SITE INFORMATION Report Type: Closure Report General Site Information: **BKU Satellite G Injection Line** Site: COG Operating LLC Company: Section, Township and Range T-17-S **Unit C** Sec. 30 R-30-E NMLC-028784B Lease Number: County: **Eddy County** GPS: 32.81155° N 104.01222° W Surface Owner: **Federal** Mineral Owner: Intersection of Hwy 82 and CR-216 (west of Loco Hills), south on CR-216 0.6 mi, left on Lace C Directions: 0.3 mi, left 1000' to well location. Spill located 900' east of well. Release Data: Date Released: 9/21/2011 Produced Water NOV **0 1** 2012 Type Release: Source of Contamination: Injection line leak Fluid Released: 10 bbls NMOCD ARTESIA 0 bbls Fluids Recovered: Official Communication: Name: Ike Tavarez Pat Ellis Company: COG Operating, LLC Tetra Tech Address: 1910 N. Big Spring 550 W. Texas Ave. Ste. 1300 P.O. Box City: Midland Texas, 79701 Midland, Texas (432) 686-3023 Phone number: (432) 682-4559 Fax: (432) 684-7137 Email: pellis@conchoresources.com iek,tavarez@tetratech.com

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft	0	Ō
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0

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



October 19, 2012

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



Closure Report for the COG Operating LLC., BKU Satellite G Re: Injection Line, Unit C, Section 30, 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 BKU Satellite G Injection Line, Unit C, Section 30, Township 17 South, Range 30 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.81155°, W 104.01222°. The site location is shown on Figures 1 and 2.

Background

According to the C-141 Initial Report, the leak was discovered on September 21, 2011, and released approximately ten (10) barrels of produced water from a corroded injection line located in the pasture. was unable to recover any fluids. The spill initiated from the injection line impacting an area of approximately 15' x 45', which pooled in a native low lying area surrounded by sand dunes. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 30. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 200' below surface. The groundwater data is shown in Appendix B.



Regulatory

A risk-based evaluation was performed for the Site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethyl-benzene 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 October 7, 2011, 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 reports 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 sample at 0-1' was below the RRAL for BTEX and TPH. The chloride impact was not vertically defined, with a bottom sample of 10,600 mg/kg at 1.5-2.0' below surface.

On March 30, 2011, Tetra Tech supervised the installation one borehole (BH-1) using an air rotary drilling rig to assess the soils. The borehole was installed to a depth of 60.0' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The boreholes results are summarized in Table 1.

Elevated chloride concentrations were detected ranging from 1,360 mg/kg at 2-3' to 16,500 mg/kg at 4-5'. The chloride concentrations declined with depth to 292 mg/kg at 39-40' below surface.



Remediation and Conclusion

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. Tetra Tech personnel supervised the excavation and measured approximately 40' x 50' at a depth of approximately 20.0' below surface. The excavated area and depth is highlighted in Table 1 and shown on Figure 4. Approximately 1,840 cubic yards of soil was excavated and transported to the R360 facility for proper disposal.

As requested by the BLM, confirmations were collected from the excavation. A bottom hole confirmation sample at 20.0' showed a chloride concentration of 9,800 mg/kg. The sidewall confirmation samples ranged from <20.0 mg/kg to 276 mg/kg. The sampling results are shown in Table 2

The excavation was then backfilled with clean soil to approximately 4.0' below surface and a 40 mil plastic liner was installed to cap the remaining impact. The excavation was then brought to grade with additional clean soil and the pasture was seeded with a BLM approved mixture. In addition the area was then ripped and windrows were installed in order to prevent erosion.

