SITE INFORMATION Report Type: Work Plan General Site Information: Birch Keely Unit #196 Well Site Site: Company: COG Operating LLC Section, Township and Range Sec 25 T17S R29E Unit P Lease Number: API-30-015-24976 County: **Eddy County** GPS: 32.80003° N 104.02646° W Surface Owner: Federal Mineral Owner: From the intersection of CR 217 and Hwy 82 travel west of Hwy 82 for 1.8 miles, turn left onto Directions: lease road and travel 1.3 miles, turn right and travel 0.3 miles to site. Release Data: Date Released: 2/6/2011 Type Release: Produced Water Source of Contamination: Steel Flowline Fluid Released: 20 bbls Fluids Recovered: 18 bbls A STATE OF THE STATE OF THE STATE OF THE Official Communication: Pat Ellis Name: Ike Tavarez COG Operating, LLC Company: Tetra Tech Address: 550 W. Texas Ave. Ste. 1300 1910 N. Big Spring P.O. Box City: Midland Texas, 79701 Midland, Texas Phone number: (432) 686-3023 (432) 682-4559 Fax: (432) 684-7137 Email: pellis@conchoresources.com ike.tavarez@tetratech.com Ranking Criteria The same of the sa Depth to Groundwater: Ranking Score Site Data <50 ft 20 50-99 ft 10 >100 ft. 0 0 WellHead Protection: Ranking Score Site Data Water Source <1,000 ft., Private <200 ft. 20 Water Source >1,000 ft., Private >200 ft. 0 Surface Body of Water: Ranking Score Site Data <200 ft. 20 200 ft - 1,000 ft. 10 >1,000 ft. RECEIVED Total Ranking Score: NOV 10 2011 Acceptable Soil RRAL (mg/kg)

Total BTEX

50

TPH

5,000

NMOCD ARTESIA

Benzene

10



October 17, 2011

MOCD ARTESIA

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

Work Plan for the COG Operating LLC., Birch Keely Unit #196 Re: Well Site, Unit P, Section 25, Township 17 South, Range 29 East, **Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Birch Keely Unit #196 well site located in Unit P. Section 25, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80003°, W 104.02646°. The site location is shown on Figures 1 and 2.

Background

According to the New Mexico Oil Conservation Division (NMOCD) initial C-141 report, the leak was discovered on February 6, 2011, and released approximately twenty (20) barrels of produced fluid from a steel flow To alleviate the problem, COG personnel replaced the flow line. Eighteen (18) barrels of standing fluids were recovered. The spill initiated west of the pad affecting an area of approximately 35' X 135' in the pasture. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 25. According to the NMOCD groundwater map, the average depth to groundwater in this area is approximately 175' below surface. The average depth to groundwater map is show 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 March 2, 2011, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1, AH-2 and AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the RRAL for BTEX and TPH. The chloride concentrations were not vertically defined in all of the three auger hole locations.

In order to delineate the chloride impact, soil borings were installed utilizing an air rotary drilling rig. On May 6, 2011, Tetra Tech personnel supervised the installation of three (3) soil bores (SB-1, SB-2 and SB-3). Soil samples were collected to a depth of 50.0' below surface. Referring to Table 1, chloride concentrations declined with depth in SB-1 and SB-2. However, the samples in SB-3 chlorides declined with depth, but spiked at 50.0' below surface, with a chloride of 2,190 mg/kg. Deeper samples could not be collected due to the upper sands sloughing, which would not allow the bottom to remain open. The soil boring locations are shown on Figure 3.

On September 22, 2011, Tetra Tech installed an additional soil boring in the area of SB-3 to attempt to define the extents of the deeper chloride impact. The soil boring was installed to a total depth of 90.0' below surface. Samples were collected at 10.0' intervals from 40.0' to 90.0' below surface.



Referring to Table 1, the chloride concentrations declined with depth to 465 mg/kg at 70.0' and <200 at 90.0' below surface.

Work Plan

COG proposes to remove impacted material as highlighted (green) in Table 1 and shown on Figure 4. The spill area will be excavated to approximately 3.0' to 7.0' below surface. Once the areas are excavated to the appropriate depths, the areas of AH-1 (SB-1) an AH-3 (SB-3) will be capped with a 40 mil liner at 4.0' below surface and backfilled with clean soil.

If the excavation depths are not achieved due to safety concerns, Tetra Tech will excavate the soils to the maximum extent practicable. Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,

TETRA/TECH

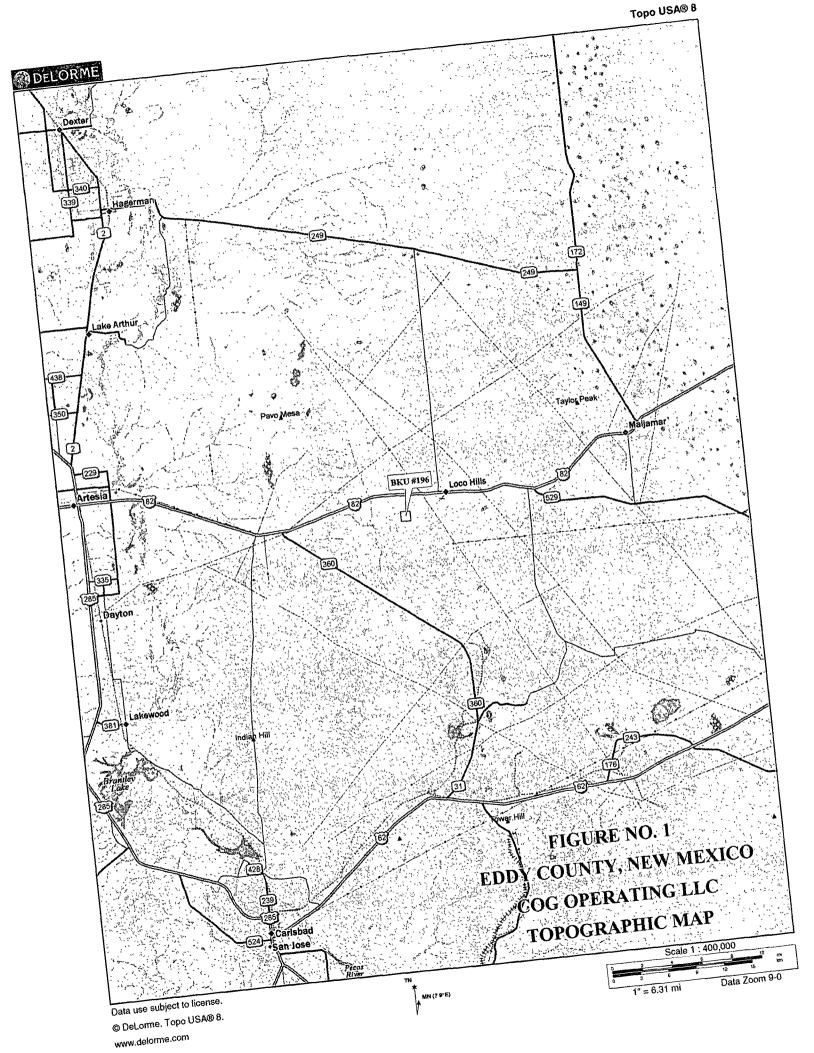
Ike Tavarez

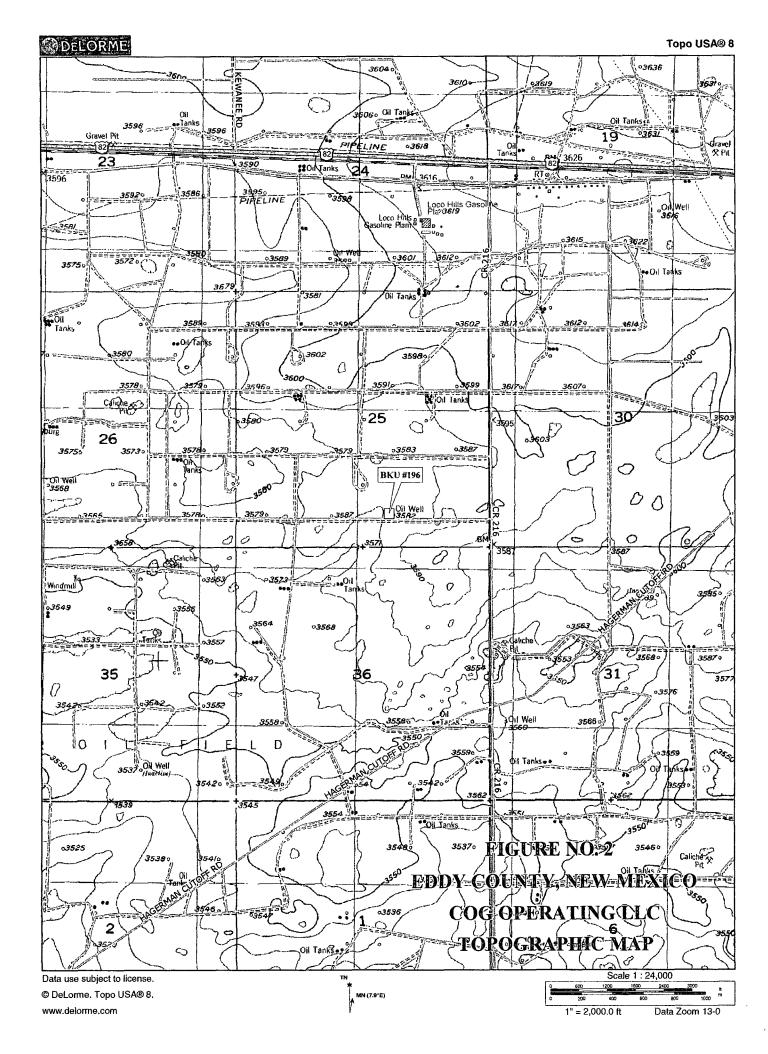
Senior Project Manager

cc: Pat Ellis - COG

cc: Terry Gregston - BLM

Figures







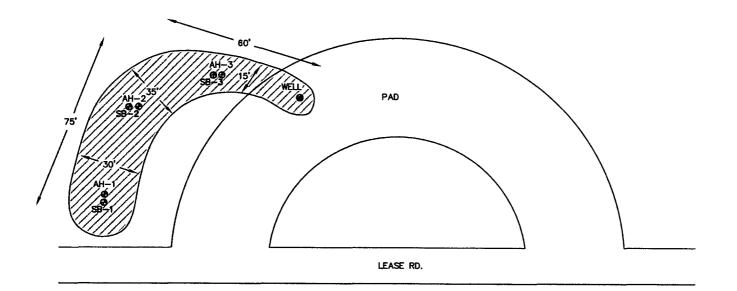


FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

DATE: 2/9/11 DWN. BY: JJ

BKU #196

TETRA TECH, INC. MIDLAND, TEXAS

SPILL AREA
SO AUGER HOLE LOCATIONS
SOIL BORE LOCATIONS



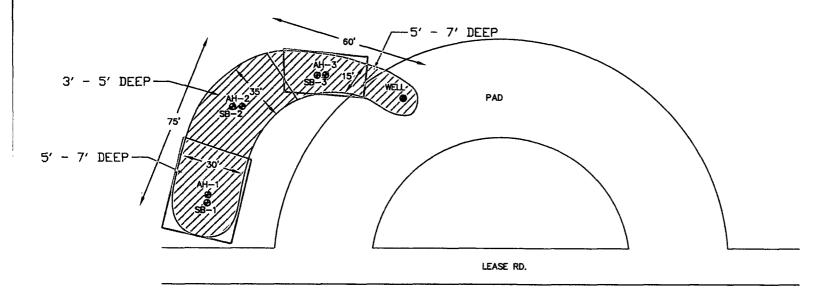


FIGURE NO. 4

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

DATE: 10/13/2011

DWN. BY: IM

FILE: HCOORDON ACCOUNTY

FILE: MICHON ACCOUNTY

BUT #196

TETRA TECH, INC.

MIDLAND, TEXAS

PROPOSED EXCAVATION DEPTHS
PROPOSED LINER INSTALLATION
AUGER HOLE LOCATIONS
SOIL BORE LOCATIONS

NOT TO SCALE

Tables

Table 1
COG Operating LLC.
BIRCH KEELY UNIT #196
EDDY COUNTY, NEW MEXICO

Sample	Sample	Sample	Soi	l Status	TF	PH (mg/k	(g) .	Benzene	Toluene	Ethlybenzene	Xylene	Chloride (mg/kg)
ID	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
AH-1	3/2/2011	0-1	×X.		<2.00	97.0	97.0	[™] <0.0200	0.222	0:204	0.438	3,900
建铁矿		1-1.5	, X								学说:2 约	1,0,500
		2-2.5	*X		200		计数 键	THE TARRE				15,600
Chillen Balling	L'S SEAR THE STATE	Kille Rolling Ma	经高级证	MP 是图 2022 - 500 (14	2382 PV	Section Section 1	7 18 18 of Ca	也不少。	(144.6WZ	or exploration of the	人。"在"大量社会唯	Principle Control
SB-1	5/6/2011	760-19	EXX		WER.	EN E			WALE.			4.180
	****	3, 3	X					And the same			TARING !	<u>2</u> 12,600
		生15.15	X	例心经位	数法式			N. E.			235 144	
	"	7'	Х		-	-	-	-	-	-	-	2,470
	11	10'	Х		-	-	-	-	-	-	-	1,360
	n	15'	Х		_	-	-	-	-	_	-	1,160
	n	20'	Х		-	-	-	-	-	-	-	1,750
	11	25'	Х		-	-	-	-	-	-	-	2,560
	n	30'	Х		-	-	-	-	-	-	-	862
	q	40'	Х		-	-	-	-	-	-	-	201
	II.	50'	Х		-	-	-		-	-	-	<200

