

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

HOBBS OCD

MAR 13 2013

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pJXK 10 00437637
4000

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	600 West Illinois Avenue, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Airbonita 12 Federal #2H	Facility Type	Poly Flowline
Surface Owner	Federal	Mineral Owner	
		Lease No. (API#)	30-025-40179

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	12	22S	32E					Lea

Latitude 32 24.003 Longitude 103 37.592

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	10bbls	Volume Recovered	0bbls
Source of Release	Poly flowline	Date and Hour of Occurrence	10/10/2012	Date and Hour of Discovery	10/10/2012 12:00 p.m.
Was Immediate Notice Given?	☐ Yes ☒ No ☒ Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

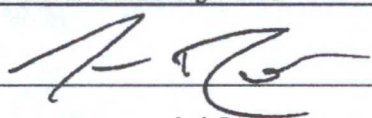
Describe Cause of Problem and Remedial Action Taken.*

A poly flowline released fluid into the pasture adjacent to the pad location. The line has been fused and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced water were released from the poly flowline and we were unable to recover any fluid. The spill area in the pasture measured roughly 40' x 70'. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD/BLM for approval prior to any significant remediation work.

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

Signature: 		<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Josh Russo		Approved by District Supervisor:	
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:	
E-mail Address: jrusso@concho.com	Conditions of Approval:		Attached ☐
Date: 10/25/2012	Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

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Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	600 West Illinois Ave. Midland, Texas 79701	Telephone No.	(432) 230-0077
Facility Name	Airbonita 12 Federal #2H	Facility Type	Poly Flowline
Surface Owner: Federal		Mineral Owner	Lease No. (API#) 30-025-40179

LOCATION OF RELEASE

Unit Letter O	Section 12	Township 22S	Range 32E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude 32.40005 Longitude 103.62681

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 10 bbls oil	Volume Recovered 0 bbls
Source of Release: Poly Flowline	Date and Hour of Occurrence 10/10/2012	Date and Hour of Discovery 10/10/2012 12:00 p.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom? Michelle Mullins	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

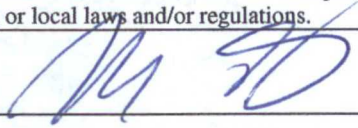
Describe Cause of Problem and Remedial Action Taken.*

A poly flowline released fluid into the pasture adjacent to the pad location. The line has been fused and returned to service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it to NMOCD for review.

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

Signature: 		<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Ike Tavarez (agent for COG)		Approved by District Supervisor:	
Title: Project Manager		Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com		Conditions of Approval:	
Date: 2-14-13 Phone: (432) 682-4559		Attached ☐	

* Attach Additional Sheets If Necessary

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Airbonita 12 Federal #2H					
Company:	COG Operating LLC					
Section, Township and Range	Unit O	Sec 12	T22S	R32E		
Lease Number:	API-30-025-40179					
County:	Lea County					
GPS:	32.40005° N			103.62681° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From Eunice take Hwy 176 East and travel approximatly 22 miles. Turn left (south) onto the lease road (caliche) and travel 6.9 miles. Turn west onto a caliche road and travel 0.8 miles, then turn south and travel 0.5 miles and turn back east traveling 0.4 miles to location.					

Release Data:

Date Released:	10/10/2012
Type Release:	Produced Water
Source of Contamination:	Flow line
Fluid Released:	10 bbls
Fluids Recovered:	0 bbls

Official Communication:

Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	One Concho Center 600 W. Illinois Ave.	1910 N. Big Spring
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavarez@tetrattech.com

Ranking Criteria

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

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

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TETRA TECH

February 12, 2013

HOBBS OCD

MAR 13 2013

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Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC., Airbonita 12 Federal #2H Flow line, Unit O, Section 12, Township 22 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill that occurred at the Airbonita 12 Federal #2H flow line located in Unit O, Section 12, Township 22 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.40005°, W 103.62681°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on October 10, 2012 and released approximately ten (10) barrels of produced water from leaking poly line. No fluids were recovered. The spill originated in the pasture and flowed onto the pad. The final C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 12. According to the NMOCD groundwater map, the depth to groundwater in this area is approximately 250' below surface. The groundwater data is shown in Appendix B

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com



(RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

On October 31, 2012, Tetra Tech personnel inspected and sampled the spill area. The spill area on the pad measured approximately 15' x 100' and 40' x 40' in the pasture. Four (4) auger holes (AH-1 through AH-4) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and 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, all of the auger hole samples were below the RRAL for TPH and BTEX. The area of AH-1 did exhibit elevated chlorides, with a chloride high of 12,400 mg/kg at 2-2.5' and declined to 9,090 mg/kg at 3-3.5'. Auger holes (AH-2 and AH-3) showed chloride concentrations at 0-1' of 892 and 832 mg/kg respectively. Deeper samples were not collected due to the dense formation at the site. The area of AH-4 showed chloride concentrations declining with depth from 1,100 mg/kg (0-1') to 842 mg/kg (1-1.5') below surface.

Remediation and Conclusion

On January 29, 2013, Tetra Tech personnel supervised site remediation and installed backhoe trenches to evaluate the subsurface soils. As proposed in the work plan, trenches were installed in the areas of AH-1 (T-1), AH-2 (T-2), AH-3 (T-3) and AH-4 (T-4) to evaluate the soil for chlorides. The sample results are shown in Table 1.

Referring to Table 1, chloride concentrations in the trenches declined with depth and were vertically defined. Based on the field results, the area of AH-1 was deepened from the previously projected depth of 4.0' to a depth of 7.0' below surface. In addition, a surficial scrape was performed in the areas of AH-2, AH-3 and AH-4 as stated in the work plan. Once completed, the excavations were then brought to grade with additional clean soil, windrows were added and the pasture was reseeded with BLM seed mixture #3. The excavation depths are highlighted in Table 1 and shown on Figure 4. Approximately 440 cubic yards of soil were excavated and transported to the R360 facility for proper disposal.