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

Respectfully submitted,

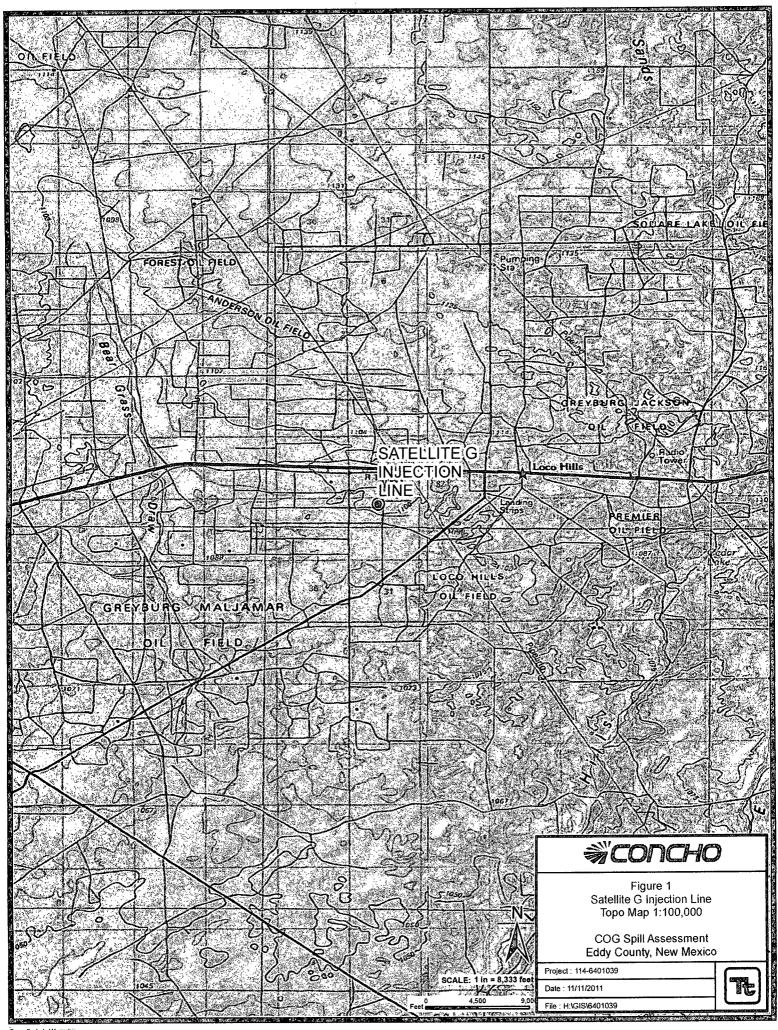
TETRA/TECH

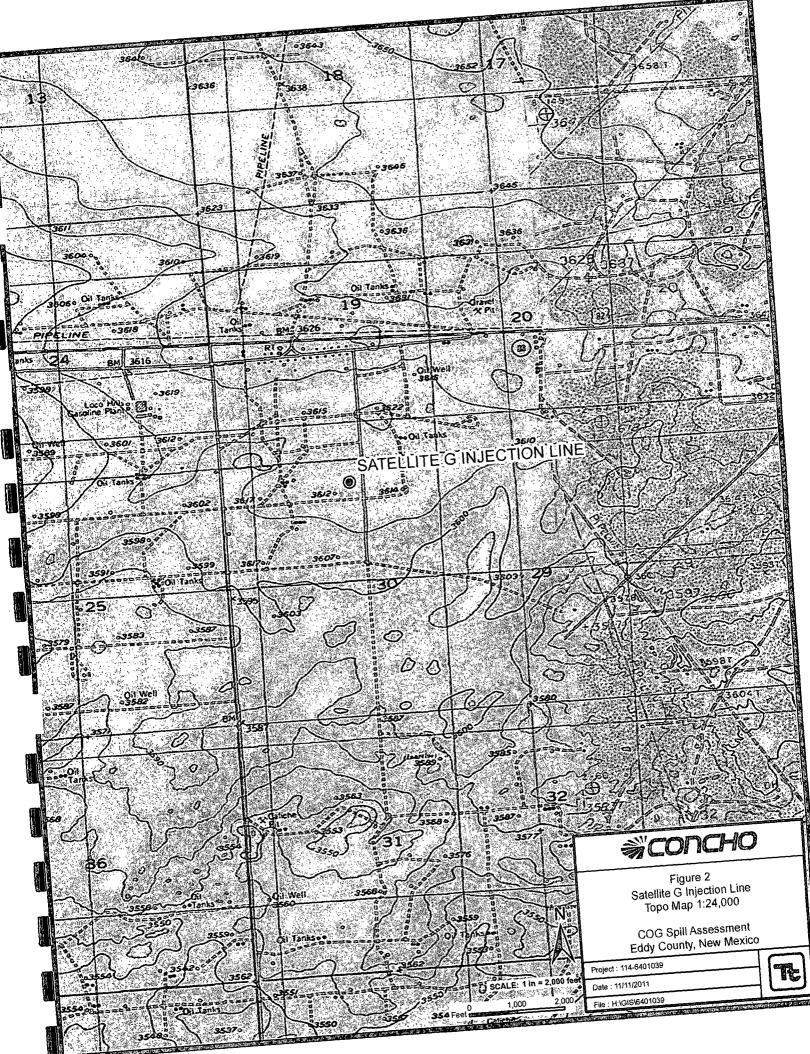
1ke Tavarez, PG Project Manager

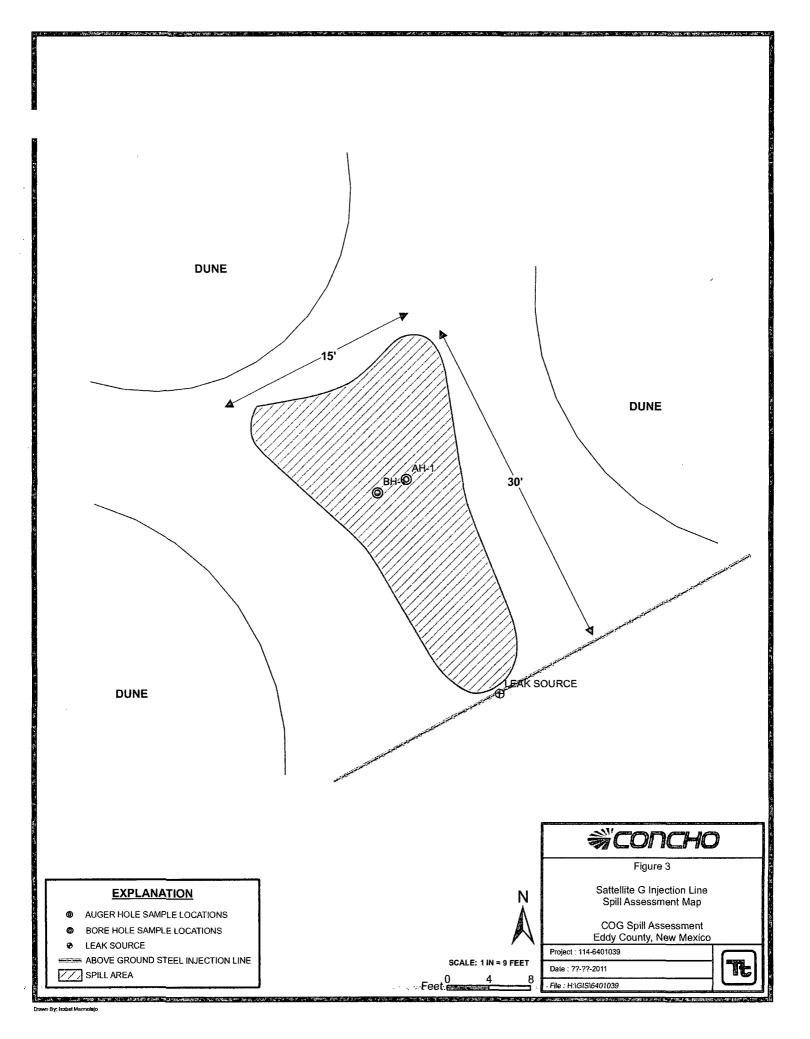
cc.

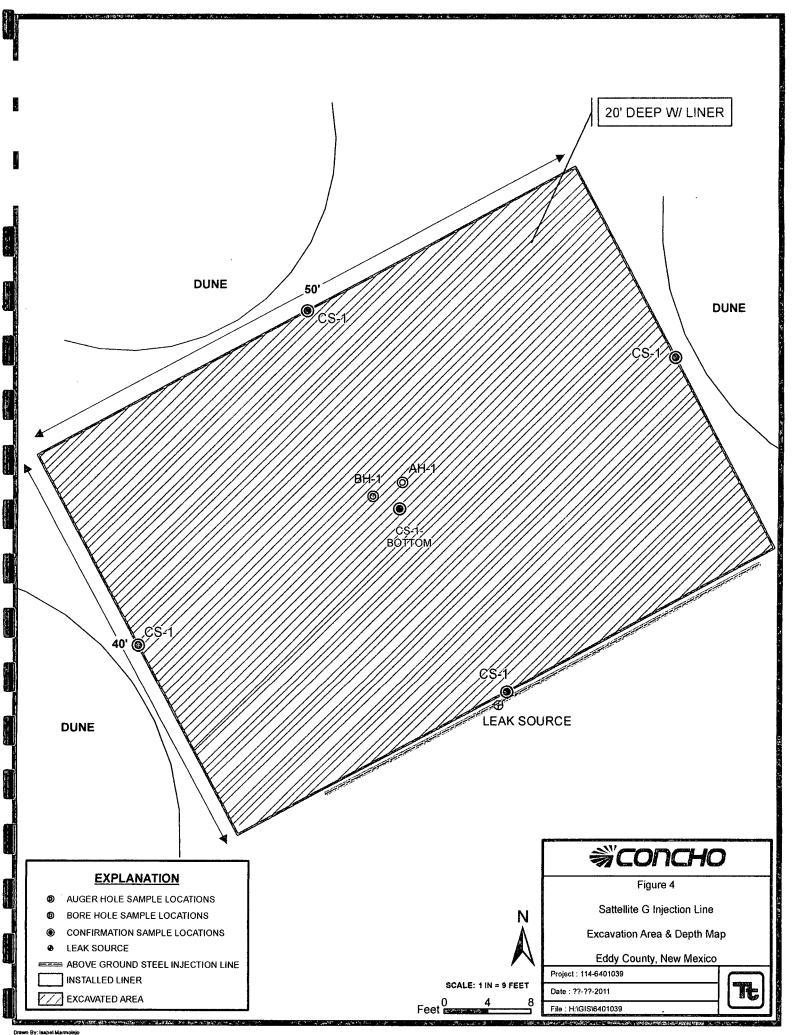
Pat Ellis – COG Terry Gregston - BLM

FIGURES









TABLES

Table 1 COG Operating LLC BKU Satellite G Injection Line Eddy County, New Mexico

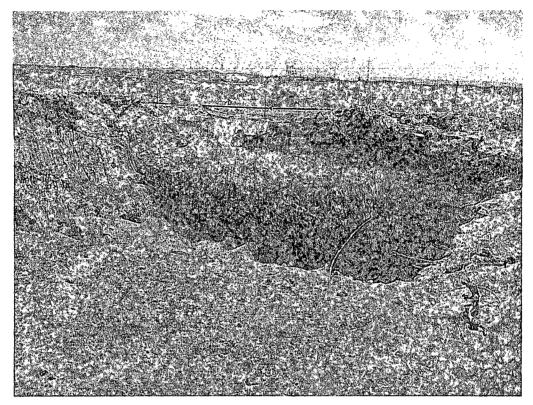
ample Date 10/7/2011	Sample Depth (ft)	Depth (BEB)					g)	Benzene	Toluene	Ethlybenzene	Xylene		Chloride
	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
	0-1			X	3.24	<50.0	3.24	² <0.0200	<0.0200	<0.0200	<0.0200	<0.0200	7,600
"	1-1.5			X		1672							6,350
11	1.5-2			X									10,600
1/25/2012	0-1			X									4,160
п	2-3			- X -									1,360
11	4-5			X							The second second second second		16,500
(L	6-7			Х							L. L. L. L.	THE ASSE	13,200
ti	9-10			X					4 . 3 . 4				7,100
51	14-15			. X		***				مستور سائلا	1 AH		5,870
ti	19-20		n e e e e e e e e e e e e e e e e e e e	X									10,500
li .	24-25	-	Х		-	_	-	-	-	-	-	-	8,890
u	29-30	-	Х		-	-	-	-	-	-	-	-	3,710
ш	39-40	-	Х		-	-	-	-	-	-	-	-	292
u	49-50	-	Х		-	-	-	-	-	-		-	<200
11	59-60	•	Х		-	-	-	-	-	-	-		<200
5/4/2012	20	-	Х		-	-	_	-	-	-	_	-	9,800
11	-	-	Х		-	-	-	-	-	-	-	-	218
ш	-	-	Х		-	-	-	-	-	-	-	•	276
11	-		Х		-	-	-	-	-	-	-	-	<20.0
5/2/2012	-	-	Х		-	-	-	-	-	-	-	-	112
	1/25/2012	" 1.5-2 1/25/2012	" 1.5-2	" 1.5-2 - 1/25/2012	" 1.5-2 - X 1/25/2012	" 1.5-2 X	" 1.5-2 X	" 1.5-2	" 1.5-2 X " 2-3 X " 4-5 X " 6-7 X " 9-10 X " 14-15 X " 19-20 X " 24-25 X " 29-30 X " 39-40 X " 49-50 X " 59-60 X " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " - - " <	" 1.5-2 X 1/25/2012 0-1 X " 2-3° X " 4-5 X " 9-10 X " 14-15 X " 19-20 X " 24-25 X " 29-30 X " 39-40 X " 49-50 X " 59-60 X " 59-60 X "	" 1.5-2	1.5-2 X	" 1.5-2 X " 2-33 X " 3-4-5 X " 6-7 X " 9-10 X " 14-15 X " 19-20 X " 24-25 X " 39-40 X " 49-50 X " 59-60 X " - - " - - " - - " - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <t< td=""></t<>

()	Not Analyzed
	Excavation Depths
	40 mil Liner

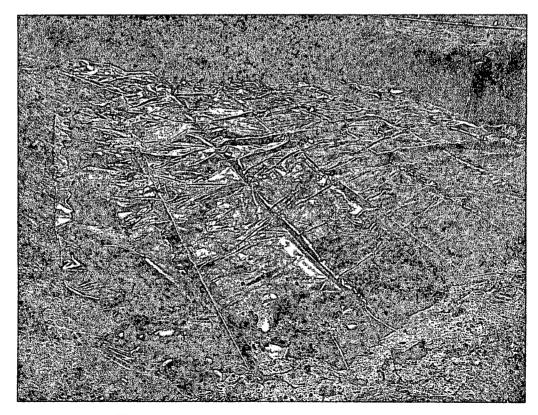
PHOTOGRAPHS

COG Operating LLC BKU Satellite G Injection Line Eddy County, New Mexico





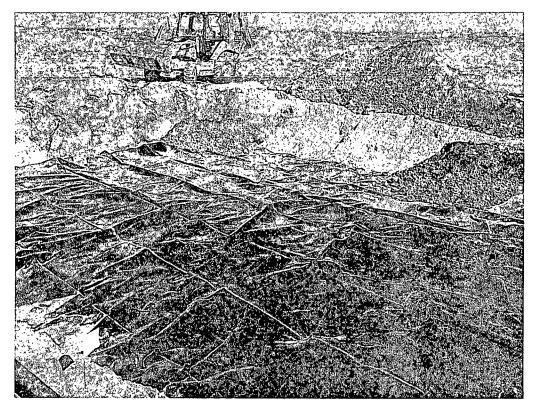
View South - Excavation of AH-1.



