
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.96	mg/Kg	1	2.00	98	70 - 130
Method Blank (1) QC Batch QC Batch: 92979	: 92979	Date Ar	alyzed:	2012-07-11			Analyzed	By: ZLM
Prep Batch: 78843		QC Prej	paration:	2012-07-11	MDL		Prepared I	By: ZLM
Parameter	Flag		Cert		Result	<b>.</b>	Units	RL
GRO			1		0.540		mg/Kg	2
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70 - 130

Report Date: July 20, 2012 114-6401448

# Laboratory Control Spikes

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

QC Batch: Prep Batch:	92800 78690			Date QC	e Analyzeo Preparatio	l: 201 on: 201	2-07-06 2-07-06			) I	Analyz Prepar	ed By ed By:	AR AR
Param			F	C	LCS Result	Units	Dil.	Spike Amoun	t R	latrix lesult	Rec		Rec. Limit
Chloride					2630	mg/Kg	; 1	2500	<	<3.85	105	8	5 - 115
Percent recov	ery is based on the s	pike	resu	lt. RPD	is based	on the s	pike and	spike dupli	cate res	sult.			
Param		F	С	LCSD Result	Units	Dil.	Spike Amount	Matrix t Result	Rec.	Rec Lim	c. 1it l	RPD	RPD Limit
Chloride				2720	mg/Kg	1	2500	<3.85	109	85 - 1	115	3	20
Laboratory QC Batch: Prep Batch:	Control Spike (LC 92862 78748	CS-1	)	Date QC I	Analyzed Preparatio	: 201 n: 201	2-07-09 2-07-09	Sailes	Ма	A P	nalyze 'repare	d By: d By:	CW CW
Laboratory QC Batch: Prep Batch: Param	Control Spike (LC 92862 78748	CS-1	.) F	Date QC I C I	Analyzed Preparatio LCS Result	: 201 n: 201 Units	2-07-09 2-07-09 Dil.	Spike Amount	Ma Res	A P trix sult	nalyze repare Rec.	d By: d By: I I	CW CW Rec.
Laboratory QC Batch: Prep Batch: Param DRO	Control Spike (LC 92862 78748	CS-1	) F	Date QC H C H	Analyzed Preparatio LCS Result 263	: 201 n: 201 Units mg/Kg	2-07-09 2-07-09 Dil. 1	Spike Amount 250	Ma Rea <1	A P trix sult 4.5	nalyze repare <u>Rec.</u> 105	d By: d By: l L 62 -	CW CW Rec. .imit - 128.3
Laboratory QC Batch: Prep Batch: Param DRO Percent recove	Control Spike (LC 92862 78748 ery is based on the s	CS-1	F resu	Date QC I 2 It. RPD LCSD	Analyzed Preparatio LCS Result 263 is based o	: 201 n: 201 Units mg/Kg on the sp	2-07-09 2-07-09 Dil. 1 pike and s Spike	Spike Amount 250 spike duplic Matrix	Ma Re: <1 cate res	A P trix sult 4.5 ult. Rec.	nalyze repare <u>Rec.</u> 105	d By: d By: l L 62 -	CW CW Rec. 128.3
Laboratory QC Batch: Prep Batch: Param DRO Percent recove Param	Control Spike (LC 92862 78748 ery is based on the s	CS-1	) F resu	Date QC I 2 lt. RPD LCSD Result	Analyzed Preparatio LCS Result 263 is based o Units	: 201 n: 201 Units mg/Kg on the sp Dil.	2-07-09 2-07-09 Dil. 1 Dike and s Spike Amount	Spike Amount 250 spike duplic Matrix Result	Ma Rea <1 cate res Rec.	A P trix sult 4.5 ult. Rec. Limiy	nalyze repare Rec. 105 t F	d By: d By: I L 62 -	CW CW Rec. 128.3 RPD Limit