Table 1
COG Operating LLC.
BIRCH KEELY UNIT #196
EDDY COUNTY, NEW MEXICO

Sample	Sample	Sample	Soi	l Status	TF	H (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
ID	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-2	**3/2/2011	0-1	, X		<2.00	<50.0	<50.0	<0.0200	,<0.0200	<0.0200	<0.0200	3:110
到深圳	No.	-2,151.5	X									861
学工业海路"5/2	(64) 北京神经中学社	理學 建二异亚烷烷	·阿米·阿里斯	課の発展では2000年19.75	A VETT THE	- TRY 2		ar . The Care and			The state of	THE STATE OF THE
SB-2	#5/6/201.1 ₁ /	7 - 0-1 - X	X. 1		WAS CO						NEC 201	1,630
	新春 基金	3	X - \$	影的記述							343	5,100.
	11	5'	Х		-	-	-	-	-	-	-	736
	H	7'	Х		-	-	-	-	-	-	_	518
	u	10'	Х		-	-	-	-	-	-	-	670
	11	15'	Х		-	-	-	-	-	-	-	381
	11	20'	Х		-	-	-	-	-	-	-	599
	11	25'	Х		-	-	-	-	-	-	-	676
	11	30'	X		-	-	-	<u>-</u>	-	-	_	<200
	11	40'	Х		-	-	-	-	-	-	-	288
	u	50'	Х		-	-	-		-	-	-	516
	u	60'	Х		-	-	-	-	-	_	-	261

Table 1 COG Operating LLC. BIRCH KEELY UNIT #196 EDDY COUNTY, NEW MEXICO

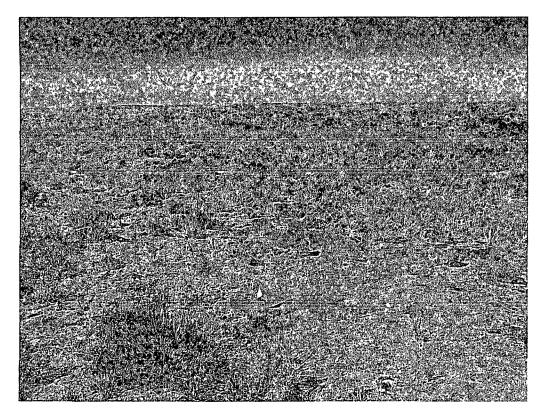
Sample	Sample	Sample	Soi	l Status	TP	H (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
ID.	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-3	3/2/2011	0-1"	× X		₹<2:00	\$\$50.0°		.<0.0200°	<0.0200	<0.0200	<0.0200	1,590
	STATE OF THE	1-1.5	XX	於基礎的					POSTAGE			ं<200 .
		2-2.5	X- X	医 测定式		164 A						ी<200 े
	N. William	3-3.5	-X	配给养给.	7 7 10							1,230 /
是一定。		Dalk Ziffic.	*1527 \$18382	制度工作。有效工作	STANCE L	N. N. F. 24.	是影響的記述		CARPOR.	and the second	。"李沙公司全公路	化零120位至1
SB-3	5/6/2011	0-1: 列	X	reign.				ながは多さ			THE STATE	1,730
	物學家	3.3	X	關意思能			i Air					≰°6,240 €
學的對		5 2	` X >	的地名为		を かかり		る。			表。那	1,490
	It	7'	Х		-	-	-	-	-	-	-	3,000
	11	10'	Х		-	-	-	-	-	-	-	3,180
	u	15'	Х		-	-	-	-	-	_	-	3,010
	"	20'	Х		-	-	-	-	-	-	-	3,280
×	11	25'	Х		-	-	-	-	-	_	-	2,160
	н	30'	Х		-	-	-	-	-	-	-	1,540
	น	40'	Х		-	-	-	-		-	-	1,750
	а	50'	Х		-	-	-	-	•	-		2,190
SB-3	9/22/2011	40'	Х		-	-	-	-	-	~	-	1,890
		50'	Х		-	-	-	-	-	-	-	2,510
		60'	Х		-	-	-	-	-	-		1,190
	-	70'	Х		-	-	-	•	-	-	<u> </u>	465
		80'	Х		-	-	-	•	-	-	-	201
		90'	Х		-	-	-	-		-	<u>.</u>	<200
	·											

()	Not Analyzed
	Proposed Excavated Depths
	Proposed Liner

Photos

COG Operating LLC Birch Keely Unit #196 Eddy County, New Mexico





View West – AH-3 and AH-2



View South West - AH-2 and AH-1

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 Revised October 10, 2003 abmit 2 Copies to appropriate

Form C-141

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

Release Notification and Corrective Action

						OPERA	IOR			al Report	Ш	Final Rep	port
Name of Co	mpany	COG OP	ERATIN	GLLC		Contact	Pa	at Ellis					
Address		Texas, Suite	100, Mi	dland, TX 79701	1	Telephone N	No. 432-	230-00	77				
Facility Nar			ely Unit			Facility Typ		Well					
Surface Ow	ner Fede	eral		Mineral O	wner				Lease N	lo. (API#)	30-01	5-24976	
				LOCA	TIO	OF REI	EASE						
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	Fast/V	West Line	County			
P	25	17S	29E	rect nom me	North	Boutil Lanc	1 cct ii din tiic	Last	VOSE LINE	-	Eddy		Í
-		.,,,	2,2										
				Latitude 32 4	7.987	Longitu	ıde 104 01.569						
·				NAT	URE	OF RELI							
Type of Rele							Release 20bbls			Recovered			
Source of Rel	Source of Release Steel flowline					1	lour of Occurrenc	e		Hour of Dis			
Was Immedia	W 1 1' 1 N 1 ' 0' 0					02/06/2011 If YES, To			02/06/201	1 6:00	a.m.		
Was Immediate Notice Given? ☐ Yes ☐ No ☐ Not Requi						11 1E5, 10	wnom?						
By Whom?						Date and H	Our						\dashv
Was a Watero	course Read	hed?					lume Impacting t	he Wate	ercourse.	·····			\neg
			Yes 🛛	No									
If a Watercourse was Impacted, Describe Fully.*									\dashv				
Describe Cau	se of Proble	em and Remed	lial Action	Taken.*									
The steel flow	vline develo	pped a hole du	e to corros	sion. The pipe has	s been r	eplaced and r	eturned into servi	ce.					
Describe Area	a Affected a	and Cleanup A	ction Tak	en.*									\dashv
release, the w the spill site a any significan	ater travele rea to delin it remediati	d 3' x 35' to a eate any conta on work.	collecting mination	rom the steel flow g area measuring 1 from the release a	.5' x 15 nd we v	in the pastury	re. All standing f remediation work	luid has plan to	the NMO	ered. Tetra CD/BLM fo	Tech r r appro	will sample val prior to	
regulations all public health should their of or the environ	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.												
							OIL CONS	SERV	ATION	DIVISIO	<u>DN</u>		\neg
Signature:			1	/ 5									
Printed Name: Josh Russo Approved by District S						District Supervise	or:						
Title: HSE Coordinator					Approval Date: Expiration Date:		• • •						
E-mail Addres	ss:	jrusso@concl	oresource	es.com	Conditions of Approval:								
Date: 02/													

Appendix B

Water Well Data Average Depth to Groundwater (ft) COG - Birch Keely Unit #196 Eddy County, New Mexico

	16	South	2	28 East			16 S	outh	2	29 East	1		16	South	3	0 East
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
18	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
19	20	21 61	22	23	24	19 110	20	21	22	23	24	19	20	21	22	23
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26
31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35
	17 :	South	2	28 East		<u> </u>	17 Sc	outh		29 East	: 	<u> </u>	17	South	3	0 East
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
18	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
19	20	21	22 79	23	24	19	20	21	22	80 23	24	19	20	21	22	23
30	29	28	27	26	25	30	29 210 208 '	28	27	26	25 SITE	30	29	28	27	26
31	32	33	34 53	35	36	31	32	33	34	35 153	36	31	32	33	34	35
	18	South	2	28 East			18 Sc	outh	2	29 East	 -		18	South	3	0 East
6	5	4	3	2	1	6	5	4	3	2	1	6	5	4	3	2
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11
18	17	16	15	14	13	18	17	16	15	14	13	18	17	16	15	14
19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23
30	29	28	27	26	25	30	29	28	27	26	25	30	29	28	27	26
31	32	33	34	35 65	36	31	32	33	34	35	36	31	32	33	34	35

New Mexico State Engineers Well Reports

USGS Well Reports

Geology and Groundwater Conditions in Southern Eddy, County, NM

NMOCD - Groundwater Data

Appendix C

Page Number: 1 of 2

Summary Report

Work Order: 11030238

Tom Franklin

 ${\bf Tetra} \,\, {\bf Tech}$

1910 N. Big Spring Street

Midland, TX 79705

Report Date: March 17, 2011

Work Order: 11030238

Project Location: Eddy County, NM Project Name: Eddy County, NM Birch Keely Unit #196

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
259350	AH-1 0-1'	soil	2011-03-02	00:00	2011-03-02
259351	AH-1 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259352	AH-1 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259353	AH-2 0-1'	soil	2011-03-02	00:00	2011-03-02
259354	AH-2 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259355	AH-3 0-1'	soil	2011-03-02	00:00	2011-03-02
259356	AH-3 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259357	AH-3 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259358	AH-3 3-3.5'	soil	2011-03-02	00:00	2011-03-02

			BTEX		TPH DRO - NEW	TPH GRO
1	Benzene	Toluene	Ethylbenzene	DRO	GRO	
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
259350 - AH-1 0-1'	< 0.0200	0.222	0.204	0.438	97.0	< 2.00
259353 - AH-2 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 50.0	< 2.00
259355 - AH-3 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 50.0	< 2.00

Sample: 259350 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		3900	mg/Kg	4.00

Sample: 259351 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		10500	mg/Kg	4.00

Report Date: Marc	ch 17, 2011	Work Order: 11030238	Page	Number: 2 of 2
Sample: 259352	- AH-1 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		15600	mg/Kg	4.00
Sample: 259353	- AH-2 0-1'			
Param	Flag	Result	Units	RL
Chloride		3110	mg/Kg	4.00
Sample: 259354	- AH-2 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		861	mg/Kg	4.00
Sample: 259355	- AH-3 0-1'			
Param	Flag	Result	Units	RL
Chloride		1590	mg/Kg	4.00
Sample: 259356	- AH-3 1-1.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 259357	- AH-3 2-2.5'			
Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00
Sample: 259358 ·	- AH-3 3-3.5'			
Param	Flag	Result	${f Units}$	RL



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

6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

El Paso, Texas 79922 Midland, Texas 79703 800 • 378 • 1296 888 • 588 • 3443

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

FAX 806 • 794 • 1298 FAX 915 • 585 • 4944

817 • 201 • 5260

FAX 432 • 689 • 6313

E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019

HUB:

1752439743100-86536 NCTRCA WFWB38444Y0909

DBE: VN 20657

NELAP Certifications

T104704219-08-TX Lubbock:

LELAP-02003

El Paso:

T104704221-08-TX LELAP-02002

Midland: T104704392-08-TX

Kansas E-10317

Analytical and Quality Control Report

Victoria Inman Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

Report Date: 11, 3

Work Order: 11030238

Project Location: Eddy County, NM Project Name:

Birch Keely Unit #196

Project Number:

Birch Keely Unit #196

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
259350	AH-1 0-1'	soil	2011-03-02	00:00	2011-03-02
259351	AH-1 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259352	AH-1 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259353	AH-2 0-1'	soil	2011-03-02	00:00	2011-03-02
259354	AH-2 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259355	AH-3 0-1'	soil	2011-03-02	00:00	2011-03-02
259356	AH-3 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259357	AH-3 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259358	AH-3 3-3.5'	soil	2011-03-02	00:00	2011-03-02

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 19 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

Standard Flags

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

Case Narrative

Samples for project Birch Keely Unit #196 were received by TraceAnalysis, Inc. on 2011-03-02 and assigned to work order 11030238. Samples for work order 11030238 were received intact at a temperature of 13.1 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	67073	2011-03-04 at 12:11	79035	2011-03-04 at 11:34
Chloride (Titration)	SM 4500-Cl B	67258	2011-03-04 at 14:22	79394	2011-03-07 at 09:27
Chloride (Titration)	SM 4500-Cl B	67259	2011-03-07 at 14:23	79396	2011-03-08 at 09:28
TPH DRO - NEW	S 8015 D	67158	2011-03-03 at 13:18	79169	2011-03-03 at 13:18
TPH DRO - NEW	S 8015 D	67236	2011-03-08 at 09:57	79250	2011-03-08 at 09:57
TPH GRO	S 8015 D	67106	2011-03-08 at 09:12	79088	2011-03-08 at 09:53

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 11030238 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Work Order: 11030238 Birch Keely Unit #196 Page Number: 4 of 19 Eddy County, NM

Analytical Report

Sample: 259350 - AH-1 0-1'

Midland Laboratory:

Analysis: **BTEX** QC Batch: 79035 Prep Batch: 67073

Analytical Method: S 8021B Date Analyzed: 2011-03-04 Sample Preparation: 2011-03-04

Prep Method: S 5035 Analyzed By: MEPrepared By: ME

RI

		1(1)			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene		0.222	mg/Kg	1	0.0200
Ethylbenzene		0.204	mg/Kg	1	0.0200
Xylene		0.438	mg/Kg	1	0.0200

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.45	mg/Kg	1	2.00	122	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.45	mg/Kg	1	2.00	122	38.4 - 157

Sample: 259350 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 79394 Prep Batch:

67258

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-03-07

Sample Preparation: 2011-03-04

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		3900	mg/Kg	100	4.00

Sample: 259350 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW QC Batch: 79250 Prep Batch: 67236

Analytical Method: S 8015 D Date Analyzed: 2011-03-08 Sample Preparation: 2011-03-08 Prep Method: N/A Analyzed By: kg Prepared By:

RL

Parameter	Flag	Result	Units	Dilution	RL
DRO		97.0	mg/Kg	1	50.0

Chloride

Work Order: 11030238 Birch Keely Unit #196 Page Number: 5 of 19 Eddy County, NM

100

4.00

mg/Kg

Surrogate	Flag	Result	Units	Diluti	ion	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1100	120	mg/Kg	1		100	120	70 - 130
II III COLLIE		120	6/ **8_	1			120	10 100
Sample: 25	9350 - AH-1 0	-1'						
Laboratory:	Midland							
Analysis:	TPH GRO		Analytical		S 8015 D		Prep Metho	
QC Batch:	79088		Date Anal		2011-03-08		Analyzed B	
Prep Batch:	67106		Sample Pr	eparation:	2011-03-08		Prepared B	y: ME
			RL					
Parameter	Fla	ag	Result		Units		Dilution	RL
GRO			< 2.00		mg/Kg		1	2.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	_		Limits
Trifluorotolu	ene (TFT)		2.56	mg/Kg	1	2.00	128	48.5 - 152
	robenzene (4-BF)	B)	2.26	mg/Kg	1	2.00	113	42 - 159
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titra 79394 67258	ution)	Date A	tical Method Analyzed: e Preparatio	2011-03	3-07	Prep Met Analyzed Prepared	By: AR
			$_{ m RL}$					
Parameter	Fla	ao	Result		Units		Dilution	RL
Chloride	116	<u>'5</u>	10500		mg/Kg		100	4.00
Sample: 25	9352 - AH-1 2-	-2.5'			<u> </u>	1		er e
Laboratory:	Midland							
Analysis:	Chloride (Titra	tion)		tical Method	: SM 450	00-Cl B	Prep Met	
QC Batch:	79394			Analyzed:	2011-03	3-07	Analyzed	•
Prep Batch:	67258		Sample	e Preparatio	n: 2011-03	3-()4	Prepared	By: AR
			RL					
Parameter	Fla	ag	Result		Units		Dilution	RL
Chlorida		······································	15600		mg/Kg		100	4.00

15600

Work Order: 11030238 Birch Keely Unit #196 Page Number: 6 of 19 Eddy County, NM

Sample: 259353 - AH-2 0-1'

Laboratory: Midland

BTEX Analysis: QC Batch: 79035 Prep Batch: 67073

Analytical Method: Date Analyzed: Sample Preparation:

S 8021B 2011-03-04 2011-03-04 Prep Method: S 5035 Analyzed By: MEPrepared By: ME

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene	•	< 0.0200	mg/Kg	1	0.0200
Ethylbenzene		< 0.0200	m mg/Kg	1	0.0200
Xylene		< 0.0200	mg/Kg	1	0.0200

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.56	mg/Kg	1	2.00	128	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.47	mg/Kg	1	2.00	124	38.4 - 157

Sample: 259353 - AH-2 0-1'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 79394 Prep Batch: 67258

SM 4500-Cl B Analytical Method: Date Analyzed:

2011-03-07 Sample Preparation: 2011-03-04 Prep Method: N/A Analyzed By: ARPrepared By: AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		3110	mg/Kg	100	4.00

Sample: 259353 - AH-2 0-1'

Laboratory: Midland

TPH DRO - NEW Analysis: QC Batch: 79169 Prep Batch: 67158

Analytical Method: Date Analyzed:

S 8015 D 2011-03-03 Sample Preparation: 2011-03-03 Prep Method: N/A Analyzed By: kg Prepared By:

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

					\mathbf{Spike}	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		87.0	mg/Kg	1	100	87	70 - 130

Work Order: 11030238 Birch Keely Unit #196 Page Number: 7 of 19 Eddy County, NM

Sample: 259353 - AH-2 0-1'

Laboratory:

Prep Batch:

Midland

67106

Analysis: TPH GRO QC Batch: 79088

Analytical Method: Date Analyzed:

S 8015 D 2011-03-08 Prep Method: S 5035 Analyzed By: ME Prepared By: ME

RL

Dilution RLParameter Flag Result Units GRO < 2.00mg/Kg 1 2.00

Sample Preparation: 2011-03-08

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.46	mg/Kg	1	2.00	123	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.08	$_{ m mg/Kg}$	1	2.00	104	42 - 159

Sample: 259354 - AH-2 1-1.5'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 79394

Prep Batch: 67258 Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-03-07 Sample Preparation: 2011-03-04

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

RL

Units Dilution RLParameter Flag Result Chloride 861 mg/Kg 50 4.00

Sample: 259355 - AH-3 0-1'

Midland Laboratory:

Analysis: **BTEX** QC Batch: 79035 Prep Batch: 67073

Analytical Method: Date Analyzed:

S 8021B 2011-03-04 2011-03-04 Sample Preparation:

Prep Method: S 5035 Analyzed By: ME

ME

Prepared By:

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	1	0.0200
Toluene		< 0.0200	mg/Kg	1	0.0200
Ethylbenzene		< 0.0200	mg/Kg	1	0.0200
Xylene		< 0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.48	mg/Kg	1	2.00	124	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.39	mg/Kg	1	2.00	120	38.4 - 157

Report Date: 11, 3 Birch Keely Unit #196 Sample: 259355 - AH-3 0-1' Laboratory: Midland Analysis: Chloride (Titration) QC Batch: 79394 Prep Batch: 67258

Work Order: 11030238 Birch Keely Unit #196 Page Number: 8 of 19 Eddy County, NM

Analytical Method: Date Analyzed:

SM 4500-Cl B 2011-03-07 Sample Preparation: 2011-03-04

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

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		1590	mg/Kg	100	4.00

Sample: 259355 - AH-3 0-1'

Laboratory: Midland

TPH DRO - NEW Analysis: QC Batch: 79169 Prep Batch: 67158

S 8015 D Analytical Method: Date Analyzed: 2011-03-03

Prep Method: N/A Analyzed By: kg Sample Preparation: 2011-03-03 Prepared By:

RL

Parameter	Flag	Result	Units	Dilution	RL
DRO		< 50.0	m mg/Kg	1	50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		91.9	mg/Kg	1	100	92	70 - 130

Sample: 259355 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH GRO QC Batch: 79088 Prep Batch: 67106

Analytical Method: S 8015 D 2011-03-08 Date Analyzed: Sample Preparation: 2011-03-08

Prep Method: S 5035 Analyzed By: MEPrepared By: ME

RL

Parameter	Flag	Result	Units	Dilution	RL
GRO		< 2.00	mg/Kg	1	2.00

e-					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		2.71	mg/Kg	1	2.00	136	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.18	nıg/Kg	1	2.00	109	42 - 159
` ,				1			

Report Date Birch Keely		Work Order: 11030 Birch Keely Unit #		Page Number: Eddy Coun		
Sample: 25	9356 - AH-3 1-1.5'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79396 67259	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-08 2011-03-07	Prep Method: Analyzed By: Prepared By:	N/A AR AR	
Parameter	Flag	RL Result	Units	Dilution	RL	
Chloride	Tang		mg/Kg	50	4.00	
Sample: 25	9357 - AH-3 2-2.5'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 79396 67259	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-08 2011-03-07	Prep Method: Analyzed By: Prepared By:	N/A AR AR	
Parameter	Flag	RL Result	Units	Dilution	RL	
Chloride			mg/Kg	50	4.00	
Sample: 25 Laboratory: Analysis: QC Batch: Prep Batch:	9358 - AH-3 3-3.5' Midland Chloride (Titration) 79396 67259	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2011-03-08 2011-03-07	Prep Method: Analyzed By: Prepared By:	N/A AR AR	
Parameter	Flag	RL Result	Units	Dilution	RL	
Chloride	1106		mg/Kg	100	4.00	
Method Bla	79035	Date Analyzed: 2011-		Analyzed By:	ME	
Prep Batch:	67073	QC Preparation: 2011-	03-04	Prepared By:	ME	
Parameter	Flag	MDL Result		Units	RL	
Benzene	* ****	< 0.0118		mg/Kg	0.02	
Toluene		<0.00600		mg/Kg	0.02	
Ethylbenzene	e	< 0.00850		mg/Kg continu	0.02	

Work Order: 11030238 Birch Keely Unit #196 Page Number: 10 of 19 Eddy County, NM

method	blank	continued		
1100,01000	ULLETER	COTTOBLECE	٠	

mentoa otatik continuea			MD	L				
Parameter	Flag Result			Unit	RL			
Xylene		< 0.00613			mg/Kg		0.02	
					Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotoluene (TFT)		1.66	mg/Kg	1	2.00	83	66.6 - 122	
4-Bromofluorobenzene (4-BFB)		1.59	mg/Kg	1	2.00	80	55.4 - 124	

Method Blank (1) QC Batch: 79088

QC Batch: 79088 Prep Batch: 67106 Date Analyzed: 2011-03-08 QC Preparation: 2011-03-08 Analyzed By: ME Prepared By: ME

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.98	mg/Kg	1	2.00	99	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.60	mg/Kg	1	2.00	80	52.4 - 130

Method Blank (1) QC Batch: 79169

QC Batch: 79169 Prep Batch: 67158 Date Analyzed: 2011-03-03 QC Preparation: 2011-03-03 Analyzed By: kg Prepared By: kg

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane		90.1	mg/Kg	1	100	90	70 - 130

Method Blank (1) QC Batch: 79250

QC Batch: 79250 Prep Batch: 67236 Date Analyzed: 2011-03-08 QC Preparation: 2011-03-08

Analyzed By: kg Prepared By: kg

Work Order: 11030238 Birch Keely Unit #196 Page Number: 11 of 19 Eddy County, NM

		M	DL			
Parameter	Flag		sult		Units	RL
DRO	1 1.005		5.7		ng/Kg	50
2100					6/6	
				Spike	Percent	Recovery
Surrogate	Flag Result		Dilution	Amount	Recovery	Limits
n-Tricosane	104	mg/Kg	1	100	104	70 - 130
Method Blank	(1) QC Batch: 7939)4				
QC Batch: 793	94	Date Analyzed:	2011-03-07		Analyze	d Bv: AR
Prep Batch: 672	58	QC Preparation:	2011-03-04		Prepare	
		3.4	D.			
	TD!		DL		* 7 · .	D.F.
Parameter	Flag		sult		Units	RL
Chloride		<u> </u>	3.85	n	ng/Kg	4
	,	•				
Method Blank	(1) QC Batch: 7939	96				
QC Batch: 793	96	Date Analyzed:	2011-03-08		Analyze	d By: AR
Prep Batch: 672	59	QC Preparation:	2011-03-07		Prepare	
			D.T.			
~	ro.		DL		TT	Dr
Parameter	Flag	Res			Units	RL
Chloride		<:	3.85	n	ng/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 79035 Prep Batch: 67073 Date Analyzed: 2011-03-04 QC Preparation: 2011-03-04 Analyzed By: ME Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.81	mg/Kg	1	2.00	< 0.0118	90	81.9 - 108
Toluene	1.78	mg/Kg	1	2.00	< 0.00600	89	81.9 - 107
Ethylbenzene	1.73	nig/Kg	1	2.00	< 0.00850	86	78.4 - 107
Xylene	5.22	mg/Kg	1	6.00	< 0.00613	87	79.1 - 107

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	$_{ m Limit}$
Benzene	1.80	mg/Kg	1	2.00	< 0.0118	90	81.9 - 108	1	20

 $continued \dots$

Work Order: 11030238 Birch Keelv Unit #196 Page Number: 12 of 19 Eddy County, NM

control	snikes	continued			
COMMING	ou	COTOUBLEACUE	٠	•	

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Toluene	1.77	mg/Kg	1	2.00	< 0.00600	88	81.9 - 107	1	20
Ethylbenzene	1.74	mg/Kg	1	2.00	< 0.00850	87	78.4 - 107	1	20
Xylene	5.23	mg/Kg	1	6.00	< 0.00613	87	79.1 - 107	0	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.88	1.81	mg/Kg	1	2.00	94	90	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.92	1.90	mg/Kg	1	2.00	96	95	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 67106

79088

Date Analyzed:

2011-03-08 QC Preparation: 2011-03-08

Analyzed By: ME Prepared By: ME

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	12.9	mg/Kg	1	20.0	< 0.753	64	60.9 - 95.4

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

	LCSD			$_{ m Spike}$	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	$_{ m Limit}$	RPD	Limit
GRO	13.7	mg/Kg	1	20.0	< 0.753	68	60.9 - 95.4	6	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.98	1.93	mg/Kg	1	2.00	99	96	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.76	1.74	mg/Kg	1	2.00	88	87	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 67158

79169

Date Analyzed:

2011-03-03 QC Preparation: 2011-03-03

Analyzed By: kg Prepared By: kg

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	241	mg/Kg	1	250	<15.7	96	47.5 - 144.1

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

Param

Chloride

Work Order: 11030238 Birch Keely Unit #196 Page Number: 13 of 19 Eddy County, NM

RPD

Limit

20

RPD

6

Rec.

Limit

85 - 115

Rec.