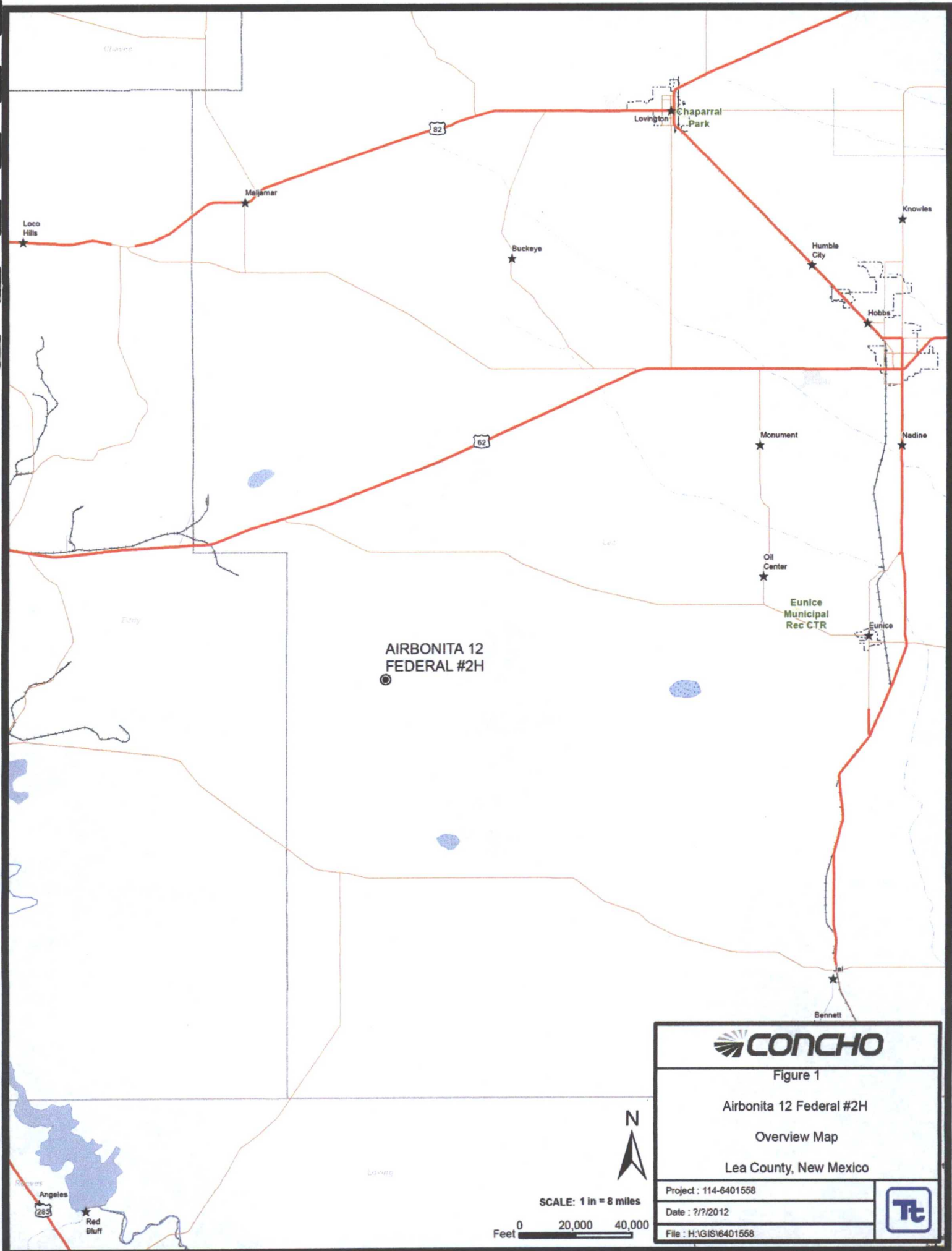
TETRA TECH

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

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Pat Ellis – COG
cc: Jennifer Van Curen – BLM