Laboratory QC Batch: Prep Batch: Param DRO Percent recove Param DRO	Control Spike (LC 92862 78748 ery is based on the s	CS-1	) F resu	Date QC I 2 lt. RPD LCSD Result 263	Analyzed Preparatio LCS Result 263 is based o Units mg/Kg	: 201 n: 201 <u>Units</u> mg/Kg on the sp <u>Dil.</u> 1	2-07-09 2-07-09 Dil. 1 Dike and s Spike Amount 250	Spike Amount 250 spike duplic Matrix Result <14.5	Ma Res <1 sate res Rec. 105	A P trix sult 4.5 ult. Rec. Limit 62 - 12	Rec. 105 t F 8.3	d By: d By: l L 62 - RPD 0	CW CW Rec. 128.3 RPD Limit 20
Laboratory QC Batch: Prep Batch: Param DRO Percent recove Param DRO Percent recove	Control Spike (LC 92862 78748 ery is based on the s	CS-1	) F resul	Date QC I 2 lt. RPD LCSD Result 263 lt. RPD	Analyzed Preparatio LCS Result 263 is based o Units mg/Kg is based o	: 201 n: 201 <u>Units</u> <u>mg/Kg</u> on the sp <u>Dil.</u> 1 on the sp	2-07-09 2-07-09 Dil. 1 pike and s Spike Amount 250 pike and s	Spike Amount 250 spike duplic Matrix Result <14.5 spike duplic	Ma Rer <1 cate res Rec. 105 cate res	A P trix sult 4.5 ult. Rec. Limit 62 - 12 ult.	Rec. 105 t F	d By: d By: L 62 - RPD 0	CW CW Rec. 128.3 RPD Limit 20
Laboratory QC Batch: Prep Batch: Param DRO Percent recove Param DRO Percent recove	Control Spike (LC 92862 78748 ery is based on the s	CS-1	F resul	Date QC I 2 lt. RPD LCSD Result 263 lt. RPD LCSD	Analyzed Preparatio LCS Result 263 is based o Units mg/Kg is based o	: 201 n: 201 <u>mg/Kg</u> on the sp <u>Dil.</u> 1 on the sp	2-07-09 2-07-09 Dil. 1 Dike and s Spike Amount 250 Dike and s	Spike Amount 250 spike duplic Matrix Result <14.5 spike duplic Spike	Ma Res <1 :ate res Rec. 105 :ate res LCS	A P trix sult 4.5 ult. Ecs LCS	Rec. 105 t F 8.3	d By: d By: l L 62 - RPD 0 R	CW CW Rec. <u>imit</u> <u>128.3</u> RPD Limit 20
Laboratory QC Batch: Prep Batch: Param DRO Percent recove Param DRO Percent recove Surrogate	Control Spike (LC 92862 78748 ery is based on the s ery is based on the s	F pike LCS Resu	) F result result S lt	Date QC H 2 It. RPD LCSD Result 263 It. RPD LCSD Result	Analyzed Preparatio LCS Result 263 is based o Units mg/Kg is based o	: 201 n: 201 <u>Units</u> mg/Kg on the sp <u>Dil.</u> 1 on the sp ts	2-07-09 2-07-09 Dil. 1 pike and s Spike Amount 250 pike and s Dil. <i>A</i>	Spike Amount 250 spike duplic Matrix Result <14.5 spike duplic Spike Amount	Ma Rec. 105 ate res LCS Rec.	A P trix sult 4.5 ult. Rec. Limit 62 - 12 ult. LCS Rea	Rec. 105 t F 8.3 SD c.	d By: d By: L 62 - R D Li	CW CW Rec. imit 128.3 RPD Limit 20 ec. mit