102

										_	
Param		LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.		Rec. .imit	RPD	R.P.D Limit
DRO		230	mg/Kg	1	250	<15.7	92	47.5	- 144.1	5	20
Percent recovery is b	pased on the s	pike result.	RPD is b	pased on	the spike	and spike d	uplicat	e resu	lt.		
					•						-
	LCS	LCSD	**	• .	TS:1	Spike		LCS	LCSD		Rec.
Surrogate	Result	Result 108		nits	Dil.	Amount 100		Rec. 110	Rec. 108		Limit 70 - 130
n-Tricosane	110	108	шд	/Kg	1	100		110	106		10 - 130
Laboratory Contr	ol Spike (LC	CS-1)									
QC Batch: 79250			Date Ar	nalyzed:	2011-03	-08			Ana	lyzed B	y: kg
Prep Batch: 67236				paration	: 2011-03	-08			Prep	pared B	y: kg
		LCS	3			Spike	Ma	ıtrix		Ţ	Rec.
Param		Resu		Jnits	Dil.	Amount		sult	Rec.		imit
DRO		202		g/Kg	1	250		15.7	81		- 144.1
	pased on the s	pike result.	RPD is b	pased on	the spike	and spike d	uplicat	e resu	lt.		
	pased on the s	_	RPD is b	pased on	_	_	uplicat				RPD
Percent recovery is b	pased on the s	LCSD			Spike	Matrix			Rec.	RPD	
Percent recovery is b	pased on the s	LCSD Result	Units	Dil.	_	_	uplicat Rec. 80	I		RPD 0	
Percent recovery is b		LCSD Result 201	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result <15.7	Rec.	I 47.5	Rec. Jimit - 144.1		
Percent recovery is b Param DRO	pased on the s	LCSD Result 201 pike result.	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result <15.7 and spike d	Rec. 80 uplicat	I 47.5 e resu	Rec. Jimit - 144.1	0	Limit 20
Param DRO Percent recovery is b		LCSD Result 201	Units mg/Kg RPD is b	Dil.	Spike Amount 250	Matrix Result <15.7	Rec. 80 uplicat	I 47.5	Rec. Jimit 1 - 144.1 It.	0	Limit
Percent recovery is barrogate Param DRO Percent recovery is barrogate	pased on the s	LCSD Result 201 pike result. LCSD	Units mg/Kg RPD is t	Dil. 1 pased on	Spike Amount 250 the spike	Matrix Result <15.7 and spike d Spike	Rec. 80 uplicat I	I 47.5 e resu LCS	Rec. Jimit - 144.1 lt. LCSD	0	Limit 20 Rec. Limit
Percent recovery is barrogate n-Tricosane	pased on the s LCS Result 118	LCSD Result 201 pike result. LCSD Result 123	Units mg/Kg RPD is t	Dil. 1 pased on	Spike Amount 250 the spike	Matrix Result <15.7 and spike d Spike Amount	Rec. 80 uplicat I	I 47.5 se resu LCS Rec.	Rec. imit - 144.1 lt. LCSD Rec.	0	Limit 20 Rec. Limit
Percent recovery is b Param DRO Percent recovery is b Surrogate n-Tricosane Laboratory Contr QC Batch: 79394	pased on the s LCS Result 118	LCSD Result 201 pike result. LCSD Result 123	Units mg/Kg RPD is t	Dil. 1 pased on nits //Kg	Spike Amount 250 the spike	Matrix Result <15.7 and spike d Spike Amount 100	Rec. 80 uplicat I	I 47.5 se resu LCS Rec.	Rec. .imit - 144.1 lt. LCSD Rec. 123	0	Limit 20 Rec. Limit 70 - 130
Percent recovery is b Param DRO Percent recovery is b Surrogate n-Tricosane Laboratory Contr QC Batch: 79394	pased on the s LCS Result 118	LCSD Result 201 pike result. LCSD Result 123	Units mg/Kg RPD is t Un mg	Dil. 1 pased on nits //Kg	Spike Amount 250 the spike Dil. 1	Matrix Result <15.7 and spike d Spike Amount 100	Rec. 80 uplicat I	I 47.5 se resu LCS Rec.	Recimit - 144.1 lt. LCSD Rec. 123	0	Rec. Limit 70 - 130
Percent recovery is b Param DRO Percent recovery is b Surrogate n-Tricosane Laboratory Contr QC Batch: 79394	pased on the s LCS Result 118	LCSD Result 201 pike result. LCSD Result 123	Units mg/Kg RPD is t Units mg	Dil. 1 pased on nits //Kg	Spike Amount 250 the spike Dil. 1	Matrix Result <15.7 and spike d Spike Amount 100	Rec. 80 uplicat I	I 47.5 se resu LCS Rec.	Recimit - 144.1 lt. LCSD Rec. 123 Analy	0 vzed By	Rec. Limit 70 - 130
Percent recovery is b Param DRO Percent recovery is b Surrogate n-Tricosane Laboratory Contr QC Batch: 79394	pased on the s LCS Result 118	LCSD Result 201 pike result. LCSD Result 123 CS-1)	Units mg/Kg RPD is t Un mg Date An QC Prep	Dil. 1 pased on nits //Kg	Spike Amount 250 the spike Dil. 1	Matrix Result <15.7 and spike d Spike Amount 100	Rec. 80 uplicat I	I 47.5 e resu LCS Rec. 1118	Recimit - 144.1 lt. LCSD Rec. 123 Analy Prepare	0 yzed By ared By	Rec. Limit 70 - 130

Spike

Amount

100

Matrix

Result

< 3.85

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

Units

Dil.

1

LCSD

Result

102

Work Order: 11030238 Birch Keely Unit #196 Page Number: 14 of 19 Eddy County, NM

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 67259

79396

Date Analyzed:

2011-03-08 QC Preparation: 2011-03-07 Analyzed By: AR

Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	$_{ m Units}$	Dil.	Amount	Result	Rec.	\mathbf{Limit}
Chloride	95.9	m mg/Kg	1	100	< 3.85	96	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	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride	104	mg/Kg	1	100	< 3.85	104	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: 259205

QC Batch: 79035 Prep Batch: 67073

Date Analyzed:

2011-03-04 QC Preparation: 2011-03-04 Analyzed By: ME Prepared By: ME

Param		MS Result	Units	Dil.	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Matrix Result	Rec.	$egin{array}{l} { m Re}c. \\ { m Limit} \end{array}$
Benzene		4.81	mg/Kg	5	5.00	0.5723	85	80.5 - 112
Toluene	i	4.82	mg/Kg	5	5.00	0.7424	82	82.4 - 113
Ethylbenzene	2	4.92	mg/Kg	5	5.00	0.874	81	83.9 - 114
Xylene	3	14.4	mg/Kg	5	15.0	2.1499	82	84 - 114

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

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	4	4.60	mg/Kg	5	5.00	0.5723	80	80.5 - 112	4	20
Toluene	5	4.69	mg/Kg	5	5.00	0.7424	79	82.4 - 113	3	20
Ethylbenzene	6	5.03	mg/Kg	5	5.00	0.874	83	83.9 - 114	2	20
Xylene		14.8	mg/Kg	5	15.0	2.1499	84	84 - 114	3	20

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

Surrogate	$rac{MS}{Result}$	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	5.72	5.40	mg/Kg	5	5	114	108	41.3 - 117

continued ...

¹Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

²Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control. ³Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

⁴Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

⁵Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. ⁶Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: 11, 3 Birch Keely Unit #196			r: 11030238 7 Unit #196]		ber: 15 of 19 County, NM
matrix spikes continued								
a	MS	MSD	TT **	Dul	Spike	MS	MSD	Rec.
Surrogate 4-Bromofluorobenzene (4-BFB)	7 8 7.36		Units mg/Kg	Dil.	Amount 5	Rec. 147	Rec. 142	Limit 35.5 - 129
4-Dromondorobenzene (4-Dr D)	7.30	1.12	mg/ Kg	<u> </u>	•)	141	142	33.3 - 129
Matrix Spike (MS-1) Spike	d Sample: 259'	734						
QC Batch: 79088	D	ate Analyzed	: 2011-03-	-08			Analyze	d By: ME
Prep Batch: 67106	Ç	C Preparatio	n: 2011-03-	-08			Prepare	d By: ME
	MS			Spike	Ma	ıtrix		Rec.
Param	Result	Units	Dil.	Amoui		sult	Rec.	Limit
GRO	15.6	mg/Kg	1	20.0		.753	78	61.8 - 114
Percent recovery is based on the s	spike result. R		n the spike	and spike	e duplicate	result.		
	MSD		Spike	Matri	x	Re	c.	RPD
Param	MSD Result	Units Dil.	Spike Amount	Matri Resul		Re Lin		RPD PD Limit
	Result	Units Dil.	-		t Rec.		nit R	
GRO	Result 15.4 n	ng/Kg 1	Amount 20.0	Resul	t Rec. 3 77	Lin 61.8 -	nit R	PD Limit
GRO	Result 15.4 n spike result. R	ng/Kg 1 PD is based o	Amount 20.0	Resul	t Rec. 3 77 e duplicate	Lin 61.8 - result.	nit R 114	PD Limit 1 20
GRO Percent recovery is based on the s	Result 15.4 n	ng/Kg 1 PD is based o MSD	Amount 20.0	Resul	t Rec. 3 77	Lin 61.8 -	nit R	PD Limit
GRO Percent recovery is based on the s Surrogate	Result 15.4 n spike result. R MS	m ng/Kg 1 PD is based of MSD	Amount 20.0 on the spike	Resul <0.75 and spike	t Rec. 3 77 e duplicate Spike	Lin 61.8 - result. MS	nit Ri 114 MSD	PD Limit 1 20 Rec. Limit
Param GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	Result 15.4 n spike result. R MS Result	ng/Kg 1 PD is based of MSD Result	Amount 20.0 on the spike Units	Resul <0.75 and spike Dil.	t Rec. 3 77 e duplicate Spike Amount	Lin 61.8 - result. MS Rec.	MSD Rec.	PD Limit 1 20 Rec.
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	Result 15.4 n spike result. R MS Result 2.56 2.15	ng/Kg 1 PD is based of MSD Result 2.52 2.03	Amount 20.0 on the spike Units mg/Kg	Resul <0.75 and spike Dil.	t Rec. 3 77 e duplicate Spike Amount 2	Lin 61.8 - result. MS Rec. 128	MSD Rec. 126	PD Limit 1 20 Rec. Limit 50 - 162
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked	Result 15.4 n 15.4 n Spike result. R MS Result 2.56 2.15 d Sample: 2593	ng/Kg 1 PD is based of MSD Result 2.52 2.03	Amount 20.0 on the spike Units mg/Kg mg/Kg	Resul <0.75 and spike Dil. 1	t Rec. 3 77 e duplicate Spike Amount 2	Lin 61.8 - result. MS Rec. 128	MSD Rec. 126 102	PD Limit 1 20 Rec. Limit 50 - 162
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 79169	Result 15.4 n spike result. R MS Result 2.56 2.15 d Sample: 2593	ng/Kg 1 PD is based of MSD Result 2.52 2.03 Date Analyzed	Amount 20.0 on the spike Units mg/Kg mg/Kg	Resul <0.75 and spike Dil. 1 1	t Rec. 3 77 e duplicate Spike Amount 2	Lin 61.8 - result. MS Rec. 128	MSD Rec. 126 102	PD Limit 1 20 Rec. Limit 50 - 162 50 - 162
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked	Result 15.4 n spike result. R MS Result 2.56 2.15 d Sample: 2593	ng/Kg 1 PD is based of MSD Result 2.52 2.03	Amount 20.0 on the spike Units mg/Kg mg/Kg	Resul <0.75 and spike Dil. 1 1	t Rec. 3 77 e duplicate Spike Amount 2	Lin 61.8 - result. MS Rec. 128	MSD Rec. 126 102	PD Limit 1 20 Rec. Limit 50 - 162 50 - 162
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 79169	Result 15.4 n spike result. R MS Result 2.56 2.15 d Sample: 2593	ng/Kg 1 PD is based of MSD Result 2.52 2.03 Date Analyzed	Amount 20.0 on the spike Units mg/Kg mg/Kg	Resul <0.75 and spike Dil. 1 1	t Rec. 3 77 e duplicate Spike Amount 2	Lin 61.8 - result. MS Rec. 128 108	MSD Rec. 126 102	PD Limit 1 20 Rec. Limit 50 - 162 50 - 162
GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 79169	Result 15.4 n 15.4 n Spike result. R MS Result 2.56 2.15 d Sample: 2593	ng/Kg 1 PD is based of MSD Result 2.52 2.03 Date Analyzed	Amount 20.0 on the spike Units mg/Kg mg/Kg	Resul <0.75 and spike Dil. 1 1 1-03 -03	t Rec. 3 77 e duplicate Spike Amount 2 2	Lin 61.8 - result. MS Rec. 128 108	MSD Rec. 126 102	PD Limit 1 20 Rec. Limit 50 - 162 50 - 162 ed By: kg ed By: kg

Spike

 ${\bf Amount}$

250

 ${\rm Matrix}$

Result

37.1

Rec.

90

RPD

 ${\bf Limit}$

20

continued ...

RPD

10

Rec.

Limit

11.7 - 152.3

 ${\bf Param}$

DRO

MSD

Result

263

Units

mg/Kg

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

Dil.

1

⁷High surrogate recovery due to peak interference. ⁸High surrogate recovery due to peak interference.

Report Date: 11, 3 Birch Keely Unit #196			Work Order: Birch Keely U					umber: 16 of 19 dy County, NM
matrix spikes continued		MUD			0.0	3.60	MOD	D.
Surrogate	MS Result	MSD Result	Units	Dil.	$egin{array}{c} ext{Spike} \ ext{Amount} \end{array}$	MS Rec.	MSD Rec.	Rec. Limit
	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	109	107	mg/Kg	1	100	109	107	70 - 130
Matrix Spike (MS-1) QC Batch: 79250	Spiked S	Sample: 259	0832 Date Analyzed:	2011-03	-08		Ana	lyzed By: kg
Prep Batch: 67236			QC Preparation:					pared By: kg
			V · · · · · · · · · · · · · · · · ·				~ = 0]	,
		MS			Spike	Matrix		Rec.
Param		Result		Dil.	Amount	Result	Rec.	Limit
DRO	9	2990	mg/Kg	5	250	2990	0	11.7 - 152.3
Percent recovery is base	d on the spi	ke result. I	RPD is based on	the spike a	and spike du	iplicate resu	ılt.	
		MSD		Spike	Matrix		Rec.	RPD
Param		Result	Units Dil.	Amount	Result	Rec.	Limit	RPD Limit
DRO	10	2880	mg/Kg 5	250	2990	0 11.	7 - 152.3	4 20
Percent recovery is base	d on the spi	ke result. I	RPD is based on	the spike a	and spike dı	iplicate resu	ılt.	
	MS	MSD)		Spike	MS	MSE	Rec.
Surrogate	Result	Resul	lt Units	Dil.	Amount	t Rec.	Rec.	Limit
n-Tricosane 11 12	326	311	mg/Kg	5	100	326	311	70 - 130
Matrix Spike (MS-1) QC Batch: 79394	Spiked S	Sample: 259	9335 Date Analyzed:	2011-03-	07		Analy	vzed By: AR
Prep Batch: 67258		(QC Preparation:	2011-03-	04		Prepa	ared By: AR
		3 -0			<i>a</i>			_
Daram		MS Resul	lt Units	Dil.	Spike Amount	Matri		Rec. . Limit
Param Chloride		11400		100	10000	Result 1590		80 - 120
OHOTRIC		1140	7 448/118	100	10000	1000	90	00 - 120

Units 12000 Chloride mg/Kg 100 10000 1590 104 80 - 120 Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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

MSD

Result

Dil.