AIRBONITA 12
FEDERAL #2H



Figure 1

Airbonita 12 Federal #2H

Overview Map

Lea County, New Mexico

Project : 114-6401558

Date : 7/7/2012

File : H:\GIS\6401558



SCALE: 1 in = 8 miles

Feet 0 20,000 40,000



Figure 2

Airbonita 12 Federal #2H

Topo Map 1:24,000

Lea County, New Mexico

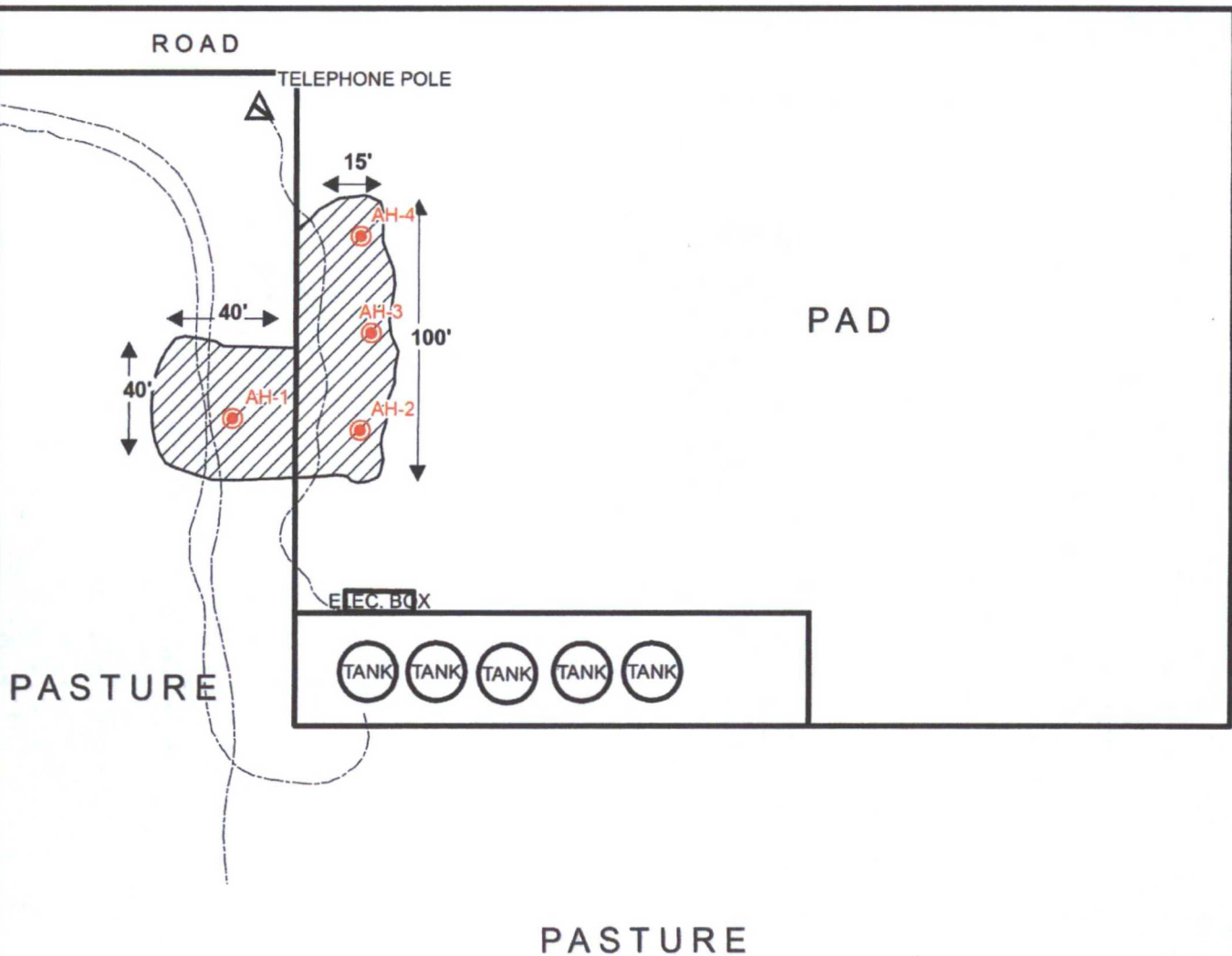
Project : 114-6401558

Date : 11/20/2012

File : H:\GIS\6401558



PASTURE



EXPLANATION	
	AUGER HOLE SAMPLE LOCATIONS
	SPILL AREA

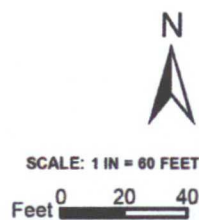


Figure 3	
Airbonita 12 Federal #2H	
Spill Assessment Map	
Lea County, New Mexico	
Project : 114-6401558	
Date : 11/20/2012	
File : H:\GIS\6401558	

PASTURE

ROAD

TELEPHONE POLE

15'

AH-4

AH-3

100'

40'

40'

AH-1

AH-2

PAD

PASTURE

TANK TANK TANK TANK TANK

PASTURE

EXPLANATION

- AUGER HOLE SAMPLE LOCATIONS
- ▨ SPILL AREA

SCALE: 1 IN = 60 FEET
Feet 0 20 40



Figure 3

Airbonita 12 Federal #2H

Spill Assessment Map

Lea County, New Mexico

Project : 114-6401558

Date : 11/20/2012

File : H:\GIS\6401558



The site map shows a 100' x 100' study area. A road runs along the top edge, with a telephone pole located at the top center. A pasture area is located to the left of the study area. A pad area is located to the right of the study area. The study area is divided into two main sections: a blue hatched area on the left and a green hatched area on the right. The blue hatched area is labeled '7' DEEP' and contains sample locations T-1, AH-1, and CS-1. The green hatched area is labeled '0 - 0.5' DEEP (SURFACE SCRAPE)' and contains sample locations T-2, AH-2, T-3, AH-3, T-4, and AH-4. A 'FLEC. BOX' is located at the bottom center of the study area. Five 'TANK' locations are shown in a row at the bottom of the study area. Dimensions of 40' and 15' are indicated for various sections of the study area.

 AUGER HOLE SAMPLE LOCATIONS
 TRENCH LOCATIONS
 EXCAVATED AREAS



Feet 0 20 40

File : H:\GIS\6401558



Table 1
COG Operating LLC.
Air Bonita 12 Federal #2H
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	10/31/2012	0-1		X	<20.0	<50.0	<50.0	<0.100	<0.100	<0.100	<0.100	<0.100	5,670
	"	1-1.5		X	-	-	-	-	-	-	-	-	5,960
	"	2-2.5		X	-	-	-	-	-	-	-	-	12,400
	"	3-3.5		X	-	-	-	-	-	-	-	-	9,090
CS-1	1/28/2013	7' Bottom	X		-	-	-	-	-	-	-	-	948
T-1	1/28/2013	8	X		-	-	-	-	-	-	-	-	563
	"	9	X		-	-	-	-	-	-	-	-	106
	"	10	X		-	-	-	-	-	-	-	-	<20.0
AH-2	10/31/2012	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	892
T-2	1/28/2013	1	X		-	-	-	-	-	-	-	-	70.9
	"	2	X		-	-	-	-	-	-	-	-	<20.0
AH-3	10/31/2012	0-1	X		<4.00	191	191	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	832
T-3	1/28/2013	1	X		-	-	-	-	-	-	-	-	408
	"	2	X		-	-	-	-	-	-	-	-	195
AH-4	10/31/2012	0-1	X		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,100
	"	1-1.5	X		-	-	-	-	-	-	-	-	842
T-4	1/28/2013	1	X		-	-	-	-	-	-	-	-	275
	"	2	X		-	-	-	-	-	-	-	-	145

(-) Not Analyzed
 Excavated Depths
 Surface scrape

COG Operating LLC
Air Bonita 12 Federal #2H Flow line
Lea County, New Mexico



View West – Excavation of AH-1.