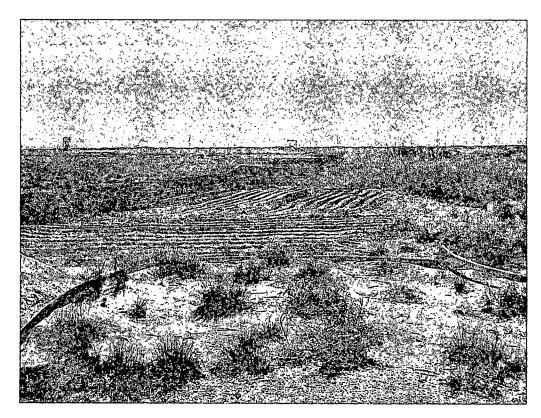
View East - Liner installed in excavation of AH-1.

COG Operating LLC BKU Satellite G Injection Line Eddy County, New Mexico





View Northwest - Backfill



View North – Pasture ripped and seeded.

APPENDIX A

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

Attach Additional Sheets If Necessary

State of New Mexico Energy Minerals and Natural Resources

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

Form C-141 Revised October 10, 2003

NOV 0 1 20 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

					OPEK	TIUK		Ł	Initia	l Report	N.	Final Report	
Name of Co	mpany C	OG Operat	ing LLC	,	Contact I	at Ellis	5						
Address 55	0 W. Texa	s, Suite 130	0 Midlaı	nd, Texas 79701	Telephone	No. (4	1 32) 230-0	077					
Facility Nan					Facility T	ype In	jection Li	ine					
~						1							
Surface Ow	ner Feder	al		Mineral Owne	er.				Lease No. NMLC-028784B				
				LOCATI	ON OF R	ELEA	SE						
Unit Letter	Section	Township	Range	Feet from the No	orth/South Lin	Feet	from the	East/W	est Line		Count	y	
C	30	17S	30E								Eddy	'	
	·		L	atitude N 32 48.68	38° Longite			33°					
Type of Relea	ase: Produ	iced Fluid			Volume	of Relea	se 10 bbls	5	Volume R	ecovered () bbls		
Source of Rel					Date and	Hour of	f Occurrenc			lour of Disc			
					09/21/20	11			09/21/201	1 3:00 p.m	•		
Was Immedia	ate Notice C		Yes 🛭	No 🛛 Not Requir	ed If YES,	To Whor	m?						
By Whom?	Josh Russo				Date and	Hour 1	2/05/2011	8:48 a.n	n.				
Was a Watero	course Reac				If YES,	Volume l	Impacting t	he Water	course.				
			Yes 🏻	No	N/A								
If a Watercou	irse was Im	pacted, Descri	be Fully.*	* ************************************									
N/A													
Describe Cau	se of Proble	em and Remed	lial Action	Taken.*									
The injection	line at the l	neaders had a	leak due te	o a corroded pipe. The	e faulty joint o	f pipe ha	ıs been repl	aced with	a new joi	nt.			
Describe Area	a Affected a	and Cleanup A	ction Tak	en.*			 	· · · · · · · · · · · · · · · · · · ·					
				cted samples to define e grade with clean bac									
regulations al public health should their o	I operators or the envir operations hament. In a	are required to onment. The ave failed to a ddition, NMO	report an acceptanc dequately CD accep	is true and complete to d/or file certain releas e of a C-141 report by investigate and remed tance of a C-141 report	e notifications the NMOCD liate contamin	and perf marked a ation that	form correc as "Final R t pose a thre	tive actio eport" do eat to gro	ns for rele es not reli- und water	ases which eve the oper , surface wa	may en ator of ter, hur	danger liability nan health	
		1	-			Ol	IL CON	SERVA	TION	DIVISIO	N		
Signature:													
Printed Name	: Ike Tavar	ez (agent for (COG)		Approved 1	y Distric	ct Supervise	or:					
Title: Project	Manager				Approval I	ate:		E	piration I	Date:			
E-mail Addre	ss: ike.tava	rez@tetratech	.com		Conditions	of Appro	oval:			Attached			
Date:	-19-	-1 pt	Phone:	(432) 682-4559									

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

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

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

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

Form C-14I

Revised October 10, 2003

side of form

Release Notification and Corrective Action

						OPERA	TOR		🛛 Initia	al Report		Final	Report
Name of Co		COG OP				Contact	~ 	at Ellis		~			
Address				dland, TX 7970		Telephone 1		230-00					
Facility Nat	ne	Sat	ellite G			Facility Typ	e Injec	tion Li	ne				
Surface Ow	ner Fede	ral		Mineral (Owner				Lease N	No. NM	LC-028	784B	
					~~~~~~~	OF RE		.;					
Unit Letter C	Section 30	Township 17S	Range 30E	Feet from the	North/	South Line	Feet from the	East/V	Vest Line	County	Eddy		•
				Latitude 32		-	ide 104 00.683						
Type of Pole	na Dradua	-dd		NA'I	URE	OF REL			Volume I	) according to	Obble	<del></del>	······
Type of Rele Source of Re							Release 10bbls  lour of Occurrence	φ.		Recovered Hour of Di		,	
	·cuse inject					09/21/2011		~		1 3:00 p			
Was Immedia	ate Notice (		Yes 🗵	No 🛛 Not Re	equired	If YES, To	Whom?						٠.
By Whom?						Date and F							
Was a Water	course Read		Yes 🗵	No		If YES, Vo	lume Impacting t	the Wate	ercourse.				
If a Watercou	rse was Im	pacted, Descr	be Fully.*			.1.							
Describe Cau	se of Proble	m and Reme	dial Action	Taken.*	· · · · · · · · · · · · · · · · · · ·						· · · · · · · · · · · · · · · · · · ·		
The injection	line at the l	neaders had a	leak due to	o corroded pipe.	The faul	ty joint of pip	oe has been replac	ced with	a new join	t.			
Describe Are	a Affected a	and Cleanup A	Action Tak	en.*					· · · · · · · · · · · · · · · · · · ·				
location to th	is release is	the BKU 241	API# 30-	from the injection 015-20281). Tetrolan to the NMOC	a Tech w	ill sample th	e spill site area to	delinea	te any poss	ible contan			
regulations al public health should their o	l operators or the envir perations had ment. In a	are required to onment. The ave failed to a ddition, NMO	report an acceptance dequately CD accept	is true and comp id/or file certain r e of a C-141 repo investigate and r tance of a C-141	elease no ort by the emediate	otifications are NMOCD me contamination	nd perform correct arked as "Final R on that pose a thr	tive acti eport" d eat to gr	ons for rele oes not reli ound water	eases which eve the ope r, surface w	h may ei erator of ater, hu	ndanger f liabilit man he	r ty salth
				7			OIL CON	SERV	ATION	DIVISI	<u>on</u>		
Signature:		/_											
Printed Name		Josh	Russo		/	Approved by	District Supervis	or:					
Title:		HSE Co	ordinator			Approval Dat	e:		expiration	Date:			
E-mail Addre		jrusso@concl				Conditions of	Approval:			Attached	<b>:</b> 🗆		
Date: 0 Attach Addit	9/28/2011 ional Shee	Phores of Necessary		2-212-2399					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1			

## APPENDIX B

## Water Well Data Average Depth to Groundwater (ft) COG - BKU Satellite G Injection Line Eddy County, New Mexico

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

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Site Location - BKU Satellite G

## APPENDIX C

Work Order: 11110402

Page Number: 1 of 1

## **Summary Report**

Ike Tavarez Tetra Tech

1910 N. Big Spring Street

Midland, TX 79705

Report Date: November 10, 2011

Work Order: 11110402

Project Location: Eddy Co., NM

Project Name:

COG/Satellite G Flowline

Project Number: 114-6401039

			$\operatorname{Date}$	$\mathbf{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
281502	AH-1 0-1'	water	2011-11-01	00:00	2011-11-03
281503	AH-1 1-1.5'	water	2011-11-01	00:00	2011-11-03
281504	AH-1 1.5-2.0'	water	2011-11-01	00:00	2011-11-03

		В	TEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
281502 - AH-1 0-1'	<0.0200 Qr	<0.0200 Qr	<0.0200 Qr	<0.0200 qr	< 50.0	3.24

Sample: 281502 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		7660	mg/Kg	4

Sample: 281503 - AH-1 1-1.5'