Laboratory Control Spike (LCS-1)QC Batch:92978Prep Batch:78843ParamFCBenzeneToluene1Ethylbenzene1Xylene1Percent recovery is based on the spike result.ParamFCReBenzene12Toluene12Toluene12Toluene12Toluene12Toluene12SurrogateTrifluorotoluene (TFT)4-Bromofluorobenzene (4-BFB)Laboratory Control Spike (LCS-1)QC Batch:92979Prep Batch:78843FCGRO1Percent recovery is based on the spike result.		Work Order: 12070517 COG/BKU #100					
QC Batch:92978Prep Batch:78843ParamFCBenzene1Toluene1Ethylbenzene1Xylene1Percent recovery is based on the spike result.ParamFCRe1Benzene112Toluene122Nylene122Nylene122Nylene123Aylene145Percent recovery is based on the spike result.Surrogate1Trifluorotoluene (TFT)4-Bromofluorobenzene (4-BFB)Laboratory Control Spike (LCS-1)QC Batch:92979Prep Batch:78843ParamFCGRO1Percent recovery is based on the spike result.							
Prep Batch:78843ParamFCBenzene1Toluene1Ethylbenzene1Xylene1Percent recovery is based on the spike result.ParamFCReBenzene11ParamFCReBenzene112Toluene12Ethylbenzene12Aylene16Percent recovery is based on the spike result.SurrogateTrifluorotoluene (TFT)4-Bromofluorobenzene (4-BFB)Laboratory Control Spike (LCS-1)QC Batch:92979Prep Batch:78843ParamFCGRO1Percent recovery is based on the spike result.	Date Analyzed: 20	12-07-11			Analyze	d By:	ZLM
Param F C   Benzene 1   Foluene 1   Chylbenzene 1   Cylene 1   Percent recovery is based on the spike result. L(C)   Param F C   Reference 1 2   Coluene 1 2   Chylbenzene 1 2   Cylene 1 6   Percent recovery is based on the spike result. 6   Surrogate Trifluorotoluene (TFT) -   Homofluorobenzene (4-BFB) - -   Caboratory Control Spike (LCS-1) - -   QC Batch: 92979 - -   Prep Batch: 78843 - -   Param F C -   Param F C -   Param F C -   Parenent recovery is based on the spike result.<	QC Preparation: 20	12-07-11			Prepared	d By:	ZLM
Param F C   Benzene 1   Foluene 1   Sthylbenzene 1   Yene 1   Percent recovery is based on the spike result. LC   Param F C   Benzene 1 2   Chuene 1 2   Benzene 1 2   Coluene 1 2   Schylbenzene 1 2   Kylene 1 6   Percent recovery is based on the spike result. 5   Surrogate 1 6   Prifluorotoluene (TFT) 4 4   Laboratory Control Spike (LCS-1) 2   QC Batch: 92979   Prep Batch: 78843   Param F C   GRO 1   Percent recovery is based on the spike result. 1	LCS		Spike	Matrix		F	lec.
Benzene 1   Foluene 1   Ethylbenzene 1   Percent recovery is based on the spike result. L(C   Param F C   Re Re   Benzene 1 2   Foluene 1 2   Coluene 1 2   Ethylbenzene 1 2   Kylene 1 6   Percent recovery is based on the spike result. 6   Surrogate 1 6   Currogate 1 6   Currogate 1 6   Caboratory Control Spike (LCS-1) 1   QC Batch: 92979   Prep Batch: 78843   Param F C   GRO 1   Percent recovery is based on the spike result. 1	C Result Units	Dil.	Amount	Result	Rec.	$\mathbf{L}$	imit
Coluene 1   Cylene 1   Percent recovery is based on the spike result. L(C   Param F C   Remain F C   Benzene 1 2   Coluene 1 2   Chylbenzene 1 2   Cylene 1 2   Cylene 1 2   Cylene 1 6   Percent recovery is based on the spike result. 1   urrogate 1 6   Yifluorotoluene (TFT) - -   -Bromofluorobenzene (4-BFB) - -   QC Batch: 92979 - -   Param F C C   RO 1 - -   Param F C C   RO 1 - -   Param F C C   Param F C -   Param F C C   Param F C -   Parecent r	2.06 mg/Kg	1	2.00	< 0.00365	103	75.4	- 120
Chylbenzene 1   Aglene 1   Percent recovery is based on the spike result. L(   Param F C Re   Benzene 1 2   Coluene 1 2   Chylbenzene 1 2   Cylene 1 2   Cylene 1 2   Cylene 1 6   Percent recovery is based on the spike result. 1   Burrogate 1 6   Param F C   Aboratory Control Spike (LCS-1) 2   QC Batch: 92979   Prep Batch: 78843   Param F C   RO 1   Percent recovery is based on the spike result. 1	2.04 mg/Kg	1	2.00	< 0.00816	102	74.9	) - 120
tylene 1   Percent recovery is based on the spike result.   Param F C Re   Percent 1 2   Percent 1 2   Poluene 1 2   Percent 1 2   Pylene 1 2   Percent recovery is based on the spike result. 1   urrogate 1 6   Yifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) 1   Param F C   QC Batch: 92979 1   Prep Batch: 78843 1   Param F C   Percent recovery is based on the spike result. 1	2.06 mg/Kg	1	2.00	< 0.00560	103	78.1	- 120