View North – Surficial scape of AH-2, AH-3 and AH-4 on the pad.

COG Operating LLC
Air Bonita 12 Federal #2H Flow line
Lea County, New Mexico



View South – Backfill of AH-1.



View West – Backfill of AH-1, AH-2, AH-3 and AH-4.

Water Well Data
Average Depth to Groundwater (ft)
COG - Airbonita 12 Federal #2H
Lea County, New Mexico

21 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 630	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33 SITE	34	35	36

21 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

21 South			33 East		
6	5	4	3	279 107	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 179	27	26	25
31	32	33	34	35	36

22 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12 SITE
18	17	16	15	14 382 350	13
19 (S) 280	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

22 South			33 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			31 East		
6 85	5 354	4 168	3	2	1
7 140	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 400	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			33 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

-  New Mexico State Engineers Well Reports
-  USGS Well Reports
-  Geology and Groundwater Conditions in Southern Eddy, County, NM
-  NMOCD - Groundwater Data
-  Field water level
-  New Mexico Water and Infrastructure Data System

Summary Report

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

Report Date: February 11, 2013

Work Order: 13020130



Project Location: Lea Co., NM
Project Name: COG/Air Bonita 12 Fed. #2H
Project Number: 114-6401558

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
320159	CS-1 7' Bottom (AH-1)	soil	2013-01-28	00:00	2013-02-01
320160	T-1 8' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320161	T-1 9' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320162	T-1 10' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320163	T-2 1' (AH-2)	soil	2013-01-28	00:00	2013-02-01
320164	T-2 2' (AH-2)	soil	2013-01-28	00:00	2013-02-01
320165	T-3 1' (AH-3)	soil	2013-01-28	00:00	2013-02-01
320166	T-3 2' (AH-3)	soil	2013-01-28	00:00	2013-02-01
320167	T-4 1' (AH-4)	soil	2013-01-28	00:00	2013-02-01
320168	T-4 2' (AH-4)	soil	2013-01-28	00:00	2013-02-01

Sample: 320159 - CS-1 7' Bottom (AH-1)

Param	Flag	Result	Units	RL
Chloride		948	mg/Kg	4

Sample: 320160 - T-1 8' (AH-1)

Param	Flag	Result	Units	RL
Chloride		563	mg/Kg	4

Sample: 320161 - T-1 9' (AH-1)

Param	Flag	Result	Units	RL
Chloride		106	mg/Kg	4

Sample: 320162 - T-1 10' (AH-1)

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

Sample: 320163 - T-2 1' (AH-2)

Param	Flag	Result	Units	RL
Chloride		70.9	mg/Kg	4

Sample: 320164 - T-2 2' (AH-2)

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

Sample: 320165 - T-3 1' (AH-3)

Param	Flag	Result	Units	RL
Chloride		408	mg/Kg	4

Sample: 320166 - T-3 2' (AH-3)

Param	Flag	Result	Units	RL
Chloride		195	mg/Kg	4

Sample: 320167 - T-4 1' (AH-4)

Param	Flag	Result	Units	RL
Chloride		275	mg/Kg	4

Sample: 320168 - T-4 2' (AH-4)

Param	Flag	Result	Units	RL
Chloride		145	mg/Kg	4



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail lab@traceanalysis.com WEB www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: February 11, 2013

Work Order: 13020130



Project Location: Lea Co., NM
Project Name: COG/Air Bonita 12 Fed. #2H
Project Number: 114-6401558

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
320159	CS-1 7' Bottom (AH-1)	soil	2013-01-28	00:00	2013-02-01
320160	T-1 8' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320161	T-1 9' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320162	T-1 10' (AH-1)	soil	2013-01-28	00:00	2013-02-01
320163	T-2 1' (AH-2)	soil	2013-01-28	00:00	2013-02-01
320164	T-2 2' (AH-2)	soil	2013-01-28	00:00	2013-02-01
320165	T-3 1' (AH-3)	soil	2013-01-28	00:00	2013-02-01
320166	T-3 2' (AH-3)	soil	2013-01-28	00:00	2013-02-01
320167	T-4 1' (AH-4)	soil	2013-01-28	00:00	2013-02-01
320168	T-4 2' (AH-4)	soil	2013-01-28	00:00	2013-02-01

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

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

Michael Abel

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

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Case Narrative

Samples for project COG/Air Bonita 12 Fed. #2H were received by TraceAnalysis, Inc. on 2013-02-01 and assigned to work order 13020130. Samples for work order 13020130 were received intact at a temperature of -2.1 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	83717	2013-02-11 at 08:44	98826	2013-02-11 at 15:35
Chloride (Titration)	SM 4500-Cl B	83717	2013-02-11 at 08:44	98827	2013-02-11 at 15:36

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13020130 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: February 11, 2013
114-6401558

Work Order: 13020130
COG/Air Bonita 12 Fed. #2H

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Analytical Report

Sample: 320159 - CS-1 7' Bottom (AH-1)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			948	mg/Kg	10	4.00

Sample: 320160 - T-1 8' (AH-1)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			563	mg/Kg	5	4.00

Sample: 320161 - T-1 9' (AH-1)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			106	mg/Kg	5	4.00

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Sample: 320162 - T-1 10' (AH-1)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<20.0	mg/Kg	5	4.00

Sample: 320163 - T-2 1' (AH-2)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			70.9	mg/Kg	5	4.00