Param	Flag	Result	Units	$\operatorname{RL}$
Chloride		6350	mg/Kg	4

Sample: 281504 - AH-1 1.5-2.0'

Param	Flag	Result	Units	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	10600	mg/Kg	4



6701 Aberdeen Avenue, Suite 9. 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1

Lubbock, Texas 79424 El Paso, Texas 79922 Midland, Texas 79703 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

800 • 378 • 1296 888 • 588 • 3443

806 • 794 • 1296 915 • 585 • 3443 432 • 689 • 6301

FAX 806 • 794 • 1298 FAX 915 • 585 • 4944 FAX 432 • 689 • 6313

817 • 201 • 5260

E-Mail: lab@traceanalysis.com

#### Certifications

**NELAP** DoDLELAP WBE HUB **NCTRCA** DBEKansas Oklahoma ISO 17025

## Analytical and Quality Control Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street

Midland, TX, 79705

Report Date: November 10, 2011

Work Order:

11110402

Project Location:

Eddy Co., NM

Project Name:

COG/Satellite G Flowline

Project Number:

114-6401039

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

			Date	$\operatorname{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
281502	AH-1 0-1'	water	2011-11-01	00:00	2011-11-03
281503	AH-1 1-1.5'	water	2011-11-01	00:00	2011-11-03
281504	AH-1 1.5-2.0'	water	2011-11-01	00:00	2011-11-03

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

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

## Report Contents

Case Narrative
Analytical Report       5         Sample 281502 (AH-1 0-1')       5         Sample 281503 (AH-1 1-1.5')       5         Sample 281504 (AH-1 1.5-2.0')       5
Method Blanks
QC Batch 86134 - Method Blank (1)
QC Batch 86135 - Method Blank (1)
QC Batch 86138 - Method Blank (1)
QC Batch 86236 - Method Blank (1)
Laboratory Control Spikes
QC Batch 86134 - LCS (1)
QC Batch 86135 - LCS (1)
QC Batch 86138 - LCS (1)
QC Batch 86236 - LCS (1)
QC Batch 86134 - MS (1)
QC Batch 86135 - MS (1)
QC Batch 86138 - MS (1)
QC Batch 86236 - MS (1)
Calibration Standards 14
QC Batch 86134 - CCV (1)
QC Batch 86134 - CCV (2)
QC Batch 86135 - CCV (1)
QC Batch 86135 - CCV (2)
QC Batch 86138 - CCV (1)
QC Batch 86138 - CCV (2)
QC Batch 86236 - ICV (1)
QC Batch 86236 - CCV (1)
Appendix 1'
Laboratory Certifications
Standard Flags
Attachments

#### Case Narrative

Samples for project COG/Satellite G Flowline were received by TraceAnalysis, Inc. on 2011-11-03 and assigned to work order 11110402. Samples for work order 11110402 were received intact at a temperature of 4.3 C.

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

		$\operatorname{Prep}$	$\operatorname{Prep}$	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	73143	2011-11-04 at 12:45	86134	2011-11-05 at 02:47
Chloride (Titration)	SM 4500-Cl B	73222	2011-11-07 at 09:37	86236	2011-11-09 at 10:59
TPH DRO - NEW	S 8015 D	73148	2011-11-04 at 13:42	86138	2011-11-04 at 13:42
TPH GRO	S 8015 D	73143	2011-11-04 at 12:45	86135	2011-11-05 at 03:14

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 11110402 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.

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 4 of 17 Eddy Co., NM

## **Analytical Report**

Sample: 281502 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX QC Batch: 86134 Prep Batch: 73143

Analytical Method: S 8021B Date Analyzed: 2011-11-05

Prep Method: S 5035 Analyzed By: AG Sample Preparation: 2011-11-04 Prepared By: AG

RLParameter Result RLFlag Cert Units Dilution Benzene Qr,U mg/Kg 0.0200 < 0.0200 Qr,UToluene Qr,U1 0.0200< 0.0200 mg/Kg Qr, UEthylbenzene Qr,U< 0.0200 mg/Kg 1 0.0200Qr, U**Xylene** mg/Kg 1 Qr,U< 0.0200 0.0200Qr,U

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	82.8 - 143.1
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	70.6 - 179

Sample: 281502 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 86236 Prep Batch: 73222

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-11-09 Sample Preparation: 2011-11-07

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

RLParameter Cert Result Units Dilution RLFlag Chloride 7660 mg/Kg 100 4.00

Sample: 281502 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 86138 Prep Batch: 73148

Analytical Method: S 8015 D Date Analyzed: 2011-11-04 Sample Preparation: 2011-11-04

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

RLParameter Flag Cert Result Units Dilution RL**DRO** < 50.0 mg/Kg 50.0 Report Date: November 10, 2011 114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 5 of 17 Eddy Co., NM

S 5035

AG

AG

						Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	Result	${ m Units}$	Dilution	Amount	Recovery	${f Limits}$
n-Tricosane			129	mg/Kg	1	100	129	67.5 - 147.1

Sample: 281502 - AH-1 0-1'

Laboratory:

Midland TPH GRO

Analysis: QC Batch: 86135 Prep Batch: 73143

Analytical Method:

S 8015 D Date Analyzed: Sample Preparation:

2011-11-05 2011-11-04

Analyzed By: Prepared By:

Prep Method:

RL $\operatorname{Cert}$ Result Units Parameter Flag Dilution RL $\overline{GRO}$ 3.24 mg/Kg 2.00 1

						$_{ m Spike}$	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.96	m mg/Kg	1	2.00	98	30 - 134.6
4-Bromofluorobenzene (4-BFB)			1.84	mg/Kg	1	2.00	92	22.4 - 149

Sample: 281503 - AH-1 1-1.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 86236 Prep Batch: 73222

Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2011-11-09 2011-11-07

Prep Method: N/AAnalyzed By: ARPrepared By: AR

RLParameter Flag Cert Result Units Dilution RLChloride 6350 mg/Kg 100 4.00

Sample: 281504 - AH-1 1.5-2.0'

Laboratory:

Prep Batch:

Midland

Analysis: Chloride (Titration) QC Batch:

86236 73222

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2011-11-09 2011-11-07

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

 $continued \dots$ 

Report Date: November 10, 2011 114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 6 of 17 Eddy Co., NM

sample 281504 continued ...

			$\mathrm{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	RL
1						
			$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			10600	mg/Kg	100	4.00

Report Date: November 10, 2011 114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 7 of 17 Eddy Co., NM

## Method Blanks

Method Blank (1)

QC Batch: 86134

QC Batch: 86134 Date Analyzed:

2011-11-05

Analyzed By: AG Prepared By: AG

Prep Batch: 73143

QC Preparation: 2011-11-04

MDL Parameter Flag Cert Result Units RLBenzene < 0.0118 mg/Kg 0.02 Toluene < 0.00600 mg/Kg 0.02 1 Ethylbenzene < 0.00850 mg/Kg 0.02 mg/Kg Xylene < 0.00613 0.02

						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.88	mg/Kg	1	2.00	94	65.9 - 111.8
4-Bromofluorobenzene (4-BFB)	_		1.67	mg/Kg	1	2.00	84	48.4 - 123.1

Method Blank (1)

QC Batch: 86135

QC Batch: 86135 Prep Batch: 73143 Date Analyzed: QC Preparation: 2011-11-04

2011-11-05

Analyzed By: AG Prepared By: AG

MDL Cert Parameter Flag Result Units RLGRO 0.915 mg/Kg

						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	${f A}{f m}{f o}{f u}{f n}{f t}$	Recovery	Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	67.6 - 150
4-Bromoffuorobenzene (4-BFB)			1.60	mg/Kg	1	2.00	80	52.4 - 130

Method Blank (1)

QC Batch: 86138

QC Batch: 86138 Prep Batch: 73148 Date Analyzed: 2011-11-04 QC Preparation: 2011-11-04

Analyzed By: kg Prepared By: kg

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 8 of 17

Eddy Co., NM

Parameter		F	lag	Cert		MDL Result	Units	m RL
DRO				1		<14.5	mg/Kg	50
_						Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	Result	$\operatorname{Units}$	Dilution	Amount	Recovery	Limits
n-Tricosane			114	mg/Kg	1	100	114	52.7 - 133.8

Method Blank (1)

QC Batch: 86236

QC Batch: 86236

2011-11-09

Analyzed By: AR

Prep Batch:

73222

Date Analyzed: QC Preparation: 2011-11-07

Prepared By: AR

MDL

Flag Units RLParameter Cert Result Chloride < 3.85 mg/Kg 4

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 9 of 17 Eddy Co., NM

## Laboratory Control Spikes

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

QC Batch:

86134

Date Analyzed:

2011-11-05

Analyzed By: AG Prepared By: AG

Prep Batch: 73143

QC Preparation: 2011-11-04

			LCS			$\operatorname{Spike}$	Matrix		${ m Rec.}$
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	2.03	mg/Kg	1	2.00	< 0.0118	102	77.4 - 121.7
Toluene		1	1.98	${ m mg/Kg}$	1	2.00	< 0.00600	99	88.6 - 121.6
Ethylbenzene		1	1.93	mg/Kg	1	2.00	< 0.00850	96	74.3 - 117.9
Xylene		1	5.83	mg/Kg	11	6.00	< 0.00613	97	73.4 - 118.8