Spike

Amount

Matrix

Result

Rec.

Rec.

Limit

RPD

Limit

20

RPD

5

Param

⁹Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. ¹⁰Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

¹¹High surrogate recovery due to peak interference. ¹²High surrogate recovery due to peak interference.

Report Date: 11, 3 Birch Keely Unit #196 Work Order: 11030238 Birch Keely Unit #196 Page Number: 17 of 19 Eddy County, NM

Matrix Spike (MS-1)

Spiked Sample: 259810

QC Batch: Prep Batch: 67259

79396

Date Analyzed: QC Preparation: 2011-03-07

2011-03-08

Analyzed By: AR. Prepared By: AR.

MSSpike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit Chloride 10100 mg/Kg 100 10000 <385 98 80 - 120

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	10300	mg/Kg	100	10000	<385	100	80 - 120	2	20

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

Standard (CCV-2)

QC Batch: 79035

Date Analyzed: 2011-03-04

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0941	94	80 - 120	2011-03-04
Toluene		mg/Kg	0.100	0.0941	94	80 - 120	2011-03-04
Ethylbenzene		mg/Kg	0.100	0.0882	88	80 - 120	2011-03-04
Xylene		mg/Kg	0.300	0.268	89	80 - 120	2011-03-04

Standard (CCV-3)

QC Batch: 79035

Date Analyzed: 2011-03-04

Analyzed By: ME

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0973	97	80 - 120	2011-03-04
Toluene		mg/Kg	0.100	0.0967	97	80 - 120	2011-03-04
Ethylbenzene		$_{ m mg/Kg}$	0.100	0.0918	92	80 - 120	2011-03-04
Xylene		mg/Kg	0.300	0.277	92	80 - 120	2011-03-04

Standard (CCV-1)

QC Batch: 79088

Date Analyzed: 2011-03-08

Analyzed By: ME

	Oate: 11, 3 ely Unit #196			Order: 110302 Keely Unit #1			umber: 18 of 19 ldy County, NM
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO	•	mg/Kg	1.00	0.850	85	80 - 120	2011-03-08
Standard	d (CCV-2)						
QC Batch	n: 79088		Date Ana	dyzed: 2011-0	3-08	Anal	yzed By: ME
_		**	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param GRO	Flag	Units mg/Kg	Conc. 1.00	Conc. 0.804	Recovery 80	Limits 80 - 120	Analyzed 2011-03-08
QC Batch	n: 79169 Flag	Units	Date An CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO	d (CCV-3)	nıg/Kg	250	234	94	80 - 120	2011-03-03
QC Batch	, ,		Date An	alyzed: 2011-0	03-03	Ana	alyzed By: kg
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	230	92	80 - 120	2011-03-03
Standard QC Batch	d (CCV-3) n: 79250		Date An	alyzed: 2011-(03-08	Ana	alyzed By: kg

Standard (CCV-4)

Flag

Units

mg/Kg

Param

DRO

QC Batch: 79250 Date Analyzed: 2011-03-08 Analyzed By: kg

CCVs

Found

Conc.

232

 CCVs

Percent

Recovery

93

Percent

Recovery

Limits

80 - 120

Date

Analyzed

2011-03-08

CCVs

True

Conc.

250

Report Date: 11, 3 Birch Keely Unit #196

Chloride

mg/Kg

100

Work Order: 11030238 Birch Keely Unit #196 Page Number: 19 of 19 Eddy County, NM

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	222	89	80 - 120	2011-03-08
Standard	(ICV-1)						
QC Batch:	79394		Date Ana	lyzed: 2011-03	3-07	Ana	yzed By: AR.
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		nıg/Kg	100	100	100	85 - 115	2011-03-07
Standard	(CCV-1)						
QC Batch:	79394		Date Ana	lyzed: 2011-05	3-07	Ana	lyzed By: AR
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.7	100	85 - 115	2011-03-07
Standard	(ICV-1)						
QC Batch:	79396		Date Ana	lyzed: 2011-0	3-08	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	98.7	99	85 - 115	2011-03-08
Standard	(CCV-1)						
QC Batch:	79396		Date Ana	lyzed: 2011-0	3-08	Ana	yzed By: AR
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Paranı	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed

101

101

85 - 115

2011-03-08

An	alvs	sis F	₹ 6	0		est of C	nain of Cus	tody	R	2	CC	r	٦									P/	GE:		\overline{L}			F:	工	
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						Midland,	A TECH ig Spring St. Texas 79705 59 • Fax (432) 682-3946									5 (Ext. to C35)	Cr Pb Hg	d Vr Pd Hg Se										rDS		
CLIENT NAMI	E:					SITE MANA	GER: Towarez		NERS			SER	VATIV	Æ.		MOD.> TX1005	Ba Cd	s Ba Cd			60/624	270/625						ıs, pH,		
PROJECT NO).:) OJ		NAME:			CONTAI						, <u> </u>	MOD.	s Ag As	s Ag A	es	Volatiles	8240/82	i. Vol. 8	809,	g	ن	Air)	tos)	s/Cation		
LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP.	GRAB	É	ALY C. NM PLE IDENTIFICATION		NUMBER OF CONTAINERS	HCL.	HN03	ICE	NONE		6TEX 8027B	PAH 8270	RCRA Meta	TCLP Metals Ag As Ba C	TCLP Volatil	ICLP Semi Volatiles	GC.MS Vol.	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/ou	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anlons/Cations, pH, TDS		
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Report Date: May 19, 2011 Work Order: 11051002 Page Number: 1 of 6

Summary Report

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

Report Date: May 19, 2011

Work Order: 11051002

Project Location: Eddy Co., NM

Project Name: COG/Burch Keely Unit #197

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
265956	SB-1 0-1'	soil	2011-05-06	00:00	2011-05-09
265957	SB-1 3'	soil	2011-05-06	00:00	2011-05-09
265958	SB-1 5'	soil	2011-05-06	00:00	2011-05-09
265959	SB-1 7'	soil	2011-05-06	00:00	2011-05-09
265960	SB-1 10'	soil	2011-05-06	00:00	2011-05-09
265961	SB-1 15'	soil	2011-05-06	00:00	2011-05-09
265962	SB-1 20'	soil	2011-05-06	00:00	2011-05-09
265963	SB-1 25'	soil	2011-05-06	00:00	2011-05-09
265964	SB-1 30'	soil	2011-05-06	00:00	2011-05-09
265965	SB-1 40'	soil	2011-05-06	00:00	2011-05-09
265966	SB-1 50'	soil	2011-05-06	00:00	2011-05-09
265967	SB-2 0-1'	soil	2011-05-06	00:00	2011-05-09
265968	SB-2 3'	soil	2011-05-06	00:00	2011-05-09
265969	SB-2 5'	soil	2011-05-06	00:00	2011-05-09
265970	SB-2 7'	soil	2011-05-06	00:00	2011-05-09
265971	SB-2 10'	soil	2011-05-06	00:00	2011-05-09
265972	SB-2 15'	soil	2011-05-06	00:00	2011-05-09
265973	SB-2 20'	soil	2011-05-06	00:00	2011-05-09
265974	SB-2 25'	soil	2011-05-06	00:00	2011-05-09
265975	SB-2 30'	soil	2011-05-06	00:00	2011-05-09
265976	SB-2 40'	soil	2011-05-06	00:00	2011-05-09
265977	SB-2 50'	soil	2011-05-06	00:00	2011-05-09
265978	SB-2 60'	soil	2011-05-06	00:00	2011-05-09
265979	SB-3 0-1'	soil	2011-05-06	00:00	2011-05-09
265980	SB-3 3'	soil	2011-05-06	00:00	2011-05-09
265981	SB-3 5'	soil	2011-05-06	00:00	2011-05-09
265982	SB-3 7'	soil	2011-05-06	00:00	2011-05-09
265983	SB-3 10'	soil	2011-05-06	00:00	2011-05-09
265984	SB-3 15'	soil	2011-05-06	00:00	2011-05-09
265985	SB-3 20'	soil	2011-05-06	00:00	2011-05-09
265986	SB-3 25'	soil	2011-05-06	00:00	2011-05-09

Report Date: May 19, 2011	May 19, 2011	Work (Order: 11051002	Pag	ge Number: 2 of 6
Sample	Description	Matrix	Date Taken	Time Taken	Date Received
265987	SB-3 30'	soil	2011-05-06	00:00	2011-05-09
265988	SB-3 40'	soil	2011-05-06	00:00	2011-05-09
265989	SB-3 50'	soil	2011-05-06	00:00	2011-05-09
Sample: 265	956 - SB-1 0-1'				
Param	Flag	I	Result	Units	RL
Chloride			4180	mg/Kg	4
Sample: 265	957 - SB-1 3'				
Param	Flag	I	Result	Units	RL
Chloride	1 100		.2600	mg/Kg	4
Sample: 265 Param Chloride	958 - SB-1 5' Flag	I	Result 8730	Units mg/Kg	RL 4
Sample: 265	959 - SB-1 7'				
Param	Flag	ī	Result	Units	RL
Chloride	1 1005		2470	mg/Kg	4
Sample: 265	960 - SB-1 10'				
Param	Flag		Result	Units	RL
Chloride			1360	mg/Kg	4
Sample: 265	961 - SB-1 15'				
Sample: 265	961 - SB-1 15' Flag	F	lesult	Units	RL

Sample: 265962 - SB-1 20'

Report Date: May 1	9, 2011	Work Order: 11051002	Page Number: 3 of 6				
Param	Flag	Result	Units	RL			
Chloride		1750	mg/Kg	4			
Sample: 265963 -	SB-1 25'						
Param	Flag	Result	Units	m RL			
Chloride		2560	nig/Kg	4			
Sample: 265964 -	SB-1 30'						
Param	Flag	Result	Units	RL			
Chloride		862	mg/Kg	4			
Sample: 265965 -	SB-1 40'						
Param	Flag	Result	Units	RL			
Chloride	0	201	mg/Kg	4			
Sample: 265966 -	SB-1 50'						
Param	Flag	Result	Units	RL			
Chloride	6	<200	mg/Kg	4			
Sample: 265967 -	SB-2 0-1'						
Param	Flag	Result	Units	RL			
Chloride		1630	mg/Kg	4			
Sample: 265968 -	SB-2 3'						
Param	Flag	Result	Units	RL			
Chloride		5100	mg/Kg	4			
Sample: 265969 -	SB-2 5'						
Param	Flag	Result	Units	RL			
Chloride		736	mg/Kg	4			

Report Date: May	19, 2011	Work Order: 11051002	Page I	Number: 4 of 6
Sample: 265970	- SB-2 7'			
Param	Flag	Result	Units	RL
Chloride		518	mg/Kg	4
•				
Sample: 265971				
Param	Flag	Result	Units	RL
Chloride	· · · · · · · · · · · · · · · · · · ·	670	mg/Kg	4
Sample: 265972 -	- SB-2 15'			
Param	Flag	Result	Units	RL
Chloride		381	mg/Kg	4
Sample: 265973 -	- SB-2 20'			
Param	Flag	Result	Units	RL
Chloride	1 105	599	mg/Kg	4
Sample: 265974 Param Chloride	- SB-2 25'	Result 676	Units mg/Kg	RL 4
Sample: 265975	- SB-2 30'			
Param	Elam	Result	Units	RL
	Flag	Tocatio	G EMEQL.	14.17
	riag	<200	mg/Kg	
Chloride Sample: 265976				
Chloride Sample: 265976				RL
Chloride Sample: 265976 - Param	- SB-2 40'	<200	mg/Kg	4 RL
Chloride Sample: 265976 Param Chloride	- SB-2 40' Flag	<200 Result	mg/Kg Units	4
Chloride	- SB-2 40' Flag	<200 Result	mg/Kg Units	4 RL

Parsin	Report Date: May 19, 2011		Work Order: 11051002	Pa	ge Number: 5 of 6
Chloride 261 mg/Kg 4	Sample: 265978 - SB-2 60'				
Sample: 265979 - SB-3 0-1' Param Flag Result Units RL Chloride 1730 mg/Kg 4 Sample: 265980 - SB-3 3' Param Flag Result Units RL Chloride 6240 mg/Kg 4 Sample: 265981 - SB-3 5' Param Flag Result Units RL Chloride 1490 mg/Kg 4 Sample: 265982 - SB-3 7' Param Flag Result Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL Chloride 3010 mg/Kg 4	Param F	ag	Result		RL
Param Flag Result Units RL			261	mg/Kg	4
Param Flag Result Units RL Chloride 1730 mg/Kg 4 Sample: 265980 - SB-3 3' Sample: 265980 - SB-3 3' Sample: Dink Units RL Chloride 6240 mg/Kg 4 Sample: 265981 - SB-3 5' Sample: Dink Units RL Chloride 1490 mg/Kg 4 Sample: 265982 - SB-3 7' Sample: Dink Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Sample: 265983 - SB-3 10' Sample: Dink Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Sample: 265984 - SB-3 15' Sample: Dink Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Sample: 265985 - SB-3 20' Sample: Units RL Param Flag Result Units RL					
Chloride 1730 mg/Kg 4 Sample: 265980 - SB-3 3' Param Flag Result Units RL Chloride 1490 mg/Kg 4 Sample: 265982 - SB-3 7' Param Flag Result Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 <	Sample: 265979 - SB-3 0-1'				
Sample: 265980 - SB-3 3' Param Flag Result Units RL Chloride 6240 mg/Kg 4 Sample: 265981 - SB-3 5' Param Flag Result Units RL Chloride 1490 mg/Kg 4 Sample: 265982 - SB-3 7' Param Flag Result Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL Param Flag Result Units RL		ag			
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Sample: 265981 - SB-3 5' Param Flag Result Units RL Chloride 1490 mg/Kg 4 Sample: 265982 - SB-3 7' Param Flag Result Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL Sample: 265985 - SB-3 20' Param Flag Result Units RL	Param F	ag	Result	Units	RL
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Param Flag Result Units RL Chloride 3000 mg/Kg 4 Sample: 265983 - SB-3 10' Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Result Units RL Param Flag Result Units RL					
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Param Flag Result Units RL Chloride 3180 mg/Kg 4 Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL					
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Sample: 265984 - SB-3 15' Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL	Param F	ag			RL
Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL	Chloride		3180	mg/Kg	4
Param Flag Result Units RL Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL					
Chloride 3010 mg/Kg 4 Sample: 265985 - SB-3 20' Param Flag Result Units RL	Sample: 265984 - SB-3 15'				
Sample: 265985 - SB-3 20' Param Flag Result Units RL		ag			
Param Flag Result Units RL	Chloride		3010	mg/Kg	4
Param Flag Result Units RL					
9	Sample: 265985 - SB-3 20'				
Chloride 3280 mg/Kg 4		ag			
	Chloride		3280	mg/Kg	4