Sample: 320164 - T-2 2' (AH-2)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	u		<20.0	mg/Kg	5	4.00

Sample: 320165 - T-3 1' (AH-3)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2013-02-11	Analyzed By:	AR
QC Batch:	98826	Sample Preparation:	2013-02-11	Prepared By:	AR
Prep Batch:	83717				

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			408	mg/Kg	5	4.00

Sample: 320166 - T-3 2' (AH-3)

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 98826
Prep Batch: 83717

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-02-11
Sample Preparation: 2013-02-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			195	mg/Kg	5	4.00

Sample: 320167 - T-4 1' (AH-4)

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 98826
Prep Batch: 83717

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-02-11
Sample Preparation: 2013-02-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			275	mg/Kg	5	4.00

Sample: 320168 - T-4 2' (AH-4)

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 98827
Prep Batch: 83717

Analytical Method: SM 4500-Cl B
Date Analyzed: 2013-02-11
Sample Preparation: 2013-02-11

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			145	mg/Kg	5	4.00

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114-6401558

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Method Blanks

Method Blank (1) QC Batch: 98826

QC Batch: 98826
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 98827

QC Batch: 98827
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

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

Report Date: February 11, 2013
114-6401558

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 98826
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2540	mg/Kg	1	2500	<3.85	102	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2610	mg/Kg	1	2500	<3.85	104	85 - 115	3	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 98827
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2770	mg/Kg	1	2500	<3.85	111	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2570	mg/Kg	1	2500	<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: 320167

QC Batch: 98826
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

Report Date: February 11, 2013
114-6401558

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Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2710	mg/Kg	5	2500	275	97	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2840	mg/Kg	5	2500	275	103	78.9 - 121	5	20

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

Matrix Spike (MS-1) Spiked Sample: 320673

QC Batch: 98827
Prep Batch: 83717

Date Analyzed: 2013-02-11
QC Preparation: 2013-02-11

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			15500	mg/Kg	10	2500	13200	92	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			15800	mg/Kg	10	2500	13200	104	78.9 - 121	2	20

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

Report Date: February 11, 2013
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Calibration Standards

Standard (CCV-1)

QC Batch: 98826

Date Analyzed: 2013-02-11

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.9	100	85 - 115	2013-02-11

Standard (CCV-2)

QC Batch: 98826

Date Analyzed: 2013-02-11

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-02-11

Standard (CCV-1)

QC Batch: 98827

Date Analyzed: 2013-02-11

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	103	103	85 - 115	2013-02-11

Standard (CCV-2)

QC Batch: 98827

Date Analyzed: 2013-02-11

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	97.2	97	85 - 115	2013-02-11

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory 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 than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

Report Date: February 11, 2013
114-6401558

Work Order: 13020130
COG/Air Bonita 12 Fed. #2H

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Lea Co., NM

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

13020130

Analysis Request of Chain of Custody Record

PAGE: 1

ANALYSIS REQUEST
(Circle or Specify Method No.)**TETRA TECH**1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: <u>COG</u>		SITE MANAGER: <u>Ike Tavaruz</u>		PROJECT NAME: <u>COG / Arbonita 12 Fld ZH</u>		PRESERVATIVE METHOD	
PROJECT NO.: <u>114-6401508</u>		SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS		HCL	
LAB I.D. NUMBER	DATE	TIME	GRAB	COM	MATRIX	TIME	TIME
320159	1/20/13		X		CS-1	7' Bottom	(AH-1)
160					T-1	8'	(AH-1)
161					T-1	9'	(AH-1)
162					T-1	10'	(AH-1)
163					T-2	1'	(AH-2)
164					T-2	2'	(AH-2)
165					T-3	1'	(AH-3)
166					T-3	2'	(AH-3)
167					T-4	1'	(AH-4)
168					T-4	2'	(AH-4)

RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
<u>[Signature]</u>	1/21/13	14:15	<u>[Signature]</u>	1/21/13	14:15
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
RECEIVING LABORATORY: <u>Tetra</u>	RECEIVED BY: (Signature)				
ADDRESS: <u>Midland</u>	DATE:				
CITY: <u>Midland</u>	STATE: <u>TX</u>				
CONTACT: <u>[Signature]</u>	PHONE: <u>[Signature]</u>				

REMARKS:	
<u>Midland all</u>	

SAMPLE CONDITION WHEN RECEIVED:	
<u>-2.1</u>	

SAMPLING BY: (Print & Initial)		Date:	Time:
<u>ST</u>		1/20/13	17:20/13

SAMPLE SHIPPED BY: (Circle)		AIRBILL #:
FEDEX	BUS	
HAND DELIVERED	UPS	

TETRA TECH CONTACT PERSON:	
<u>Ike Tavaruz</u>	

RESULTS BY:	
RUSH Charges Authorized: Yes No	

Please fill out all copies - Laboratory retains Yellow copy - Return Original 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: November 14, 2012

Work Order: 12110208



Project Location: Lea Co., NM
Project Name: COG/Air Bonita 12 Fed. #2H
Project Number: 114-6401558

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
313230	AH 1 0-1'	soil	2012-10-31	00:00	2012-11-02
313231	AH 1 1-1.5'	soil	2012-10-31	00:00	2012-11-02
313232	AH 1 2-2.5'	soil	2012-10-31	00:00	2012-11-02
313233	AH 1 3-3.5'	soil	2012-10-31	00:00	2012-11-02
313234	AH 2 0-1'	soil	2012-10-31	00:00	2012-11-02
313235	AH 3 0-1'	soil	2012-10-31	00:00	2012-11-02
313236	AH 4 0-1'	soil	2012-10-31	00:00	2012-11-02
313237	AH 4 1-1.5'	soil	2012-10-31	00:00	2012-11-02

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
313230 - AH 1 0-1'	<0.100 ¹	<0.100	<0.100	<0.100	<50.0	<20.0 ²
313234 - AH 2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313235 - AH 3 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	191 Qs	<4.00 Qr,Qs
313236 - AH 4 0-1'	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<0.0200 Qs	<50.0 Qs	<4.00 Qr,Qs

Sample: 313230 - AH 1 0-1'

Param	Flag	Result	Units	RL
Chloride		5670	mg/Kg	4

Sample: 313231 - AH 1 1-1.5'

¹Dilution due to surfactants.