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$
Benzene		1	2.01	mg/Kg	1	2.00	< 0.0118	100	77.4 - 121.7	1	20
Toluene		ı	1.97	mg/Kg	1	2.00	< 0.00600	98	88.6 - 121.6	0	20
Ethylbenzene		1	1.89	mg/Kg	1	2.00	< 0.00850	94	74.3 - 117.9	2	20
Xylene		1	5.74	mg/Kg	1	6.00	< 0.00613	96	73.4 - 118.8	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	$\mathrm{Rec}.$
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.92	1.90	mg/Kg	1	2.00	96	95	65.5 - 116.7
4-Bromofluorobenzene (4-BFB)	1.93	1.94	mg/Kg	1	2.00	96	97	56.2 - 132.1

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

QC Batch:

86135

Prep Batch: 73143

Date Analyzed:

2011-11-05

QC Preparation: 2011-11-04

Analyzed By: AG

Prepared By: AG

			LCS			$\operatorname{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$
GRO		1	17.8	mg/Kg	1	20.0	< 0.753	89	60.9 - 95.4

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

 $continued \dots$ 

Report Date: November 10, 2011 114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 10 of 17 Eddy Co., NM

Param	F	С	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	С	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.2	mg/Kg	1	20.0	< 0.753	91	60.9 - 95.4	2	20

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

	LCS	LCSD			$_{ m Spike}$	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.97	1.96	mg/Kg	1	2.00	98	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.78	1.79	mg/Kg	1	2.00	89	90	56.2 - 132

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

QC Batch:

86138

Date Analyzed:

2011-11-04

Analyzed By: kg Prepared By: kg

Prep Batch: 73148

QC Preparation: 2011-11-04

			LCS			$_{ m Spike}$	Matrix		${ m Rec.}$
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	282	mg/Kg	1	250	<14.5	113	64.5 - 146.9

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		1	290	mg/Kg	1	250	<14.5	116	64.5 - 146.9	3	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	131	135	mg/Kg	1	100	131	135	65.3 - 135.8

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

QC Batch:

86236

Date Analyzed:

2011-11-09

Analyzed By: AR.

Prep Batch: 73222

QC Preparation: 2011-11-07

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	$\mathrm{Rec.}$	Limit
Chloride			97.8	m mg/Kg	1	100	< 3.85	98	85 - 115

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 11 of 17 Eddy Co., NM

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

			LCSD			Spike	Matrix		${ m Rec.}$		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			106	mg/Kg	1	100	< 3.85	106	85 - 115	8	20

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

Matrix Spike (MS-1)

Spiked Sample: 281552

QC Batch: 86134 Date Analyzed: 2011-11-05

Analyzed By: AGPrepared By: AG

Prep Batch: 73143

QC Preparation: 2011-11-04

			MS			Spike	Matrix		Rec.
Param	${f F}$	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		ì	2.24	mg/Kg	1	2.00	< 0.0118	112	69.4 - 123.6
Toluene		1	2.23	mg/Kg	1	2.00	< 0.00600	112	75.4 - 134.3
Ethylbenzene		1	2.32	mg/Kg	1	2.00	< 0.00850	116	58.8 - 133.7
Xylene		1	6.98	mg/Kg	1	6.00	< 0.00613	116	57 - 134.2

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

				MSD			Spike	Matrix		Rec.		RPD
Param		$\mathbf{F}$	C	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
Benzene	Qr	Qr	1	1.72	mg/Kg	1	2.00	< 0.0118	86	69.4 - 123.6	26	20
Toluene	Qr	Qr	1	1.70	mg/Kg	1	2.00	< 0.00600	85	75.4 - 134.3	27	20
Ethylbenzene	Qг	Qr	1	1.76	mg/Kg	1	2.00	< 0.00850	88	58.8 - 133.7	27	20
Xylene	Qr	Qr	1	5.30	mg/Kg	1	6.00	< 0.00613	88	57 - 134.2	27	20

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

Surrogate	$rac{ ext{MS}}{ ext{Result}}$	$\begin{array}{c} \text{MSD} \\ \text{Result} \end{array}$	Units	Dil.	$egin{array}{l}  ext{Spike} \  ext{Amount} \end{array}$	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.94	mg/Kg	1	2	97	97	79.4 - 141.1
4-Bromofluorobenzene (4-BFB)	2.07	2.04	mg/Kg	1	2	104	102	71 - 167

Spiked Sample: 281555 Matrix Spike (MS-1)

QC Batch: 86135 Prep Batch: 73143

Date Analyzed:

2011-11-05 QC Preparation: 2011-11-04 Analyzed By: AG Prepared By: AG

MSRec. Spike Matrix Param F  $\mathbf{C}$ Result Units Dil. Amount Result Rec. Limit 81 61.8 - 114 19.9 20.0 3.68 GRO mg/Kg

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

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 12 of 17 Eddy Co., NM

			MSD			Spike	Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
GRO		1	22.0	mg/Kg	1	20.0	3.68	92	61.8 - 114	10	20
Percent recovery is 1	based on the spike	resi	ılt. RPD	is based of	on the	spike and s	spike dupl	icate re	esult.		

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.95	1.95	mg/Kg	1	2	98	98	29.4 - 161.7
4-Bromofluorobenzene (4-BFB)	2.01	2.02	$\mathrm{mg}/\mathrm{Kg}$	1	2	100	101	37.3 - 162

Matrix Spike (MS-1) Spiked Sample: 281552

QC Batch: 86138

Date Analyzed:

2011-11-04

Analyzed By: kg Prepared By: kg

Prep Batch: 73148

QC Preparation: 2011-11-04

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	293	mg/Kg	1	250	23.1	108	38.8 - 153.3

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

			MSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	$\operatorname{Units}$	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		1	302	mg/Kg	1	250	23.1	112	38.8 - 153.3	3	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	$_{ m Units}$	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	125	122	mg/Kg	1	100	125	122	54.6 - 149.8

Matrix Spike (MS-1) Spiked Sample: 281549

QC Batch: 86236 Date Analyzed:

2011-11-09

Analyzed By: AR.

Prep Batch: 73222

QC Preparation: 2011-11-07

Prepared By: AR

			MS			$\operatorname{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			9130	mg/Kg	100	10000	<385	88	79.4 - 120.6

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

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114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 13 of 17 Eddy Co., NM

$matrix\ spikes\ continued\ \dots$	matrix	spikes	continued			
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Param	F	С	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			9780	mg/Kg	100	10000	<385	95	79.4 - 120.6	7	20

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

Work Order: 11110402 114-6401039 COG/Satellite G Flowline Page Number: 14 of 17 Eddy Co., NM

## Calibration Standards

Standard (CCV-1)

QC Batch: 86134 Date Analyzed: 2011-11-05 Analyzed By: AG

				$rac{ ext{CCVs}}{ ext{True}}$	CCVs Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	$\mathbf{U}\mathbf{nits}$	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.101	101	80 - 120	2011-11-05
Toluene		1	mg/Kg	0.100	0.0981	98	80 - 120	2011-11-05
Ethylbenzene		1	mg/Kg	0.100	0.0959	96	80 - 120	2011-11-05
Xylene		1	mg/Kg	0.300	0.289	96	80 - 120	2011-11-05

#### Standard (CCV-2)

QC Batch: 86134 Date Analyzed: 2011-11-05 Analyzed By: AG

				CCVs	$\mathrm{CCVs}$	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/Kg	0.100	0.0921	92	80 - 120	2011-11-05
Toluene		ı	mg/Kg	0.100	0.0888	89	80 - 120	2011-11-05
Ethylbenzene		1	mg/Kg	0.100	0.0859	86	80 - 120	2011-11-05
Xylene		1	mg/Kg	0.300	0.260	87	80 - 120	2011-11-05

#### Standard (CCV-1)

Date Analyzed: 2011-11-05 QC Batch: 86135 Analyzed By: AG

				$\mathrm{CCVs}$	$\mathrm{CCVs}$	$\mathrm{CCVs}$	$\operatorname{Percent}$	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.07	107	80 - 120	2011-11-05

#### Standard (CCV-2)

Date Analyzed: 2011-11-05 Analyzed By: AG QC Batch: 86135

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 15 of 17 Eddy Co., NM

D.	F)	G	77. 4	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.15	115	80 - 120	2011-11-05

#### Standard (CCV-1)

QC Batch: 86138

Date Analyzed: 2011-11-04

Analyzed By: kg

				CCVs True	CCVs Found	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	266	106	80 - 120	2011-11-04

#### Standard (CCV-2)

QC Batch: 86138

Date Analyzed: 2011-11-04

Analyzed By: kg

				$rac{ ext{CCVs}}{ ext{True}}$	$\operatorname{CCVs}$ Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	237	95	80 - 120	2011-11-04

#### Standard (ICV-1)

QC Batch: 86236

Date Analyzed: 2011-11-09

Analyzed By: AR

				ICVs	$ICV_{S}$	ICVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	$\mathbf{U}\mathbf{nits}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	96.6	97	85 - 115	2011-11-09

#### Standard (CCV-1)

QC Batch: 86236

Date Analyzed: 2011-11-09

Analyzed By: AR

Report Date: November 10, 2011

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 16 of 17 Eddy Co., NM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	103	103	85 - 115	2011-11-09

Report Date: November 10, 2011

114-6401039

Work Order: 11110402 COG/Satellite G Flowline Page Number: 17 of 17 Eddy Co., NM

# **Appendix**

### **Laboratory Certifications**

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-10-TX	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

#### Attachments

The scanned attachments will follow this page.