Report Date: May 19, 2011		Work Order: 11051002	I	Page Number: 6 of 6
Sample: 265986	- SB-3 25'			
Param	Flag	Result	Units	RL
Chloride		2160	mg/Kg	4
Sample: 265987	- SB-3 30'			
Param	Flag	Result	Units	RL
Chloride		1540	mg/Kg	4
Sample: 265988	- SB-3 40'			
Param	Flag	Result	Units	RL
Chloride		1750	mg/Kg	4
Sample: 265989	- SB-3 50'			
Param	Flag	Result	Units	RL
Chloride		2190	mg/Kg	4



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

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817 • 201 • 5260

t-Mail lab@traceanalysis.com

Certifications 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: May 19, 2011

Work Order: 11051002

Project Location: Eddy Co., NM

Project Name: COG/Burch Keely Unit #197 Project Number: COG/Burch Keely Unit #197

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
265956	SB-1 0-1'	soil	2011-05-06	00:00	2011-05-09
265957	SB-1 3'	soil	2011-05-06	00:00	2011-05-09
265958	SB-1 5'	soil	2011-05-06	00:00	2011-05-09
265959	SB-1 7'	soil	2011-05-06	00:00	2011-05-09
265960	SB-1 10'	soil	2011-05-06	00:00	2011-05-09
265961	SB-1 15'	soil	2011-05-06	00:00	2011-05-09
265962	SB-1 20'	soil	2011-05-06	00:00	2011-05-09
265963	SB-1 25'	soil	2011-05-06	00:00	2011-05-09
265964	SB-1 30'	soil	2011-05-06	00:00	2011-05-09
265965	SB-1 40'	soil	2011-05-06	00:00	2011-05-09
265966	SB-1 50'	soil	2011-05-06	00:00	2011-05-09
265967	SB-2 0-1'	soil	2011-05-06	00:00	2011-05-09
265968	SB-2 3'	soil	2011-05-06	00:00	2011-05-09
265969	SB-2 5'	soil	2011-05-06	00:00	2011-05-09
265970	SB-2 7'	soil	2011-05-06	00:00	2011-05-09
265971	SB-2 10'	soil	2011-05-06	00:00	2011-05-09
265972	SB-2 15'	soil	2011-05-06	00:00	2011-05-09
265973	SB-2 20'	soil	2011-05-06	00:00	2011-05-09

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
265974	SB-2 25'	soil	2011-05-06	00:00	2011-05-09
265975	SB-2 30'	soil	2011-05-06	00:00	2011-05-09
265976	SB-2 40'	soil	2011-05-06	00:00	2011-05-09
265977	SB-2 50'	soil	2011-05-06	00:00	2011-05-09
265978	SB-2 60'	soil	2011-05-06	00:00	2011-05-09
265979	SB-3 0-1'	soil	2011-05-06	00:00	2011-05-09
265980	SB-3 3'	soil	2011-05-06	00:00	2011-05-09
265981	SB-3 5'	soil	2011-05-06	00:00	2011-05-09
265982	SB-3 7'	soil	2011-05-06	00:00	2011-05-09
265983	SB-3 10'	soil	2011-05-06	00:00	2011-05-09
265984	SB-3 15'	soil	2011-05-06	00:00	2011-05-09
265985	SB-3 20'	soil	2011-05-06	00:00	2011-05-09
265986	SB-3 25'	soil	2011-05-06	00:00	2011-05-09
265987	SB-3 30'	soil	2011-05-06	00:00	2011-05-09
265988	SB-3 40'	soil	2011-05-06	00:00	2011-05-09
265989	SB-3 50'	soil	2011-05-06	00:00	2011-05-09

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 24 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

Michael april

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Sample 205960 (SB-1 10')							
Sample 265961 (SB-1 15')							
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Case Narrative

Samples for project COG/Burch Keely Unit #197 were received by TraceAnalysis, Inc. on 2011-05-09 and assigned to work order 11051002. Samples for work order 11051002 were received intact at a temperature of 11.9 C.

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

		Prep	Prep	$_{ m QC}$	Analysis
Test	Method	Batch	Date	Batch	
Chloride (Titration)	SM 4500-Cl B	68908	2011-05-12 at 10:54	81304	2011-05-17 at 12:19
Chloride (Titration)	SM 4500-Cl B	68908	2011-05-12 at 10:54	81359	2011-05-18 at 15:05
Chloride (Titration)	SM 4500-Cl B	68908	2011-05-12 at 10:54	81360	2011-05-18 at 15:06
Chloride (Titration)	SM 4500-Cl B	68908	2011-05-12 at 10:54	81362	2011-05-18 at 15:08

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 11051002 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 6 of 24 Eddy Co., NM

Analytical Report

Sample: 265956 - SB-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)
OC Batch: 81359

QC Batch: 81359 Prep Batch: 68908 Analytical Method: SM 4500-Cl B Date Analyzed: 2011-05-18 Sample Preparation: 2011-05-12

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

N/A

AR

AR

Sample: 265957 - SB-1 3'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 81359 Prep Batch: 68908 Analytical Method: SM 450 Date Analyzed: 2011-0 Sample Preparation: 2011-0

SM 4500-Cl B Prep Method: 2011-05-18 Analyzed By: 2011-05-12 Prepared By:

Sample: 265958 - SB-1 5'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 81359 Prep Batch: 68908 Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-05-18
Sample Preparation: 2011-05-12

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

Page Number: 7 of 24 Work Order: 11051002 Report Date: May 19, 2011 Eddy Co., NM COG/Burch Keely Unit #197 COG/Burch Keely Unit #197 Sample: 265959 - SB-1 7' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 81359 Date Analyzed: 2011-05-18 Analyzed By: ARPrep Batch: 68908 Sample Preparation: 2011-05-12 Prepared By: AR RLDilution Result RLParameter Flag Cert Units Chloride 2470 mg/Kg 100 4.00 Sample: 265960 - SB-1 10' Midland Laboratory: SM 4500-Cl B Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: 2011-05-18 Analyzed By: ARQC Batch: 81359 Date Analyzed: Prep Batch: 68908 Sample Preparation: 2011-05-12 Prepared By: AR RLFlag Dilution Parameter Cert Result Units R.L 1360 4.00 Chloride mg/Kg 100 Sample: 265961 - SB-1 15' Laboratory: Midland Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A Analysis: QC Batch: 81359 Date Analyzed: 2011-05-18 Analyzed By: AR. Sample Preparation: Prep Batch: 68908 2011-05-12 Prepared By: ARRLCert Result Units Dilution RLParameter Flag Chloride 1160 mg/Kg 100 4.00

Sample: 265962 - SB-1 20'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 81359 Date Analyzed: 2011-05-18 Analyzed By: AR Prep Batch: 68908 Sample Preparation: 2011-05-12 Prepared By: AR

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 8 of 24 Eddy Co., NM

				•		
_			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1750	mg/Kg	100	4.00
Sample: 26	5963 - SB-1 25'					
Laboratory:	Midland					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81359	Date An		2011-05-18	Analyzed By:	AR
Prep Batch:	68908	Sample	Preparation:	2011-05-12	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			2560	mg/Kg	100	4.00
Sample: 26	5964 - SB-1 30'					
Laboratory:	Midland					
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81359	Date An	alyzed:	2011-05-18	Analyzed By:	AR.
Prep Batch:	68908	Sample 1	Preparation:	2011-05-12	Prepared By:	AR
			RL			

Sample:	265965 -	SB-1	40'

Laboratory:	Midland
Laboratory.	MIGHANG

Chloride

Analysis: Chloride (Titration)

QC Batch: 81359 Prep Batch: 68908 Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-05-18
Sample Preparation: 2011-05-12

862

nıg/Kg

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

50

4.00

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			201	mg/Kg	50	4.00

	: May 19, 2011 Keely Unit #197		Work Order: 11051002 COG/Burch Keely Unit #197		Page Number: Eddy C	
Sample: 26	5966 - SB-1 50'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 81360 68908	Date Ar	eal Method: nalyzed: Preparation:	SM 4500-Cl B 2011-05-18 2011-05-12	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter Chloride	Flag	Cert	Result <200	Units mg/Kg	Dilution 50	$\frac{RL}{4.00}$
Chronde			\200	шу/ку	30	4.00
-	5967 - SB-2 0-1'					
Laboratory: Analysis:	Midland Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81360	Date Ar		2011-05-18	Analyzed By:	AR
Prep Batch:	68908	Sample	Preparation:	2011-05-12	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1630	nıg/Kg	50	4.00
Sample: 26	5968 - SB-2 3'					
Laboratory:	Midland	4 1	136.1	(D. F. 1800, Cl. D.		/ 4
Analysis: QC Batch:	Chloride (Titration) 81360	Analytic Date An	al Method:	SM 4500-Cl B 2011-05-18	Prep Method: Analyzed By:	N/A AR
Prep Batch:	68908		Preparation:	2011-05-13	Prepared By:	AR
			RL			
	Flag	Cert	RL Result	Units	Dilution	RL
Parameter			5100	mg/Kg	100	4.00

Analytical Method:

Sample Preparation: 2011-05-12

Date Analyzed:

SM 4500-Cl B

2011-05-18

Prep Method: N/A

AR.

Analyzed By:

Prepared By:

Laboratory: Midland

Prep Batch: 68908

81360

Analysis:

QC Batch:

Chloride (Titration)

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 10 of 24 Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			736	mg/Kg	50	4.00

Sample: 265970 - SB-2 7'

Laboratory: Midlaud

Analysis: Chloride (Titration) QC Batch: 81360 Prep Batch: 68908 Analytical Method: SM 4500-Cl B Date Analyzed: 2011-05-18 Sample Preparation: 2011-05-12

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			518	mg/Kg	50	4.00

Sample: 265971 - SB-2 10'

Laboratory: Midland

Analysis: Chloride (Titration)
QC Batch: 81360
Prep Batch: 68908

Analytical Method: SM 4500-Cl B Date Analyzed: 2011-05-18 Sample Preparation: 2011-05-12

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

			m RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			670	mg/Kg	50	4.00

Sample: 265972 - SB-2 15'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 81360 Prep Batch: 68908 Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-05-18
Sample Preparation: 2011-05-12

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			381	mg/Kg	50	4.00

	e: May 19, 2011 n Keely Unit #197		ck Order: 110 Jurch Keely U		Page Number: 1 Eddy C	
Sample: 26	35973 - SB-2 20'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 81360 68908	Date Ar	cal Method: palyzed: Preparation:	SM 4500-Cl B 2011-05-18 2011-05-12	Prep Method: Analyzed By: Prepared By:	N/A AR AR
			RL			
Parameter Chloride	Flag	Cert	Result 599	Units mg/Kg	Dilution 50	RL 4.00
Sample: 26	65974 - SB-2 25'					
Laboratory:	Midland					
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch: Prep Batch:	81360 68908	Date Ar	alyzed: Preparation:	2011-05-18 2011-05-12	Analyzed By: Prepared By:	AR AR
тер васы.	00300	bampie	гераганоп.	2011-00-12	r repared by.	AIL
-	771	a	RL		.	
Parameter Chloride	Flag	Cert	Result 676	Units mg/Kg	Dilution 50	$\frac{RL}{4.00}$
				5/116	00	4.00
Sample: 26	5975 - SB-2 30'					
Laboratory:	Midland					
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81360	Date An		2011-05-18	Analyzed By:	AR
Prep Batch:	68908	Sample .	Preparation:	2011-05-12	Prepared By:	AR
			RL			
	Flag	Cert	Result <200	Units mg/Kg	Dilution 50	$\frac{RL}{4.00}$
Parameter Chloride	0					

Analytical Method:

Sample Preparation: 2011-05-12

Date Analyzed:

SM 4500-Cl B

2011-05-18

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Laboratory: Midland

QC Batch: 81362 Prep Batch: 68908

Analysis:

Chloride (Titration)

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 12 of 24 Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			288	mg/Kg	50	4.00

Sample: 265977 - SB-2 50'

Laboratory: Midland

Chloride (Titration)

Analysis: Chloride QC Batch: 81362 Prep Batch: 68908 Analytical Method: SM 4500-Cl B Date Analyzed: 2011-05-18 Sample Preparation: 2011-05-12 Prep Method: N/A Analyzed By: AR Prepared By: AR

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			516	mg/Kg	50	4.00

Sample: 265978 - SB-2 60'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 81362 Prep Batch: 68908 Analytical Method: SM 4500-Cl B Date Analyzed: 2011-05-18 Sample Preparation: 2011-05-12

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			261	mg/Kg	50	4.00

Sample: 265979 - SB-3 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)
QC Batch: 81362
Prep Batch: 68908

Analytical Method: SM 4500-Cl B
Date Analyzed: 2011-05-18
Sample Preparation: 2011-05-12