²Dilution due to surfactants.

Param	Flag	Result	Units	RL
Chloride		5960	mg/Kg	4

Sample: 313232 - AH 1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		12400	mg/Kg	4

Sample: 313233 - AH 1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		9090	mg/Kg	4

Sample: 313234 - AH 2 0-1'

Param	Flag	Result	Units	RL
Chloride		892	mg/Kg	4

Sample: 313235 - AH 3 0-1'

Param	Flag	Result	Units	RL
Chloride		832	mg/Kg	4

Sample: 313236 - AH 4 0-1'

Param	Flag	Result	Units	RL
Chloride		1100	mg/Kg	4

Sample: 313237 - AH 4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		842	mg/Kg	4



6701 Aberdeen Avenue, Suite 9
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5002 Basin Street, Suite A1
(BioAquatic) 2501 Mayes Rd., Suite 100

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972-242-7750

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: November 14, 2012

Work Order: 12110208



Project Location: Lea Co., NM
Project Name: COG/Air Bonita 12 Fed. #2H
Project Number: 114-6401558

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
313230	AH 1 0-1'	soil	2012-10-31	00:00	2012-11-02
313231	AH 1 1-1.5'	soil	2012-10-31	00:00	2012-11-02
313232	AH 1 2-2.5'	soil	2012-10-31	00:00	2012-11-02
313233	AH 1 3-3.5'	soil	2012-10-31	00:00	2012-11-02
313234	AH 2 0-1'	soil	2012-10-31	00:00	2012-11-02
313235	AH 3 0-1'	soil	2012-10-31	00:00	2012-11-02
313236	AH 4 0-1'	soil	2012-10-31	00:00	2012-11-02
313237	AH 4 1-1.5'	soil	2012-10-31	00:00	2012-11-02

Report Corrections (Work Order 12110208)

- Added TPH and BTEX to samples 313235 and 313236 per client. 11/9/12

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

A handwritten signature in black ink that reads "Michael Abel". The signature is written in a cursive, slightly slanted style.

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

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Case Narrative

Samples for project COG/Air Bonita 12 Fed. #2H were received by TraceAnalysis, Inc. on 2012-11-02 and assigned to work order 12110208. Samples for work order 12110208 were received intact at a temperature of 1.4 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	81655	2012-11-06 at 13:40	96348	2012-11-06 at 13:40
BTEX	S 8021B	81783	2012-11-12 at 12:47	96509	2012-11-12 at 12:47
Chloride (Titration)	SM 4500-Cl B	81654	2012-11-06 at 12:38	96375	2012-11-07 at 11:41
Chloride (Titration)	SM 4500-Cl B	81654	2012-11-06 at 12:38	96376	2012-11-07 at 11:43
TPH DRO - NEW	S 8015 D	81632	2012-11-05 at 08:00	96324	2012-11-06 at 08:27
TPH DRO - NEW	S 8015 D	81821	2012-11-12 at 10:00	96555	2012-11-14 at 08:42
TPH GRO	S 8015 D	81655	2012-11-06 at 13:40	96350	2012-11-06 at 13:40
TPH GRO	S 8015 D	81783	2012-11-12 at 12:47	96510	2012-11-12 at 12:47

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 12110208 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.

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Analytical Report

Sample: 313230 - AH 1 0-1'

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 96348

Prep Batch: 81655

Analytical Method: S 8021B

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Comment: Tetra Tech! In transit, arrive 11/6, due 11/9

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	1	<0.100	mg/Kg	5	0.0200
Toluene	u	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	u	1	<0.100	mg/Kg	5	0.0200
Xylene	u	1	<0.100	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	5	2.00	82	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	5	2.00	103	71.5 - 120

Sample: 313230 - AH 1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 96375

Prep Batch: 81654

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-11-07

Sample Preparation: 2012-11-06

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5670	mg/Kg	10	4.00

Sample: 313230 - AH 1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 96324

Prep Batch: 81632

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-05

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

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Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	jb	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			116	mg/Kg	1	100	116	55.1 - 135.7

Sample: 313230 - AH 1 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96350
Prep Batch: 81655

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Comment: Tetra Tech! In transit, arrive 11/6, due 11/9

Parameter	Flag	Cert	RL Result	Units	Dilution	RL	
GRO	2	u	1	<20.0	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.54	mg/Kg	5	2.00	77	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	5	2.00	96	74 - 120

Sample: 313231 - AH 1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96375
Prep Batch: 81654

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-07
Sample Preparation: 2012-11-06

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5960	mg/Kg	10	4.00

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Sample: 313232 - AH 1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 96375 Date Analyzed: 2012-11-07 Analyzed By: AR
Prep Batch: 81654 Sample Preparation: 2012-11-06 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			12400	mg/Kg	10	4.00

Sample: 313233 - AH 1 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 96376 Date Analyzed: 2012-11-07 Analyzed By: AR
Prep Batch: 81654 Sample Preparation: 2012-11-06 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			9090	mg/Kg	10	4.00

Sample: 313234 - AH 2 0-1'

Laboratory: Lubbock
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 96348 Date Analyzed: 2012-11-06 Analyzed By: MT
Prep Batch: 81655 Sample Preparation: 2012-11-06 Prepared By: MT