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

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Report Date: February 2, 2012 Work Order: 12013002 Page Number: 1 of 3

## **Summary Report**

Ike Tavarez Tetra Tech

1910 N. Big Spring Street

Midland, TX 79705

Report Date: February 2, 2012

Work Order: 12013002

Project Location: Eddy Co., NM

Project Name: COG/Satellite G Flowline

Project Number: 114-6401039

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
287712	BH-1 @ AH-1 0-1'	soil	2012-01-25	00:00	2012-01-27
287713	BH-1 @ AH-1 2-3'	soil	2012-01-25	00:00	2012-01-27
287714	BH-1 @ AH-1 4-5'	soil	2012-01-25	00:00	2012-01-27
287715	BH-1 @ AH-1 6-7'	soil	2012-01-25	00:00	2012-01-27
287716	BH-1 @ AH-1 9-10'	soil	2012-01-25	00:00	2012-01-27
287717	BH-1 @ AH-1 14-15'	soil	2012-01-25	00:00	2012-01-27
287718	BH-1 @ AH-1 19-20'	soil	2012-01-25	00:00	2012-01-27
287719	BH-1 @ AH-1 24-25'	soil	2012-01-25	00:00	2012-01-27
287720	BH-1 @ AH-1 29-30'	soil	2012-01-25	00:00	2012-01-27
287721	BH-1 @ AH-1 39-40'	soil	2012-01-25	00:00	2012-01-27
287722	BH-1 @ AH-1 49-50'	soil	2012-01-25	00:00	2012-01-27
287723	BH-1 @ AH-1 59-60'	soil	2012-01-25	00:00	2012-01-27

Sample: 287712 - BH-1 @ AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		4160	mg/Kg	4

Sample: 287713 - BH-1 @ AH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		1360	mg/Kg	4

Sample: 287714 - BH-1 @ AH-1 4-5'

Report Date: February 2, 2012	Work Order: 12013002	F	Page Number: 2 of 3
Param Flag	Result	Units	RL
Chloride	16500	mg/Kg	4
Sample: 287715 - BH-1 @ AH-1 6	3-7'		
Param Flag	Result	Units	$_{ m RL}$
Chloride	13200	mg/Kg	4
Sample: 287716 - BH-1 @ AH-1 9	9-10'		
Param Flag	Result	Units	$\mathrm{RL}$
Chloride	7100	mg/Kg	4
•			
Sample: 287717 - BH-1 @ AH-1 1	14-15'		
Param Flag	Result	Units	RL_
Chloride	5870	mg/Kg	4
Sample: 287718 - BH-1 @ AH-1 1	19-20'	•	
Param Flag	Result	Units	m RL
Chloride	10500	mg/Kg	4
Sample: 287719 - BH-1 @ AH-1 2	04.957		
-			
Param Flag Chloride	Result 8890	Units	$\frac{RL}{4}$
Chioride	8890	mg/Kg	4
Sample: 287720 - BH-1 @ AH-1 2	29-30'		
-		TY!.	DI
Param Flag Chloride	Result <b>3710</b>	Units mg/Kg	$\frac{RL}{4}$
	· · · · · · · · · · · · · · · · · · ·	***************************************	
Sample: 287721 - BH-1 @ AH-1 3	39-40'		
		TT ! L	n.
Param Flag Chloride	Result 292	Units mg/Kg	$\frac{\text{RL}}{4}$

Report Date: Febru	nary 2, 2012	Work Order: 12013002	Page	Number: 3 of 3
Sample: 287722	- BH-1 @ AH-1 49-50	,		
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4
Sample: 287723	- BH-1 @ AH-1 59-60	,		
Param	Flag	Result	Units	RL
Chloride		< 200	mg/Kg	4



6701 Aberdeen Avenue; Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

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E-Mail: lab@traceanalysis.com

### Certifications

**WBE** 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: February 2, 2012

Work Order:

12013002

Project Location: Eddy Co., NM

Project Name:

COG/Satellite G Flowline

Project Number:

114-6401039

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

			$\operatorname{Date}$	$\operatorname{Time}$	$\operatorname{Date}$
Sample	Description	Matrix	$\operatorname{Taken}$	Taken	Received
287712	BH-1 @ AH-1 0-1'	soil	2012-01-25	00:00	2012-01-27
287713	BH-1 @ AH-1 2-3'	soil	2012-01-25	00:00	2012-01-27
287714	BH-1 @ AH-1 4-5'	soil	2012-01-25	00:00	2012-01-27
287715	BH-1 @ AH-1 6-7'	soil	2012-01-25	00:00	2012-01-27
287716	BH-1 @ AH-1 9-10'	soil	2012-01-25	00:00	2012-01-27
287717	BH-1 @ AH-1 14-15'	soil	2012-01-25	00:00	2012-01-27
287718	BH-1 @ AH-1 19-20'	soil	2012-01-25	00:00	2012-01-27
287719	BH-1 @ AH-1 24-25'	soil	2012-01-25	00:00	2012-01-27
287720	BH-1 @ AH-1 29-30'	soil	2012-01-25	00:00	2012-01-27
287721	BH-1 @ AH-1 39-40'	soil	2012-01-25	00:00	2012-01-27
287722	BH-1 @ AH-1 49-50'	soil	2012-01-25	00:00	2012-01-27
287723	BH-1 @ AH-1 59-60'	soil	2012-01-25	00:00	2012-01-27

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

This report consists of a total of 13 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

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

# Report Contents

Case Narrative	4
Analytical Report	5
	5
Sample 287713 (BH-1 @AH-1 2-3')	5
Sample 287714 (BH-1 @AH-1 4-5')	5
Sample 287715 (BH-1 @AH-1 6-7')	5
Sample 287716 (BH-1 @AH-1 9-10')	6
Sample 287717 (BH-1 @AH-1 14-15')	6
	6
Sample 287719 (BH-1 @AH-1 24-25')	7
	7
Sample 287721 (BH-1 @AH-1 39-40°)	7
Sample 287722 (BH-1 @AH-1 49-50')	
	8
Method Blanks	9
QC Batch 88247 - Method Blank (1)	g
QC Batch 88248 - Method Blank (1)	
Laboratory Control Spikes	10
The state of the s	10
QC Batch 88248 - LCS (1)	
QC Batch 88247 - MS (1)	
QC Batch 88248 - MS (1)	11
Can of a find a	12
QC Batch 88247 - ICV (1)	
QC Batch 88247 - CCV (1)	
QC Batch 88248 - ICV (1)	
QC Batch 88248 - CCV (1)	12
12pp outdin	13
Report Definitions	13
Laboratory Certifications	
Standard Flags	13
	13

## Case Narrative

Samples for project COG/Satellite G Flowline were received by TraceAnalysis, Inc. on 2012-01-27 and assigned to work order 12013002. Samples for work order 12013002 were received intact at a temperature of 1.1 C.

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

		Prep	$\operatorname{Prep}$	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	74901	2012-02-01 at 11:48	88247	2012-02-01 at 11:22
Chloride (Titration)	SM 4500-Cl B	74901	2012-02-01 at 11:48	88248	2012-02-01 at 11:23

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 12013002 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.

114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 5 of 13 Eddy Co., NM

# **Analytical Report**

Sample: 287712 - BH-1 @ AH-1 0-1'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

88247

Date Analyzed:

2012-02-01

Analyzed By:

Prep Batch: 74901

Sample Preparation: 2012-02-01

ARPrepared By: AR.

RL

Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			4160	mg/Kg	100	4.00

Sample: 287713 - BH-1 @ AH-1 2-3'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method:

N/A AR.

QC Batch:

88247

Date Analyzed:

2012-02-01

Analyzed By:

Prep Batch: 74901

Sample Preparation:

2012-02-01

Prepared By:

AR.

RL

Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			1360	mg/Kg	100	4.00

Sample: 287714 - BH-1 @ AH-1 4-5'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: Prep Batch: 74901

88247

Date Analyzed:

2012-02-01 Sample Preparation: 2012-02-01

Analyzed By: AR Prepared By: AR.

RLCert Result Dilution RLParameter Flag Units Chloride 16500 mg/Kg 100 4.00

114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 6 of 13 Eddy Co., NM

Sample: 287715 - BH-1 @ AH-1 6-7'

Laboratory:

Midland

Analysis: Chloride (Titration)

88247

Analytical Method: Date Analyzed:

SM 4500-Cl B 2012-02-01

Prep Method: N/A Analyzed By: AR.

QC Batch: Prep Batch:

74901

Sample Preparation: 2012-02-01 Prepared By: AR.

RL

Parameter Chloride

Flag Cert

Result 13200

Units mg/Kg

100

Dilution

RL

4.00

Sample: 287716 - BH-1 @ AH-1 9-10'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Flag

Analytical Method: Date Analyzed:

SM 4500-Cl B

Prep Method: N/AAnalyzed By:

QC Batch: Prep Batch: 88247 74901

2012-02-01 Sample Preparation: 2012-02-01

Prepared By:

RL

Parameter Chloride

Cert

Result

7100

Units mg/Kg

100

Dilution

RL4.00

AR

AR

Sample: 287717 - BH-1 @ AH-1 14-15'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: Prep Batch:

Chloride

88247 74901

Date Analyzed: Sample Preparation:

2012-02-01 2012-02-01

Analyzed By: Prepared By:

ARAR.