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

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1730	mg/Kg	50	4.00

Report Date: May 19, 2011 COG/Burch Keely Unit #197			k Order: 110 Burch Keely U		Page Number: 13 of 24 Eddy Co., NA		
Sample: 26	5980 - SB-3 3'						
Laboratory:	Midland						
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A	
QC Batch:	81362	Date An		2011-05-18	Analyzed By:	AR	
Prep Batch:	68908	Sample	Preparation:	2011-05-12	Prepared By:	AR.	
			RL				
Parameter	Flag	Cert	Result	Units	Dilution	RL	
Chloride			6240	mg/Kg	100	4.00	
Sample: 26	5981 - SB-3 5'						
Laboratory:	Midland						
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A	
QC Batch:	81362	Date An		2011-05-18	Analyzed By:	AR	
Prep Batch:	68908	Sample :	Preparation:	2011-05-12	Prepared By:	AR	
			RL				
Parameter	Flag	Cert	Result	Units	Dilution	R.L	
Chloride			1490	mg/Kg	100	4.00	
-	5982 - SB-3 7'						
Laboratory:	Midland	4 3	136.1	CD C 4FOO CU D	D 16.1	NT / A	
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A	
QC Batch: Prep Batch:	81362 68908	Date An	aryzea: Preparation:	2011-05-18 2011-05-12	Analyzed By: Prepared By:	AR AR	
Trop Dutten.	00000	bampie	roparation.	2011-00-12	rrepared by.	7116	
			RL				
Parameter	Flag	Cert	Result 3000	Units mg/Kg	Dilution 100	$\frac{RL}{4.00}$	
Chloride			3111111	222001800	11113		

Analytical Method:

Sample Preparation: 2011-05-12

Date Analyzed:

SM 4500-Cl B

2011-05-18

Prep Method: N/A

AR

AR

Analyzed By:

Prepared By:

Sample: 265983 - SB-3 10'

81362

Chloride (Titration)

Laboratory: Midland

Prep Batch: 68908

Analysis:

QC Batch:

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 14 of 24 Eddy Co., NM

			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			3180	mg/Kg	100	4.00

Sample: 265984 - SB-3 15'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 81362 Prep Batch: 68908 Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2011-05-18 2011-05-12 Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 265985 - SB-3 20'

Laboratory: Midland

Analysis: Chloride (Titration) QC Batch: 81362 Prep Batch: 68908 Analytical Method: SN Date Analyzed: 20 Sample Preparation: 20

SM 4500-Cl B 2011-05-18 2011-05-12 Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 265986 - SB-3 25'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 81304 Prep Batch: 68908 Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2011-05-17 2011-05-12 Prep Method: N/A Analyzed By: AR Prepared By: AR

7

	e: May 19, 2011 Keely Unit #197		ck Order: 110 Burch Keely U		Page Number: 15 Eddy Co	
Sample: 26	5987 - SB-3 30'					
Laboratory:	Midland					
Analysis:	Chloride (Titration)		al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81304	Date Ar		2011-05-17	Analyzed By:	AR
Prep Batch:	68908	Sample	Preparation:	2011-05-12	Prepared By:	AR.
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1540	mg/Kg	100	4.00
Sample: 26 Laboratory: Analysis:	5988 - SB-3 40' Midland Chloride (Titration)	A na lytic	cal Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81304	Date Ar		2011-05-17	Analyzed By:	AR
Prep Batch:	68908		Preparation:	2011-05-12	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride			1750	mg/Kg	100	4.00
Laboratory: Analysis:	55989 - SB-3 50' Midland Chloride (Titration)		eal Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	81304	Date Ar	•	2011-05-17	Analyzed By:	AR.
Prep Batch:	68908	Sample	Preparation:	2011-05-12	Prepared By:	AR
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
O1. 1 1.			01.00	/TZ	100	1.00

2190

mg/Kg

4.00

100

Chloride

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 16 of 24 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 81304

QC Batch: 81304

Date Analyzed:

2011-05-17

Analyzed By: AR

Prep Batch:

68908

QC Preparation:

Cert

2011-05-12

Prepared By: AR

MDL

Parameter Flag Chloride

Result < 3.85

Units RLmg/Kg 4

Method Blank (1)

QC Batch: 81359

QC Batch: Prep Batch: 68908

Chloride

81359

Date Analyzed: QC Preparation:

2011-05-18 2011-05-12 Analyzed By: AR

< 3.85

Prepared By: AR

RL

4

MDLFlag Cert Result

Parameter

Units

mg/Kg

Method Blank (1)

QC Batch: 81360

QC Batch:

81360

Date Analyzed:

2011-05-18

Analyzed By: AR

Prep Batch:

68908

QC Preparation:

2011-05-12

Prepared By:

Parameter Chloride

Flag

Cert

Result < 3.85

MDL

Units RLmg/Kg

Method Blank (1)

QC Batch: 81362

QC Batch: Prep Batch: 68908

81362

Date Analyzed: QC Preparation:

2011-05-18 2011-05-12

Analyzed By: AR

Prepared By: AR

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 17 of 24 Eddy Co., NM

			MDL		
Parameter	Flag	Cert	Result	Units	RL
Chloride			< 3.85	mg/Kg	4

Work Order: 11051002 COG/Burch Keely Unit #197

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

Date Analyzed:

2011-05-17

Analyzed By: AR

Page Number: 18 of 24

Eddy Co., NM

Prep Batch: 68908

QC Preparation: 2011-05-12

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			97.5	mg/Kg	1	100	< 3.85	98	85 - 115

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	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.

Laboratory Control Spike (LCS-1)

QC Batch:

Prep Batch: 68908

81359

Date Analyzed:

2011-05-18

Analyzed By: AR

Prepared By: AR.

			LCS			Spike	Matrix		Rec.
Param	F	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			96.2	mg/Kg	1	100	< 3.85	96	85 - 115

QC Preparation: 2011-05-12

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			104	mg/Kg	1	100	< 3.85	104	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:

81360 Prep Batch: 68908 Date Analyzed:

2011-05-18

Analyzed By: AR

QC Preparation: 2011-05-12

Prepared By: AR

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 19 of 24 Eddy Co., NM

Param		F		LCS Result	Units	Dil.	Spike Amount		atrix esult l	Rec.	Rec. Limit
Chloride				97.4	mg/Kg	1	100	<	3.85	97	85 - 115
Percent recovery is base	d on the spike	resu	lt. RPD	is based o	on the sp	oike and sp	oike duplic	ate res	ult.		
			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			103	mg/Kg	1	100	< 3.85	103	85 - 115	6	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: 81362 Prep Batch: 68908 Date Analyzed: 2011-05-18 QC Preparation: 2011-05-12 Analyzed By: AR Prepared By: AR

			LCS			Spike	Matrix		Rec.
Param	F	$^{\mathrm{C}}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride		-	96.2	mg/Kg	1	100	< 3.85	96	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	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			104	mg/Kg	1	100	< 3.85	104	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: 266030

QC Batch: 81304 Prep Batch: 68908 Date Analyzed: 2011-05-17 QC Preparation: 2011-05-12 Analyzed By: AR Prepared By: AR

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			5160	mg/Kg	50	5000	239	98	80 - 120

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			5440	mg/Kg	50	5000	239	104	80 - 120	5	20

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

Work Order: 11051002 COG/Burch Keely Unit #197

Units

mg/Kg

Dil.

100

Units

Page Number: 20 of 24 Eddy Co., NM

Matrix Spike (MS-1)

Spiked Sample: 265965

QC Batch: Prep Batch:

68908

Date Analyzed: 2011-05-18 QC Preparation: 2011-05-12 Analyzed By: AR Prepared By: AR

MS F C Result

Spike Dil. Amount 100 10000

Matrix Result Rec.

80 - 120

<385

Rec.

102

Rec. Limit 80 - 120

20

Chloride

Param

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

9860

Units

mg/Kg

			MSD
Param	F	\mathbf{C}	Result
Chloride	· · · · · · · · · · · · · · · · · · ·		10400

Spike Matrix Amount Result

<385

Rec. Limit **RPD**

RPD Limit

5

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

Matrix Spike (MS-1)

Spiked Sample: 265975

F

QC Batch:

81360

Date Analyzed:

2011-05-18

10000

Analyzed By: AR

Prep Batch:

68908

QC Preparation:

2011-05-12

Prepared By:

Param	
Chlari	.1.

MS C Result

Spike Dil. Amount Matrix Result Rec.

104

Rec. Limit

80 - 120

RPD

 $\overline{20}$

Chloride	10400	mg/Kg	100	10000	<385
Percent recovery is based on the spike result. I	RPD is based	on the spike	e and si	nike dunlicate	result

							=			
			MSD			Spike	Matrix		Rec.	
Daron	ъ	α		TT	ъ.,	Amount		-		

RPD Result Units ${f Amount}$ Result Rec. Limit Limit Dil. Chloride 10800 100 10000 <385 108 80 - 120 4 mg/Kg

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

Matrix Spike (MS-1)

Spiked Sample: 265985

QC Batch:

81362

Date Analyzed:

2011-05-18

Analyzed By: AR

Prep Batch:

68908

QC Preparation:

2011-05-12

Prepared By: AR

MS Spike Matrix Rec. F \mathbf{C} Param Result Units Dil. Amount Result Rec. Limit 13600 Chloride mg/Kg 100 10000 3280 103 80 - 120

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

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 21 of 24 Eddy Co., NM

			MSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	$^{\rm C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			14100	mg/Kg	100	10000	3280	108	80 - 120	4	20

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

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 22 of 24 Eddy Co., NM

Calibration Standards

Standard (ICV-1)

QC Batch: 81304

Date Analyzed: 2011-05-17

Analyzed By: AR

				ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	104	104	85 - 115	2011-05-17

Standard (CCV-1)

QC Batch: 81304

Date Analyzed: 2011-05-17

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	${ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	95.8	96	85 - 115	2011-05-17

Standard (ICV-1)

QC Batch: 81359

Date Analyzed: 2011-05-18

Analyzed By: AR

				ICVs	ICVs	ICVs	Percent	_
				True	Found	Percent	Recovery	\mathbf{Date}
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	99.2	99	85 - 115	2011-05-18

Standard (CCV-1)

 $QC\ Batch:\ 81359$

Date Analyzed: 2011-05-18

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	${ m Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2011-05-18

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 23 of 24 Eddy Co., NM

Standard (ICV-1)

QC Batch: 81360

Date Analyzed: 2011-05-18

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	2011-05-18

Standard (CCV-1)

QC Batch: 81360

Date Analyzed: 2011-05-18

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.7	99	85 - 115	2011-05-18

Standard (ICV-1)

QC Batch: 81362

Date Analyzed: 2011-05-18

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	98.5	98	85 - 115	2011-05-18

Standard (CCV-1)

QC Batch: 81362

Date Analyzed: 2011-05-18

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2011-05-18

Work Order: 11051002 COG/Burch Keely Unit #197 Page Number: 24 of 24 Eddy Co., NM

Appendix

Laboratory Certifications

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

Standard Flags

•	D
F	Description
-	DOWNIPHOL

- 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.) TETRA TECH 1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 * Fax (432) 682-3946 RCI GC.MS Vol. 8240/8260/624 GC.MS Semi. Vol. 8270/825 PCB's 8080/608 Pest. 808/608 CLIENT NAME: SITE MANAGER: PRESERVATIVE COG Ike Tavarez METHOD PROJECT NAME: COG/ Burch Keety Unit #197 PROJECT NO .: 114-640 Eddy Co., NM SAMPLE IDENTIFICATION LAB I.D. DATE TIME GRAB HINO3 NONE NUMBER 2011 5/6 21585 5B-1 958 959 10 15' 961 20 962 963 30 40' SAMPLED BY: (Print & Initial)

Date: 5/8/11 SAMPLE SHIPPED BY: (Circle) RELINQUISHED BY: (Signature AIRBILL #: Time: OTHER: HEND DELIVERED UPS RELINQUISHED BY: (Signature) RECEIVED BY: (Signature) TETRA TECH CONTACT PERSON: Results by: Time: RECEIVING LABORATORY: TEACE RECEIVED BY: (Signature) The Taxarez **PUSH Charges** DATE: SAMPLE CONDITION WHEN RECEIVED: REMARKS: 19'cintact Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

& wo #: 1651002

An	Analysis Request of Chain of Custody Record																PA	AGE:		<u></u>			OF:	4		_						
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Analysis Request of Chain of Custody Record PAGE: OF: u **ANALYSIS REQUEST** (Circle or Specify Method No.) TETRA TECH (Ext. to C35) 8 8 1910 N. Big Spring St. Pb Hg Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 ច ≥ Major Anlons/Cations, pH, TDS Ba Cd TPH 8015 MOD. TX1005 PAH 8270 RCI GC.MS Vol. 8240/8250/624 GC.MS Semi. Vol. 8270/625 PCB's 8080/608 Pest. 808/608 CLIENT NAME: NUMBER OF CONTAINERS
FILTERED (Y/N)
HCL
HN03 SITE MANAGER: PRESERVATIVE IKE Tavarez **METHOD** PROJECT NAME Burch Keely Unit #197 TCLP Semi Volatiles PROJECT NO .: 114-640 TCLP Volar MATRIX COMP. GRAB LAB I.D. DATE SAMPLE IDENTIFICATION NONE TIME NUMBER 핑 2011 40 516 50-2 50' 977 60' 978 0-1 53-3 979 98b 3' 981 5' 982 10' 987 15' 984 20 Date: 5/8/11 SAMPLE SHIPPED BY: (Circle RELINQUISHED BY: (Signature) AIRBILL #: Time Time: HAND DELIVERED UPS OTHER: RELINQUISHED BY: (Signature) RECEIVED BY: (Signature) Date: Date: TETRA TECH CONTACT PERSON: Results by: RECEIVING LABORATORY: TRACE RECEIVED BY: (Signature) Ike Tavarez RUSH Charges Authorized: ZIP: CONTACT: No DATE: TIME:

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

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Analysis Request of Chain of Custody Record PAGE: OF: **ANALYSIS REQUEST** (Circle or Specify Method No.) TETRA TECH (Ext. to C35) 1910 N. Big Spring St. တီ တီ 모 모 Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 ö TX1005 SITE MANAGER: CLIENT NAME: PRESERVATIVE COG The Tavarez METHOD PROJECT NAME Burch Keely Unit #197 PROJECT NO.: 114-640 Eddy Co., NM LAB I.D. MATRIX COMP. DATE TIME SAMPLE IDENTIFICATION GRAB FIGE TO NONE NUMBER ZOIL 516 53-3 25' 265986 30' 987 988 40' 50' 989 BECEWED BY: (Signature) RELINQUISHED BY: (Signature) SAMPLED BY: (Print & Initial) Date: 5/8/// RELINQUISHED BY (Signatur SAMPLE SHIPPED BY: (Circle) BECEIVED BY: (Signature) AIRBILL #: 11me: Time: FEDEX BUS RELINQUISHED BY: (Signature) Date: Date: RECEIVED BY: (Signature) TETRA TECH CONTACT PERSON: Results by: Time: RECEIVING LABORATORY: TRACE RECEIVED BY: (Signature) Ike Taurez RUSH Charges Authorized: ADDRESS: CITY: MIDCA STATE: TE PHONE: DATE: TIME-Yes No SAMPLE CONDITION WHEN RECEIVED: REMARKS: cintal

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 6, 2011

Work Order: 11092630

Project Location: Eddy Co., NM

Project Name: COG/Burch Keely Unit #197

Project Number: 114-6400827

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
278361	BH-3 40'	soil	2011-09-22	00:00	2011-09-26
278362	BH-3 50'	soil	2011-09-22	00:00	2011-09-26
278363	BH-3 60'	soil	2011-09-22	00:00	2011-09-26
278364	BH-3 70'	soil	2011-09-22	00:00	2011-09-26
278365	BH-3 80'	soil	2011-09-22	00:00	2011-09-26
278366	BH-3 90'	soil	2011-09-22	00:00	2011-09-26

Sample: 278361 - BH-3 40'

Param	Flag	Result	Units	RL
Chloride		1890	mg/Kg	4

Sample: 278362 - BH-3 50'

Param	Flag	Result	Units	RL
Chloride		2510	mg/Kg	4

Sample: 278363 - BH-3 60'

Param	Flag	Result	Units	RL
Chloride		1190	mg/Kg	4

Report Date: Octo	ober 6, 2011	Work Order: 11092630	Page	Number: 2 of 2
Sample: 278364	- BH-3 70'			
Param	Flag	Result	Units	RL
Chloride		465	mg/Kg	4
Sample: 278365 Param	- BH-3 80' Flag	Result	Units	m RL
Chloride	1105	201	mg/Kg	4
Sample: 278366	- BH-3 90'			
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, Sinte 110

El Paso, Texas 79922 Midland, Texas 79703

888 • 588 • 3443 Ft. Worth, Texas 76132

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-Marl; lab@traceanalysis.com

Certifications

NCTRCA \mathbf{DBE} **NELAP** DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: October 6, 2011

Work Order:

11092630

Eddy Co., NM Project Location:

Project Name:

COG/Burch Keely Unit #197

114-6400827 Project Number:

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
278361	BH-3 40'	soil	2011-09-22	00:00	2011-09-26
278362	BH-3 50'	soil	2011-09-22	00:00	2011-09-26
278363	BH-3 60'	soil	2011-09-22	00:00	2011-09-26
278364	BH-3 70'	soil	2011-09-22	00:00	2011-09-26
278365	BH-3 80'	soil	2011-09-22	00:00	2011-09-26
278366	BH-3 90'	soil	2011-09-22	00:00	2011-09-26

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

This report consists of a total of 11 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abril

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

Report Contents

Case Narrative	4
Analytical Report	5
Sample 278361 (BH-3 40')	5
Sample 278362 (BH-3 50')	5
Sample 278363 (BH-3 60')	5
Sample 278364 (BH-3 70')	5
Sample 278365 (BH-3 80')	
Sample 278366 (BH-3 90')	
Method Blanks	7
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QC Batch 85272 - Method Blank (1)	7
Laboratory Control Spikes	8
QC Batch 85271 - LCS (1)	8
QC Batch 85272 - LCS (1)	
QC Batch 85271 - MS (1)	
QC Batch 85272 - MS (1)	
Calibration Standards	10
QC Batch 85271 - ICV (1)	10
QC Batch 85271 - CCV (1)	
QC Batch 85272 - ICV (1)	
QC Batch 85272 - CCV (1)	
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Case Narrative

Samples for project COG/Burch Keely Unit #197 were received by TraceAnalysis, Inc. on 2011-09-26 and assigned to work order 11092630. Samples for work order 11092630 were received intact at a temperature of 1.3 C.

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

		Prep	Prep	$_{ m QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	72370	2011-10-03 at 09:30	85271	2011-10-04 at 16:24
Chloride (Titration)	$\mathrm{SM}\ 4500\text{-}\mathrm{Cl}\ \mathrm{B}$	72370	2011-10-03 at 09:30	85272	2011-10-04 at 16:25

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 11092630 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.

114-6400827

Work Order: 11092630 COG/Burch Keely Unit #197 Page Number: 5 of 11 Eddy Co., NM

Analytical Report

Sample: 278361 - BH-3 40'

Laboratory:

Midland

Analysis: Chloride (Titration)

QC Batch: 85271 Analytical Method:

SM 4500-Cl B 2011-10-04

Prep Method: N/A Analyzed By: AR

Prep Batch:

72370

Date Analyzed: Sample Preparation:

RL

2011-10-03

Prepared By: AR.

Parameter Chloride

Flag Cert Result Units 1890 mg/Kg

Dilution RL100 4.00

Sample: 278362 - BH-3 50'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch: Prep Batch:

85271 72370 Date Analyzed: 2011-10-04 Sample Preparation:

Analyzed By: AR Prepared By: AR

2011-10-03

RL Flag Cert Result Dilution Parameter Units RLChloride 2510 mg/Kg 100 4.00

Sample: 278363 - BH-3 60'

Laboratory:

Midland

Chloride (Titration) Analysis:

Analytical Method: Date Analyzed:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR

QC Batch: Prep Batch:

85272 72370

2011-10-04 Sample Preparation: 2011-10-03

Prepared By: AR

RL

RL

Parameter Flag Cert Result Units Dilution 1190 Chloride mg/Kg 100 4.00

Report Date: October 6, 2011 Work Order: 11092630 Page Number: 6 of 11 114-6400827 COG/Burch Keely Unit #197 Eddy Co., NM Sample: 278364 - BH-3 70' Laboratory: Midland Analytical Method: Prep Method: N/A Analysis: Chloride (Titration) SM 4500-Cl B QC Batch: 85272 Date Analyzed: 2011-10-04 Analyzed By: AR Prep Batch: 72370 Sample Preparation: 2011-10-03 Prepared By: AR. RLParameter Flag Cert Result Units Dilution RLChloride 465 mg/Kg 50 4.00 Sample: 278365 - BH-3 80' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 85272 Date Analyzed: 2011-10-04 Analyzed By: AR Prep Batch: 2011-10-03 Prepared By: AR72370 Sample Preparation: RLParameter Flag Cert Result Units Dilution RLChloride 201 mg/Kg 50 4.00 Sample: 278366 - BH-3 90' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 85272 Date Analyzed: 2011-10-04 Analyzed By: AR. Prep Batch: 72370 Sample Preparation: 2011-10-03 Prepared By: ARRLFlag Parameter Cert Result Dilution RLUnits

<200

mg/Kg

50

4.00

Chloride

114-6400827

Work Order: 11092630 COG/Burch Keely Unit #197 Page Number: 7 of 11 Eddy Co., NM

Method Blanks

Method Blank (1)

QC Batch: 85271

QC Batch:

85271

Date Analyzed:

2011-10-04

Analyzed By: AR.

Prep Batch:

72370

QC Preparation:

2011-10-03

Prepared By: AR

MDL

Parameter Chloride

Flag

Cert

Result < 3.85

Units mg/Kg RL

Method Blank (1)

QC Batch: 85272

QC Batch: Prep Batch: 72370

85272

Date Analyzed: QC Preparation:

2011-10-04 2011-10-03 Analyzed By: AR

Prepared By: AR.

MDL

Parameter Chloride

Flag

Cert

Result < 3.85

Units mg/Kg

RL4

114-6400827

Work Order: 11092630 COG/Burch Keely Unit #197 Page Number: 8 of 11 Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch:

85271

Date Analyzed:

2011-10-04

Analyzed By: AR

Prep Batch: 72370

QC Preparation:

2011-10-03

Prepared By: AR.

Spike LCS Matrix Rec. Param F \mathbf{C} Result Units Dil. Amount Result Limit Rec. < 3.85 Chloride mg/Kg 100 96 85 - 115 95.6 1

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			106	mg/Kg	1	100	< 3.85	106	85 - 115	10	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: Prep Batch: 72370

85272

Date Analyzed: QC Preparation:

2011-10-04 2011-10-03 Analyzed By: AR Prepared By: AR

LCS Spike Matrix Rec. Param F \mathbf{C} Result Units Dil. Amount Result Rec. Limit Chloride 95.1 mg/Kg 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			Spike	Matrix		Rec.		RPD
Param	\mathbf{F}	\mathbf{C}	Result	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.

Matrix Spike (MS-1)

Spiked Sample: 278362

QC Batch: 85271 Prep Batch: 72370 Date Analyzed: 2011-10-04 QC Preparation: 2011-10-03

Analyzed By: AR Prepared By:

114-6400827

Work Order: 11092630-COG/Burch Keely Unit #197 Page Number: 9 of 11

Eddy Co., NM

			MS			Spike	Matrix		Rec.
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			12100	mg/Kg	100	10000	2510	96	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		${ m Rec.}$		$_{ m RPD}$
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			12800	mg/Kg	100	10000	2510	103	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: 278372

QC Batch:

85272

Date Analyzed:

2011-10-04

Analyzed By: AR

Prep Batch: 72370

QC Preparation: 2011-10-03

Prepared By: AR

			MS			Spike	Matrix		Rec.
Param	\mathbf{F}	\mathbf{C}	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride			12800	mg/Kg	100	10000	2780	100	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	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			13500	mg/Kg	100	10000	2780	107	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: October 6, 2011 114-6400827

Work Order: 11092630 COG/Burch Keely Unit #197 Page Number: 10 of 11 Eddy Co., NM

Calibration Standards

Standard (ICV-1)

QC Batch: 85271

Date Analyzed: 2011-10-04

Analyzed By: AR

				ICVs	ICVs	ICV s	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.3	98	85 - 115	2011-10-04

Standard (CCV-1)

QC Batch: 85271

Date Analyzed: 2011-10-04

Analyzed By: AR

				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride	-		mg/Kg	100	102	102	85 - 115	2011-10-04

Standard (ICV-1)

QC Batch: 85272

Date Analyzed: 2011-10-04

Analyzed By: AR.

				ICVs	ICVs	ICV s	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2011-10-04

Standard (CCV-1)

QC Batch: 85272

Date Analyzed: 2011-10-04

Analyzed By: AR

				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			mg/Kg	100	98.6	99	85 - 115	2011-10-04

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

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.

WO #: 11092630

Analysis Request of Chain of Custody Record						PAGE: OF:																	
							ANALYSIS REQUEST (Circle or Specify Method No.)																
1910 Midla	TRA TECH N. Big Spring St. and, Texas 79705 682-4559 • Fax (432) 682-3946							15 (Ext. to C35)	Cr Ph Ho Se	Cd Vr Pd Hg Se										DS			
CLIENT NAME: SITE	EMANAGER: Like Tavare	VERS			SER\ ETH	/ATIVE OD	7	TX1005	E. E.	Ba C			60/624	270/625						Is, pH,			
PROJECT NO: PROJECT NAME:	y Unit #197 Eddy Co., NM	F CONTAIL	(N)					8015 MOD.	A A As	als Ag As	les	Volatiles	8240/82	ni. Vol. 82	809/	88		, i	(Aur)	ns/Catlor			
LAB I.D. DATE TIME XXIII BERTON BERTO	Eddy Co., NM SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	HCL HCL	HN03	ICE	NONE	BTEX 8021B	TPH 801	PAH 8270	TCLP Metals Ag As Ba	TCLP Volatiles	TCLP Semi Volatiles	GC MS Vol 8240/8260/624	GC.MS Ser	PCB's 808(Pest. 808/608	Chloride	Gamma Spec.	Alpha Seta (Alr)	Major Anions/Catlons, pH, TDS			
278361 9/22 S X BH-3	40'				X												X			L			
362 / / /	50'	1			X				\perp								M						
363	<i>භ</i> ′	1			X												X						
364	70'	1			X												X						
366	&o′	1			X												X						
366) (/	90'				X			Ш									X						L
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		Ц	\perp				L			$oldsymbol{ol{ol{ol}}}}}}}}}}}}}}}}$								_					
RELINQUISSED BY (Gignoture) Date: 9/26	S/// BECEIVED BY/Signature)			Date:		770	91	Ц	SAME	I ED	BV: (Print 2	Initio						Dete		/2		
RELINQUISHED BY: (Signature) Time: IYO RELINQUISHED BY: (Signature) Time:				Time: Date: Time:		19	(30 -		SAMF FED	LE SI	HIPPI	ED BY	: (Circ	cle) US	Kin.	1_		Al	RBILL	#;	261		
RELINQUISHED BY: (Signature) Date: Time:	RECEIVED BY: (Signature)			Date: Time:					TETR	A TEC				PS RSO	N:				THER:	sults	by:		=
RECEIVING LABORATORY: TRACE ADDRESS: CITY: MIDLAND STATE: TX ZIP: CONTACT: PHONE:	RECEIVED BY: (Signature) DATE:	RECEIVED BY: (Signature) DATE: TIME:						-	I	700	-	Ta	- 24	æ ;	2-				RI AL	JSH C ithoni Yes	harge red:	s No	
SAMPLE CONDITION WHEN RECEIVED: REMARKS: HOSS-MIMOU Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager r									Pic	(CO:	0 / -	Ας.	cor	atic	o re-	neh.	98 (Golo	CO	71V			