Comment: Tetra Tech! In transit, arrive 11/6, due 11/9

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.90	mg/Kg	1	2.00	95	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	71.5 - 120

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Sample: 313234 - AH 2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96376
Prep Batch: 81654

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-07
Sample Preparation: 2012-11-06

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			892	mg/Kg	10	4.00

Sample: 313234 - AH 2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 96324
Prep Batch: 81632

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-05

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	jb	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			119	mg/Kg	1	100	119	55.1 - 135.7

Sample: 313234 - AH 2 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96350
Prep Batch: 81655

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Comment: Tetra Tech! In transit, arrive 11/6, due 11/9

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	u	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	74 - 120

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Sample: 313235 - AH 3 0-1'

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96509
Prep Batch: 81783

Analytical Method: S 8021B
Date Analyzed: 2012-11-12
Sample Preparation: 2012-11-12

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.02	mg/Kg	1	2.00	101	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.07	mg/Kg	1	2.00	104	71.5 - 120

Sample: 313235 - AH 3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96376
Prep Batch: 81654

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-07
Sample Preparation: 2012-11-06

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			832	mg/Kg	10	4.00

Sample: 313235 - AH 3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 96555
Prep Batch: 81821

Analytical Method: S 8015 D
Date Analyzed: 2012-11-14
Sample Preparation: 2012-11-12

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	B,Qs	2	191	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			126	mg/Kg	1	100	126	55.1 - 135.7

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Sample: 313235 - AH 3 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96510
Prep Batch: 81783

Analytical Method: S 8015 D
Date Analyzed: 2012-11-12
Sample Preparation: 2012-11-12

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,Qs	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1	2.00	107	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	74 - 120

Sample: 313236 - AH 4 0-1'

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96509
Prep Batch: 81783

Analytical Method: S 8021B
Date Analyzed: 2012-11-12
Sample Preparation: 2012-11-12

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	71.5 - 120

Sample: 313236 - AH 4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96376
Prep Batch: 81654

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-07
Sample Preparation: 2012-11-06

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

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sample 313236 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1100	mg/Kg	10	4.00

Sample: 313236 - AH 4 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 96555
Prep Batch: 81821

Analytical Method: S 8015 D
Date Analyzed: 2012-11-14
Sample Preparation: 2012-11-12

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Jb, Qs	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	55.1 - 135.7

Sample: 313236 - AH 4 0-1'

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96510
Prep Batch: 81783

Analytical Method: S 8015 D
Date Analyzed: 2012-11-12
Sample Preparation: 2012-11-12

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr, Qs, U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.11	mg/Kg	1	2.00	106	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.07	mg/Kg	1	2.00	104	74 - 120

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Sample: 313237 - AH 4 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2012-11-07	Analyzed By:	AR
QC Batch:	96376	Sample Preparation:	2012-11-06	Prepared By:	AR
Prep Batch:	81654				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			842	mg/Kg	10	4.00

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Method Blanks

Method Blank (1) QC Batch: 96324

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	29.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			122	mg/Kg	1	100	122	55.1 - 135.7

Method Blank (1) QC Batch: 96348

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	73.1 - 120
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	71.5 - 120

Method Blank (1) QC Batch: 96350

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	74 - 120

Method Blank (1) QC Batch: 96375

QC Batch: 96375 Date Analyzed: 2012-11-07 Analyzed By: AR
Prep Batch: 81654 QC Preparation: 2012-11-06 Prepared By: AR

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

Method Blank (1) QC Batch: 96376

QC Batch: 96376 Date Analyzed: 2012-11-07 Analyzed By: AR
Prep Batch: 81654 QC Preparation: 2012-11-06 Prepared By: AR

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

Method Blank (1) QC Batch: 96509

QC Batch: 96509 Date Analyzed: 2012-11-12 Analyzed By: MT
Prep Batch: 81783 QC Preparation: 2012-11-12 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00365	mg/Kg	0.02
Toluene		1	<0.00816	mg/Kg	0.02
Ethylbenzene		1	<0.00560	mg/Kg	0.02
Xylene		1	<0.00460	mg/Kg	0.02

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.85	mg/Kg	1	2.00	92	73.1 - 120
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	71.5 - 120

Method Blank (1) QC Batch: 96510

QC Batch: 96510
Prep Batch: 81783

Date Analyzed: 2012-11-12
QC Preparation: 2012-11-12

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.12	mg/Kg	1	2.00	106	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	74 - 120

Method Blank (1) QC Batch: 96555

QC Batch: 96555
Prep Batch: 81821

Date Analyzed: 2012-11-14
QC Preparation: 2012-11-12

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	27.1	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			95.1	mg/Kg	1	100	95	55.1 - 135.7

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	221	mg/Kg	1	250	29.6	76	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	209	mg/Kg	1	250	29.6	72	66.9 - 119.9	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	132	110	mg/Kg	1	100	132	110	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00365	90	78.4 - 120
Toluene		1	1.86	mg/Kg	1	2.00	<0.00816	93	78.3 - 120
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00560	94	77.4 - 120
Xylene		1	5.64	mg/Kg	1	6.00	<0.00460	94	77 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.82	mg/Kg	1	2.00	<0.00365	91	78.4 - 120	1	20
Toluene		1	1.83	mg/Kg	1	2.00	<0.00816	92	78.3 - 120	2	20
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00560	94	77.4 - 120	0	20
Xylene		1	5.64	mg/Kg	1	6.00	<0.00460	94	77 - 120	0	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.88	1.79	mg/Kg	1	2.00	94	90	73.1 - 120
4-Bromofluorobenzene (4-BFB)	1.92	1.88	mg/Kg	1	2.00	96	94	71.5 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.6	mg/Kg	1	20.0	<0.359	88	66.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.6	mg/Kg	1	20.0	<0.359	93	66.3 - 120	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.84	mg/Kg	1	2.00	90	92	74.4 - 120
4-Bromofluorobenzene (4-BFB)	1.85	1.87	mg/Kg	1	2.00	92	94	74 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 96375
Prep Batch: 81654