Percent recovery is based on the spike result. L(Param F C Reference 1 2 Benzene 1 2 Coluene 1 2 Chylbenzene 1 2 Cylene 1 6 Percent recovery is based on the spike result. Percent recovery is based on the spike result. Percent recovery Control Spike (LCS-1) CBatch: 92979 Prep Batch: 78843 Param F C RO 1 Percent recovery is based on the spike result.	6.19 mg/Kg	1	6.00	0.0126	103	77.3	8 - 120
Param F C Reprint for the second secon	. RPD is based on the	spike and s	pike duplica	te result.			
Param F C Re   Benzene 1 2   Coluene 1 2   Chylbenzene 1 2   Cylene 1 2   Cylene 1 6   Percent recovery is based on the spike result. 1   Currogate 1 6   Currogate 1 6   Currogate 1 1   Currogate 1 1   Currogate 1 1   Currogate 1 1   Demonfluorobenzene (4-BFB) 1 1   Demonfluorobenzene (4-BFB) 1 1   Correspondence 1 1   Demonfluorobenzene (4-BFB) 1 1   Demonfluorobenzene (4-BFB) 1 1   Demonfluorobenzene (4-BFB) 1 1   Param F C   GRO 1 1   Percent recovery is based on the spike result. 1	CSD	Spike	Matrix	I	Rec.		RPD
ienzene 1 2   bluene 1 6   brencent recovery is based on the spike result. 1   urrogate 1   bromofluorobenzene (4-BFB) 1   brencent: 92979   rep Batch: 78843   brencent recovery is based on the spike result.	esult Units Dil.	Amount	Result	Rec. L	imit	RPD	Limit
bluene 1 2 Chylene 1 2 Cylene 1 6 Percent recovery is based on the spike result. urrogate Yifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Aboratory Control Spike (LCS-1) QC Batch: 92979 Yrep Batch: 78843 Param F C HRO 1 Percent recovery is based on the spike result.	2.07 mg/Kg 1	2.00	< 0.00365	104 75.4	4 - 120	0	20
2 1 2   Cylene 1 6   Percent recovery is based on the spike result. 1 6   urrogate 1 6   'rifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) 1   .aboratory Control Spike (LCS-1) 0 0   .garam F C   .garam F	2.07 mg/Kg 1	2.00	<0.00816	104 74.9	9 - 120	1	<b>20</b>
Xylene 1 6   Percent recovery is based on the spike result.   Purrogate   Yifluorotoluene (TFT)   -Bromofluorobenzene (4-BFB)   Jaboratory Control Spike (LCS-1)   QC Batch: 92979   'rep Batch: 78843   'aram F C   IRO 1   'ercent recovery is based on the spike result.	2.09 mg/Kg 1	2.00	< 0.00560	104 78.1	1 - 120	1	20
Percent recovery is based on the spike result. urrogate Tifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Aboratory Control Spike (LCS-1) QC Batch: 92979 Trep Batch: 78843 Param F C RO 1 Percent recovery is based on the spike result.	6.27 mg/Kg 1	6.00	0.0126	104 77.3	3 - 120	1	20
Willogate   Fifluorotoluene (TFT)   -Bromofluorobenzene (4-BFB)   Jaboratory Control Spike (LCS-1)   QC Batch: 92979   Prep Batch: 78843   Param F   IRO 1   Percent recovery is based on the spike result.	LCS LCSD Begult Begult	Unite	Spike duplica Spil	ke LCS	S LCS	D	Rec.
-Bromofluorobenzene (4-BFB) -Bromofluorobenzene (4-BFB) -Baboratory Control Spike (LCS-1) -December 2020 -December 2020 -Brown F C -Brown F C -		ma/Ka	$\frac{DII.}{1}$ $\frac{AIII0}{20}$	$\frac{110}{0}$ 100	. <u>nec</u>	. 1	120
Jaboratory Control Spike (LCS-1) OC Batch: 92979 Prep Batch: 78843 Param F C Precent recovery is based on the spike result.	2.01 2.04	mg/Kg	1 2.0	0 100	102	70	- 130
Param F C IRO 1 Percent recovery is based on the spike result.	Date Analyzed: 20 QC Preparation: 20	12-07-11 12-07-11			Analyze Preparec	d By: l By:	ZLM ZLM
Param F C GRO 1 Percent recovery is based on the spike result.	LCS		Spike	Matrix		F	lec.
RO 1 Percent recovery is based on the spike result.	C Result Units	Dil.	Amount	Result	Rec.	$\mathbf{L}\mathbf{i}$	mit
ercent recovery is based on the spike result.	1 16.7 mg/K	g 1	20.0	0.54	84	68.9	- 120
	. RPD is based on the	spike and s	pike duplica	te result.			
$\mathbf{L}_{i}$	LCSD	Spike	Matrix	R	lec.		RPD
aram F C R	Result Units Dil.	Amount	Result I	Rec. Li	imit	RPD	Limit
1 1	17.9 mg/Kg 1	20.0	0.54	90 68.9	- 120	7	20
Percent recovery is based on the spike result	0/ 0						