RL

Parameter

Flag Cert

Result 5870

Units mg/Kg Dilution 100

RL

4.00

N/A

Sample: 287718 - BH-1 @ AH-1 19-20'

Laboratory:

Midland

Analysis: QC Batch: 88247

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: Analyzed By:

Prep Batch:

74901

Date Analyzed: Sample Preparation:

2012-02-01 2012-02-01

ARPrepared By: AR Report Date: February 2, 2012 114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 7 of 13 Eddy Co., NM

			RL			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			10500	mg/Kg	100	4.00

#### Sample: 287719 - BH-1 @ AH-1 24-25'

Midland Laboratory:

Chloride (Titration) Analysis:

Analytical Method: SM 4500-Cl B Date Analyzed: 2012-02-01

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

QC Batch: 88247 Prep Batch: 74901

Sample Preparation: 2012-02-01 RL

Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			8890	m mg/Kg	100	4.00

#### Sample: 287720 - BH-1 @ AH-1 29-30'

Midland Laboratory:

Analysis: Chloride (Titration)

QC Batch: 88247 Prep Batch: 74901

Analytical Method: Date Analyzed:

SM 4500-Cl B 2012-02-01 Sample Preparation: 2012-02-01

Prep Method: N/AAnalyzed By: AR.

AR.

AR

Prepared By:

RLDilution RLFlag Cert Result Units Parameter 3710Chloride mg/Kg 100 4.00

#### Sample: 287721 - BH-1 @ AH-1 39-40'

Laboratory: Midland

Prep Batch:

Analysis: Chloride (Titration) QC Batch:

88247 74901

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2012-02-01 2012-02-01

Prep Method: N/A Analyzed By: AR

Prepared By:

RLParameter Flag Cert Result Units Dilution RLChloride 292 mg/Kg 50 4.00

114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 8 of 13 Eddy Co., NM

Sample: 287722 - BH-1 @ AH-1 49-50'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Flag

U

88248

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

Date Analyzed:

2012-02-01

Analyzed By: AR.

Prep Batch:

74901

Sample Preparation:

2012-02-01

Prepared By:

AR.

RL

Parameter Chloride

Cert

Result <200

Units mg/Kg Dilution

50

RL

4.00

Sample: 287723 - BH-1 @ AH-1 59-60'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/AAR

QC Batch:

88248

Date Analyzed:

2012-02-01

Analyzed By: AR

Prep Batch: 74901

Sample Preparation: 2012-02-01 Prepared By:

RL

Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride	υ		< 200	mg/Kg	50	4.00

114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 9 of 13 Eddy Co., NM

## Method Blanks

Method Blank (1)

QC Batch: 88247

QC Batch: 88247 Date Analyzed:

2012-02-01

Analyzed By: AR.

Prep Batch: 74901

QC Preparation: 2012-02-01

Prepared By: AR

Parameter Chloride

Flag

MDL Cert Result < 3.85

Units mg/Kg

RL4

Method Blank (1)

QC Batch: 88248

QC Batch:

88248

Date Analyzed:

2012-02-01

Analyzed By: AR

Prep Batch: 74901

QC Preparation:

2012-02-01

Prepared By: AR

Parameter Chloride

Flag

Cert

MDLResult < 3.85

Units mg/Kg

RL4

114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 10 of 13 Eddy Co., NM

## Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

88247

Prep Batch: 74901

Date Analyzed: QC Preparation:

2012-02-01 2012-02-01 Analyzed By: AR

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	${f Limit}$
Chloride			95.3	${ m mg/Kg}$	1	100	< 3.85	95	85 - 115

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

			LCSD			$\operatorname{Spike}$	Matrix		$\mathrm{Rec.}$		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	$\operatorname{Units}$	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			103	mg/Kg	1	100	< 3.85	103	85 - 115	8	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:

88248

Date Analyzed:

2012-02-01

Analyzed By: AR.

Prep Batch: 74901

QC Preparation: 2012-02-01

Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			94.3	mg/Kg	1	100	< 3.85	94	85 - 115

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

			LCSD			$\operatorname{Spike}$	Matrix		$\mathrm{Rec.}$		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			103	mg/Kg	1	100	<3.85	103	85 - 115	9	20

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

Matrix Spike (MS-1) Spiked Sample: 287721

QC Batch: 88247

Date Analyzed:

2012-02-01

Analyzed By: AR.

Prep Batch: 74901

QC Preparation: 2012-02-01

Prepared By: AR

114-6401039

Work Order: 12013002 COG/Satellite G Flowline

Page Number: 11 of 13 Eddy Co., NM

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			10100	mg/Kg	100	10000	<385	98	79.4 - 120.6

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$	RPD	Limit
Chloride			10700	mg/Kg	100	10000	<385	104	79.4 - 120.6	6	20

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

Matrix Spike (MS-1)

Spiked Sample: 287733

QC Batch: 88248 Date Analyzed:

2012-02-01

Analyzed By: AR

Prep Batch: 74901

QC Preparation: 2012-02-01

Prepared By: AR

			MS			Spike	Matrix		Rec.		
Param	$\mathbf{F}$	$^{\mathrm{C}}$	Result	$_{ m Units}$	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$		
Chloride			12500	mg/Kg	100	10000	2560	99	79.4 - 120.6		

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
Chloride			13100	mg/Kg	100	10000	2560	105	79.4 - 120.6	5	20

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

Report Date: February 2, 2012 114-6401039

Work Order: 12013002 COG/Satellite G Flowline Page Number: 12 of 13 Eddy Co., NM

## Calibration Standards

Standard (	(ICV-1)
Diamara	110 4-11

QC Batch: 88247

Date Analyzed: 2012-02-01

Analyzed By: AR

				ICVs	ICVs	ICVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-01

#### Standard (CCV-1)

QC Batch: 88247

Date Analyzed: 2012-02-01

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.9	99	85 - 115	2012-02-01

#### Standard (ICV-1)

QC Batch: 88248

Date Analyzed: 2012-02-01

Analyzed By: AR

				ICVs	ICVs	ICVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-02-01

#### Standard (CCV-1)

QC Batch: 88248

Date Analyzed: 2012-02-01

Analyzed By: AR

				$\mathrm{CCVs}$	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.3	99	85 - 115	2012-02-01

Report Date: February 2, 2012 Work Order: 12013002 Page Number: 13 of 13 114-6401039 COG/Satellite G Flowline Eddy Co., NM

## **Appendix**

### Report Definitions

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

### **Laboratory Certifications**

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-11-3	Midland

## Standard Flags

_	D
F	Description
1	DOOUTDOOT

- 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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	<u> </u>						7	am or ousto	ay .		_			·····			ANALYSIS REQUEST (Circle or Specify Method No.)													
							Midland, Te	TECH Spring St. exas 79705 • Fax (432) 682-3946						•	1 1	)5 (Ext. to C35)	Ö	Cd Vr Pd Hg Se									pH, TDS			
CLIENT NAM					-		SITE MANAG	ER: Tavaret	ERS		PF		RVAT			TX1005	Ba Cd	Ba			60/624	70/625					s, pH,			
PROJECT N	0.:	9		PR	S	ECT	NAME: 11,te G		FCONTAIN	(N/A)		1		T	- B	5 MOD.	als Ag As	als Ag As	iles	Volatiles	8240/82	mi. Vol. 82	909/0			Air	stos)			
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717								14-15 '	1				X											X						
718								19-20'	1				X											X						
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			To read the second		L	1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946								15 (Ext. to C35)		d Vr Pd Ha Se	3										TDS			
CLIENT NAM	AE:					SITE MANAGER:  TKC Tavare	NERS		P		ERV	ATIVE OD		TX1005	- 12	As Ba Cd	: I			60/624	270/625						ns, pH,			
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Work Order: 12051033

Page Number: 1 of 2

## **Summary Report**

Ike Tavarez Tetra Tech

1910 N. Big Spring Street

Midland, TX 79705

Report Date: May 17, 2012

Work Order: 12051033

Project Location: Eddy Co., NM

Project Name:

COG/BKU Satellite G

Project Number: 114-6401039

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
297039	CS-1 Bottom 20'	soil	2012-05-04	00:00	2012-05-10
297040	CS-1 East Sidewall	soil	2012-05-04	00:00	2012-05-10
297041	CS-1 South Sidewall	soil	2012-05-04	00:00	2012-05-10
297042	CS-1 West Sidewall	soil	2012-05-04	00:00	2012-05-10
297043	CS-1 North Sidewall	soil	2012-05-02	00:00	2012-05-10

Sample: 297039 - CS-1 Bottom 20'

Param	Flag	$\operatorname{Result}$	Units	RL
Chloride		9800	mg/Kg	4

Sample: 297040 - CS-1 East Sidewall

Param	Flag	Result	Units	RL
Chloride		218	mg/Kg	4

Sample: 297041 - CS-1 South Sidewall

Param	Flag	Result	Units	RL
Chloride		<b>276</b> .	mg/Kg	4

Sample: 297042 - CS-1 West Sidewall

Report Date: May 17, 2012		Work Order: 12051033	Page	Page Number: 2 of 2		
Param	$\operatorname{Flag}$	Result	Units	RL		
Chloride		<20.0	mg/Kg	4		
Sample: 297043 Param	- CS-1 North Sidewa Flag	ll Result	Units	m RL		
Chloride	1 100	112	mg/Kg	4		



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

Lubbock. El Paso. Midland. Carrolton.