Report Date: July 20, 201 114-6401448	: July 20, 2012 Work Order: 12070517 COG/BKU #100								P	age Ni	imber: Eddy (	11 of 18 Co., NM		
control spikes continued			ı		I CGD				Snil	20	TCS	τc	SD	Bec
Surrogate			R	esult.	Result	Uni	ts	Dil.	Amo	unt	Rec.	R	ec.	Limit
·····				LCS	LCSD				Spil	ke.	LCS	LC	SD	Rec.
Surrogate			R	esult	Result	Uni	ts	Dil.	Amo	unt	Rec.	R	ec.	Limit
Trifluorotoluene (TFT)				1.68	1.80	mg/	Kg	1	2.0	0	84	9	0 '	70 - 130
4-Bromofluorobenzene (4-E	BFB)			1.95	2.02	mg/	Kg	1	2.0	0	98	10	)1 '	70 - 130
Matrix Spike (MS-1)	Spiked	Samp	ole: 30274	2										
QC Batch: 92800			Da	te Analv	zed:	2012-0	7-06					Analy	zed By	: AR
Prep Batch: 78690			QC	Prepara	ation:	2012-0	7-06					Prepa	ared By	: AR
				MS				Spil	ke	Mat	trix		J	Rec.
Param		$\mathbf{F}$	$\mathbf{C}$	Result	Unit	ts I	Dil.	Amo	unt	Res	sult	Rec.	I	imit
Chloride				2880	mg/ŀ	Kg	5	250	0	23	35	106	79.4	- 120.6
Percent recovery is based o	n the spi	ke re	sult. RP	D is base	ed on th	he spike	e and	spike d	luplica	te re	sult.			
			MSD			Sn	ike	Matri	iv		Re	c		RPD
Param	F	r C	Result	Units	a Dil.	. Am	ount	Resu	lt Re	ec.	Lin	nit	RPD	Limit
Chloride			3010	mg/K	g 5	- 25	00	235	11	1	79.4 -	120.6	4	20
Percent recovery is based o	n the spi	ke re	sult. RP	D is base	ed on th	he spike	and	spike d	luplica	te re	sult.			
Matrix Spike (MS-1)	Spiked S	Samp	le: 30273	3										
QC Batch: 92862			Dat	e Analy	zed:	2012-07	7-09					Analy	zed By:	CW
Prep Batch: 78748			QC	Prepara	tion:	2012-07	-09					Prepa	red By:	Cw
_		-	~	MS			-	Sp	oike	M	atrix			Rec.
Param		F	<u> </u>	Result	Un	its	Dil.	Am	ount	<u></u>	esult	Rec		Limit
DRO	Qs	Q	2	372	mg/	/Kg	1	2	50		221	60	45	.5 - 127
Percent recovery is based o	n the spi	ke re	sult. RP	D is base	ed on th	ne spike	and	spike d	luplica	te re	sult.			
			MSI	)		S	pike	Mat	rix		R	ec.		RPD
Param		F	C Resu	lt Uni	ts Di	il. Ar	nount	Res	ult I	Rec.	Liı	nit	RPD	Limit
DRO	Qs	Qs	2 375	mg/	Kg 1	1	250	22	21	62	45.5	- 127	1	20
Percent recovery is based o	n the spi	ke re	sult. RP	D is base	ed on th	ne spike	and	spike d con	luplica tinued	te re 	sult.			

Report Date: July 20, 2012 114-6401448	Work Order: 12070517 COG/BKU #100							P	age Nu	mber: Eddy	12 of 18 Co., NM	
matrix spikes continued												
	M	S	MS	D			Spike	MS	]	MSD		Rec.
Surrogate	Res	ult	Resi	ılt U	nits	Dil.	Amount	Rec	•	Rec.	I	Limit
	M	S	MS	Ð			Spike	MS	1	MSD		Rec.
Surrogate	Res	ult	Resu	ılt U	nits	Dil.	Amount	Rec	•	Rec.	Ι	imit
n-Tricosane	13	7	13	ó mį	g/Kg	1	100	137		135	45.4	- 145.8
Matrix Spike (MS-1) Spi	ked Sa	mple	: 30273:	3								
QC Batch: 92978			Date	e Analyze	d: 201	2-07-11				Analyz	ed By:	ZLM
Prep Batch: 78843			QC	Preparati	on: 201	2-07-11			]	Prepare	ed By:	ZLM
				MS			Spike	Ma	atrix			Rec.
Param		F	С	Result	Units	Dil.	Amoun	t Re	esult	Rec.		Limit
Benzene			1	1.96	mg/Kg	1	2.00	0.	223	87	37	.6 - 142
Toluene			1	2.11	mg/Kg	1	2.00	0.	259	92	38	.6 - 153
Ethylbenzene			1	2.64	mg/Kg	1	2.00	0	.41	112	36	.7 - 172
Xylene			1	7.81	mg/Kg	1	6.00	0.	944	114	36	.7 - 173
Percent recovery is based on th	e spike	resu	lt. RPI	) is based	on the s	pike and	spike dup	licate re	sult.			
			MSD			Spike	Matrix		Re	ec.		RPD
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	Lir	nit	RPD	Limit
Benzene		1	2.04	mg/Kg	<u>; 1</u>	2.00	0.223	91	37.6	- 142	4	20
Toluene		1	2.18	mg/Kg	, 1	2.00	0.259	96	38.6	- 153	3	20
Ethylbenzene		1	2.42	mg/Kg	ş 1	2.00	0.41	100	36.7	- 172	9	20
Xylene		1	7.26	mg/Kg	<u>, 1</u>	6.00	0.944	105	36.7	- 173	7	20
Percent recovery is based on the	e spike	resu	lt. RPI	) is based	on the s	pike and	spike dupl	licate re	sult.			
				MS	MSD			Spike	MS	S MS	SD	Rec.
Surrogate				Result	Result	Units	Dil. A	Amount	Rec	e. Re	ec.	Limit
Trifluorotoluene (TFT)				2.15	2.29	mg/Kg	1	2	108	8 11	14 7	0 - 130
4-Bromofluorobenzene (4-BFB)	Qør	Qsr		3.14	2.52	mg/Kg	1	2	157	7 12	26 7	0 - 130
Matrix Spike (MS-1) Spil	ked Sar	nple	: 302733	3								
QC Batch: 92979			Date	e Analyze	d: 2012	2-07-11			A	Analyze	ed By:	ZLM
Prep Batch: 78843			QC	Preparatio	on: 2011	2-07-11			I	Prepare	d By:	ZLM