Texas 79424 Texas 79922 Texas 79703 Texas 75006 800-378-1296 806 - 794 - 1296 915-585-3443 432-689-6301

FAX 806 - 794 - 1298 FAX 915-585-4944 FAX 432-689-8313

972-242-7750

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

#### Certifications

NELAP DoD LELAP WBE HUB NCTRCA DBEKansas Oklahoma ISO 17025

# Analytical and Quality Control Report (Corrected Report)

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

Report Date: May 17, 2012

Work Order:

12051033

Project Location: Eddy Co., NM

COG/BKU Satellite G Project Name:

Project Number: 114-6401039

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

			Date	$\operatorname{Time}$	$\operatorname{Date}$
$\mathbf{Sample}$	Description	Matrix	Taken	Taken	Received
<del>2</del> 97039	CS-1 Bottom 20'	soil	2012-05-04	00:00	2012-05-10
297040	CS-1 East Sidewall	soil	2012-05-04	00:00	2012-05-10
297041	CS-1 South Sidewall	soil	2012-05-04	00:00	2012-05-10
297042	CS-1 West Sidewall	soil	2012-05-04	00:00	2012-05-10
297043	CS-1 North Sidewall	soil	2012-05-02	00:00	2012-05-10

#### Report Corrections (Work Order 12051033)

• 5/17/12: Corrected project number per client.

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 april

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

# **Report Contents**

Case Narrative	4
Analytical Report	5
Sample 297039 (CS-1 Bottom 20')	. 5
Sample 297040 (CS-1 East Sidewall)	. 5
Sample 297041 (CS-1 South Sidewall)	
Sample 297042 (CS-1 West Sidewall)	
Sample 297043 (CS-1 North Sidewall)	
Method Blanks	7
QC Batch 91262 - Method Blank (1)	. 7
Laboratory Control Spikes	8
QC Batch 91262 - LCS (1)	. 8
QC Batch 91262 - MS (1)	. 8
Calibration Standards	9
QC Batch 91262 - CCV (1)	. 9
QC Batch 91262 - CCV (2)	. 9
Appendix	10
Report Definitions	. 10
Laboratory Certifications	
Standard Flags	
Attachments	

### Case Narrative

Samples for project COG/BKU Satellite G were received by TraceAnalysis, Inc. on 2012-05-10 and assigned to work order 12051033. Samples for work order 12051033 were received intact at a temperature of 0.6 C.

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

		$\operatorname{Prep}$	$\operatorname{Prep}$	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	77424	2012-05-16 at 09:26	91262	2012-05-16 at 13:26

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 12051033 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.

114-6401039

Work Order: 12051033 COG/BKU Satellite G Page Number: 5 of 10 Eddy Co., NM

# **Analytical Report**

Sample: 297039 - CS-1 Bottom 20'

Midland Laboratory:

Analysis:

91262

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

Date Analyzed:

2012-05-16

Analyzed By: AR

Prep Batch: 77424

Sample Preparation: 2012-05-16

Prepared By: AR

RL

Parameter Cert Result Units Dilution RLFlag Chloride 9800 mg/Kg 4.00

Sample: 297040 - CS-1 East Sidewall

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

91262

Date Analyzed: Sample Preparation:

2012-05-16

Analyzed By:

AR

Prep Batch: 77424

2012-05-16

Prepared By:

AR

			$\mathrm{RL}$			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			218	mg/Kg	5	4.00

Sample: 297041 - CS-1 South Sidewall

Laboratory:

Analysis:

Midland Chloride (Titration)

91262

Analytical Method:

SM 4500-Cl B 2012-05-16

Prep Method: N/A

QC Batch: Prep Batch: 77424

Date Analyzed: Sample Preparation:

2012-05-16

Analyzed By: Prepared By:

AR. AR.

Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
Chloride			276	mg/Kg	5	4.00

Report Date: May 17, 2012 Work Order: 12051033 Page Number: 6 of 10 114-6401039 COG/BKU Satellite G Eddy Co., NM

Sample: 297042 - CS-1 West Sidewall

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

QC Batch: 91262Date Analyzed: 2012-05-16 Analyzed By: AR. Prep Batch: 77424 Prepared By: AR. Sample Preparation: 2012-05-16

RLRLParameter Flag Cert Result Units Dilution Chloride < 20.0 mg/Kg 5 4.00

Sample: 297043 - CS-1 North Sidewall

IJ

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

QC Batch: 91262Date Analyzed: 2012-05-16 Analyzed By: ARPrep Batch: 77424 Sample Preparation: Prepared By: AR2012-05-16

RL

Parameter Result Dilution RLFlag Cert Units 4.00Chloride 112 mg/Kg

114 - 6401039

Work Order: 12051033 COG/BKU Satellite G Page Number: 7 of 10 Eddy Co., NM

# Method Blanks

Method Blank (1)

QC Batch: 91262

QC Batch: 91262 Prep Batch: 77424 Date Analyzed: 2012-05-16 QC Preparation: 2012-05-16 Analyzed By: AR Prepared By: AR

114-6401039

Work Order: 12051033 COG/BKU Satellite G

Page Number: 8 of 10 Eddy Co., NM

# Laboratory Control Spikes

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

QC Batch:

91262

Date Analyzed:

2012-05-16

Analyzed By: AR

Prep Batch: 77424

QC Preparation: 2012-05-16

Prepared By: AR

LCS Spike Matrix Rec. F Amount Result Limit Param  $\mathbf{C}$ Result Units Dil. Rec. Chloride 2450 mg/Kg 2500 < 3.85 98 85 - 115 1

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

			LCSD			Spike	Matrix		$\operatorname{Rec}$ .		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2580	mg/Kg	1	2500	< 3.85	103	85 - 115	5	20

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

Matrix Spike (MS-1)

Spiked Sample: 297043

QC Batch: 91262

Date Analyzed: QC Preparation:

2012-05-16

Prep Batch: 77424

2012-05-16

Analyzed By: AR. Prepared By: AR.

			MS			$\mathbf{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			2530	mg/Kg	5	2500	112	97	79.4 - 120.6

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2630	mg/Kg	5	2500	112	101	79.4 - 120.6	4	20

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

114-6401039

Work Order: 12051033 COG/BKU Satellite G Page Number: 9 of 10 Eddy Co., NM

# Calibration Standards

Standard (CCV-1)

QC Batch: 91262

Date Analyzed: 2012-05-16

Analyzed By: AR

				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				$\operatorname{True}$	Found	Percent	Recovery	$\operatorname{Date}$
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-05-16

Standard (CCV-2)

QC Batch: 91262

Date Analyzed: 2012-05-16

Analyzed By: AR

				$\mathrm{CCVs}$	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.5	100	85 - 115	2012-05-16

 Report Date: May 17, 2012
 Work Order: 12051033
 Page Number: 10 of 10

 114-6401039
 COG/BKU Satellite G
 Eddy Co., NM

# **Appendix**

### Report Definitions

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

## **Laboratory Certifications**

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
_	WBE	237019	TraceAnalysis

### 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.

Analysis Request of Chain of Custody Record							PAGE: OF:																						
									ANALYSIS REQUEST (Circle or Specify Method No.)																				
						Midland, Te									35 (Ext. to C35)	PAH 8270 RCBA Metals An As Ba Cri Cr Dh Hn Sa	Cd Vr Pd Hg Se									COL	SOL		
CLIENT NAM						SITE MANAG		Sa	T	F		ERV	ATIVE	7	TX1005	89	Ba			0/624	0/625					1	<u></u>		
PROJECT NO.: PROJECT NO.: (OG)						NAME: BKU Satelli-								1	8015 MOD.	A 20	s Ag As	3S	/olatiles	3240/826	. Vol. 827	809	<b>∞</b> .	ن	Air)	tos)	SVCallor		
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP		Eddy G. M	DM PLE IDENTIFICATION	NUMBER OF CONTAINERS	EII TEBED WAN	HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015	PAH 8270	TCLP Metal	TCLP Volatile	TCLP Semi Volatiles	GC.MS Vol.	GC.MS Sem	PCB's 8080/608	Pest. 808/60 Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Ameri		
297039	6/y		5		X	C5-1 Botto	m 70'	3				X											X						
040			I		Ц	CS-1 Fast	Sidewall																					Ш	
041			Ш		Ц	(5-1 South	h Sidewall					$\prod$															$oldsymbol{\perp}$		
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ADDRESS:					RECEIVED BY: (Signature)  DATE:	TIME:							TICH TAYANG Austrolized Yes								rized:	rges : No							
SAMPLE CONDI	ntai	A-3				REMARKS: Oll test	Medland																						
	Please f	fill out all	copi	es	- L	aboratory retains Yello	w copy - Return Orginal co	py to Tetra T	ech	- F	Proje	ct M	anage	r ret	tains	Pini	cop	ру -	Ac	cour	nting	rec	eives	Go	id c	ору.			