continued ...

Report Date: July 20, 2012 114-6401448	Work Order: 12070517 COG/BKU #100						Page Number: 13 of 18 Eddy Co., NM				
matrix spikes continued											
				MS			Spi	ke N	latrix		Rec.
Param		F	C	Result	Units	Dil.	Amo	unt F	Result	Rec.	Limit
				MS			Spi	ke N	latrix		Rec.
Param		$\mathbf{F}$	C I	Result	Units	Dil.	Amo	unt F	lesult	Rec.	Limit
GRO	Qı	Qs	1	117	mg/Kg	g 1	20	0	66.2	254	70 - 130
Percent recovery is based on the	e spike	e resu	lt. RPD	is based	on the s	oike and s	pike dup	olicate res	sult.		
			MSD			Spike	Matr	ix	Rec	э.	RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	s Dil.	Amount	Resu	lt Rec.	Lim	it RPD	) Limit
GRO	Qs Qs	1	107	mg/K	g 1	20.0	66.2	204	70 - 1	130 9	20
Percent recovery is based on the	spike	resu	lt. RPD i	is based	on the sp	oike and sp	oike dup	licate res	ult.		
		•	]	MS	MSD			Spike	MS	MSD	Rec.
Surrogate			R	esult l	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)			1	61	1.23	mg/Kg	1	2	80	62	70 - 130
4-Bromofluorobenzene (4-BFB)	Qar	QBT	3	.35	2.06	mg/Kg	1	2	168	103	70 - 130

Report Date: July 20, 2012 114-6401448 Work Order: 12070517 COG/BKU #100

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# **Calibration Standards**

Standard (CCV-1)

QC Batch:	92800			Date A	Analyzed:	2012-07-06		Analy	zed By: AR
					CCVs	CCVs Found	CCVs Percent	Percent	Data
					Inte	round	1 ercent	recovery	Date
Param		Flag	$\mathbf{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	99.8	100	85 - 115	2012-07-06

#### Standard (CCV-2)

QC Batch:	92800			Date A	Analyzed:	2012-07-06		Analy	zed By: AR
					CCVs	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	2012-07-06

#### Standard (CCV-1)

QC Batch:	92862			Date A	Analyzed:	2012-07-09		Analy	zed By: CW
D					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	$\mathbf{F}$	lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			2	mg/Kg	250	251	100	80 - 120	2012-07-09

#### Standard (CCV-2)

QC Batch:	92862		Date .	Analyzed:	2012-07-09		Analy	zed By: CW
				CCVs	CCVs	CCVs	Percent	_
				True	Found	Percent	Recovery	Date
Param	Fla	g Cert	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	257	103	80 - 120	2012-07-09

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Standard (C	CCV-3)							
QC Batch: 92862			Date .	Analyzed:	2012-07-09		Analy	zed By: CW
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param Flag Cert			Units Conc. Conc. Recovery				Limits	Analyzed
DRO	mg/Kg	250	243	97	80 - 120	2012-07-09		

### Standard (CCV-4)

QC Batch:	92862			Date A	Analyzed:	2012-07-09		Analyz	zed By: CW
_					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	I	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO			2	mg/Kg	250	248	99	80 - 120	2012-07-09

### Standard (CCV-1)

QC Batch:	92978			Date Ana	lyzed: 201	Analyzed By: ZLM			
					CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene			1	mg/kg	0.100	0.106	106	80 - 120	2012-07-11
Toluene			1	mg/kg	0.100	0.104	104	80 - 120	2012-07-11
Ethylbenzen	ie		1	mg/kg	0.100	0.106	106	80 - 120	2012-07-11
Xylene			1	mg/kg	0.300	0.316	105	80 - 120	2012-07-11

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### Standard (CCV-2)

QC Batch:	92978			Analyze	ed By: ZLM				
					CCVs	CCVs	CCVs	Percent	
					True	Found	Percent	Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene			1	mg/kg	0.100	0.0979	98	80 - 120	2012-07-11
Toluene			1	mg/kg	0.100	0.0957	96	80 - 120	2012-07-11
Ethylbenzen	e		1	mg/kg	0.100	0.0965	96	80 - 120	2012-07-11
Xylene			1	mg/kg	0.300	0.292	97	80 - 120	2012-07-11

Standard (CCV-3)				Page Number: 16 of 18 Eddy Co., NM							
QC Batch: 92978		Date Ar	Analyzed By: ZLM								
			CCVs	CCVs	CCVs	Percent					
			True	Found	Percent	Recovery	Date				
Param Flag	g Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
Benzene	1	mg/kg	0.100	0.0963	96	80 - 120	2012-07-11				
Toluene	1	mg/kg	0.100	0.0974	97	80 - 120	2012-07-11				
Ethylbenzene	1	mg/kg	0.100	0.0968	97	80 - 120	2012-07-11				
Xylene	1	mg/kg	0.300	0.287	96	80 - 120	2012-07-11				
Standard (CCV-1)		Data Ar	olwada 90	19.07.11			d D 71 M				
QC Batch: 92979		Date Al	laryzeu: zu	12-07-11		Analyze	ed by: ZLM				
			CCVs	CCVs	CCVs	Percent					
			True	Found	Percent	Recovery	Date				
Param Flag	$\mathbf{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
GRO	1	mg/Kg	1.00	0.889		80 - 120	2012-07-11				
Standard (CCV-2)		5.4									
QC Batch: 92979		Date An	alyzed: 20	12-07-11		Analyze	ed By: ZLM				
			CCVs	CCVs	CCVs	Percent					
			True	Found	Percent Recovery		Date				
Param Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
GRO	1	mg/Kg	1.00	1.09	109	80 - 120	2012-07-11				
Standard (CCV-3)				10.05.11							
QU Batch: 92979		Date An	alyzed: 20	12-07-11		Analyzed By: ZLM					
			CCVs	CCVs	CCVs	Percent					
			True	Found	Percent	Recovery	Date				
Param Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed				
GRO 1	1	mg/Kg	2.00	1.61	80	80 - 120	2012-07-11				

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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
1	NELAP	T104704219-12-8	Lubbock
2	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.
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

### **Result Comments**

1 CCV was double-spiked.

#### Attachments

Report Date: July 20, 2012 114-6401448

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Work Order: 12070517 COG/BKU #100

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The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

1

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Analysis Request of Chain of Custody Record						<u> </u>																
							(Circle or Specify Method No.)															
		<b>TETRA</b> 1910 N. Big Midland, Tex (432) 682-4559	<b>TECH</b> Spring St. (as 79705 • Fax (432) 682-3946							05 (Ext. to C35)	d Cr Pb Hg Se	d Vr Pd Hg Se							TDC	2		
CLIENT NAME: SITE MANAGER:										ž	Ba	SE		0/624	70/62				1			
PROJECT NO .:	PROJECT N	AME: # 100	Eddy Co. NM	CONTAINE	(N)					MOD	Is Ag As	lls Ag As les	Volatiles	8240/826	ni. Vol. 82 /rcna	88	4	(Air)	stos) se (Cation			
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