Date Analyzed: 2012-11-07
QC Preparation: 2012-11-06

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2620	mg/Kg	1	2500	<3.85	105	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2520	mg/Kg	1	2500	<3.85	101	85 - 115	4	20

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

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Laboratory Control Spike (LCS-1)

QC Batch: 96376
Prep Batch: 81654

Date Analyzed: 2012-11-07
QC Preparation: 2012-11-06

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2720	mg/Kg	1	2500	<3.85	109	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2670	mg/Kg	1	2500	<3.85	107	85 - 115	2	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: 96509
Prep Batch: 81783

Date Analyzed: 2012-11-12
QC Preparation: 2012-11-12

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.68	mg/Kg	1	2.00	<0.00365	84	78.4 - 120
Toluene		1	1.74	mg/Kg	1	2.00	<0.00816	87	78.3 - 120
Ethylbenzene		1	1.74	mg/Kg	1	2.00	<0.00560	87	77.4 - 120
Xylene		1	5.22	mg/Kg	1	6.00	<0.00460	87	77 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.69	mg/Kg	1	2.00	<0.00365	84	78.4 - 120	1	20
Toluene		1	1.72	mg/Kg	1	2.00	<0.00816	86	78.3 - 120	1	20
Ethylbenzene		1	1.74	mg/Kg	1	2.00	<0.00560	87	77.4 - 120	0	20
Xylene		1	5.24	mg/Kg	1	6.00	<0.00460	87	77 - 120	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.73	1.71	mg/Kg	1	2.00	86	86	73.1 - 120
4-Bromofluorobenzene (4-BFB)	1.75	1.76	mg/Kg	1	2.00	88	88	71.5 - 120

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Laboratory Control Spike (LCS-1)

QC Batch: 96510
Prep Batch: 81783

Date Analyzed: 2012-11-12
QC Preparation: 2012-11-12

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.3	mg/Kg	1	20.0	<0.359	86	66.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.2	mg/Kg	1	20.0	<0.359	91	66.3 - 120	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.84	1.85	mg/Kg	1	2.00	92	92	74.4 - 120
4-Bromofluorobenzene (4-BFB)	1.86	1.88	mg/Kg	1	2.00	93	94	74 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 96555
Prep Batch: 81821

Date Analyzed: 2012-11-14
QC Preparation: 2012-11-12

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	215	mg/Kg	1	250	27.1	75	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	198	mg/Kg	1	250	27.1	68	66.9 - 119.9	8	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	102	90.9	mg/Kg	1	100	102	91	76.8 - 140.2

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Matrix Spike (MS-1) Spiked Sample: 313223

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	226	mg/Kg	1	250	27.8	79	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	252	mg/Kg	1	250	27.8	90	36.1 - 147.2	11	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	130	140	mg/Kg	1	100	130	140	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 313428

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.85	mg/Kg	1	2.00	<0.00365	92	64.4 - 121
Toluene		1	2.03	mg/Kg	1	2.00	<0.00816	102	67.8 - 129
Ethylbenzene		1	2.17	mg/Kg	1	2.00	<0.00560	108	62.6 - 142
Xylene		1	6.55	mg/Kg	1	6.00	<0.00460	109	57.2 - 147

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.87	mg/Kg	1	2.00	<0.00365	94	64.4 - 121	1	20
Toluene		1	2.05	mg/Kg	1	2.00	<0.00816	102	67.8 - 129	1	20
Ethylbenzene		1	2.20	mg/Kg	1	2.00	<0.00560	110	62.6 - 142	1	20
Xylene		1	6.62	mg/Kg	1	6.00	<0.00460	110	57.2 - 147	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	2.11	mg/Kg	1	2	98	106	73.1 - 120

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matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	2.13	2.10	mg/Kg	1	2	106	105	71.5 - 120

Matrix Spike (MS-1) Spiked Sample: 313428

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.0	mg/Kg	1	20.0	<0.359	70	46 - 122

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.5	mg/Kg	1	20.0	<0.359	78	46 - 122	10	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	1.83	mg/Kg	1	2	94	92	74.4 - 120
4-Bromofluorobenzene (4-BFB)	2.10	2.22	mg/Kg	1	2	105	111	74 - 120

Matrix Spike (MS-1) Spiked Sample: 313232

QC Batch: 96375
Prep Batch: 81654

Date Analyzed: 2012-11-07
QC Preparation: 2012-11-06

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			15100	mg/Kg	10	2500	12400	108	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			14800	mg/Kg	10	2500	12400	96	78.9 - 121	2	20

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

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Matrix Spike (MS-1) Spiked Sample: 313244

QC Batch: 96376
Prep Batch: 81654

Date Analyzed: 2012-11-07
QC Preparation: 2012-11-06

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3290	mg/Kg	5	2500	882	96	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3410	mg/Kg	5	2500	882	101	78.9 - 121	4	20

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

Matrix Spike (xMS-1) Spiked Sample:

QC Batch: 96510
Prep Batch: 81783

Date Analyzed: 2012-11-12
QC Preparation: 2012-11-12

Analyzed By: MT
Prepared By: MT

Param	F		C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	2.93	mg/Kg	5	10.0	2.66	3	46 - 122

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

Param			MSD		Dil.	Spike	Matrix	Rec.	Rec.	RPD	RPD	
	F	C	Result	Units		Amount	Result		Limit		Limit	
GRO	Q _r , Q _s	Q _r , Q _s	1	2.37	mg/Kg	5	10.0	2.66	-1	46 - 122	21	20

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

Surrogate			MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	Q _{sr}	Q _{sr}	0.309	0.313	mg/Kg	5	2	15	16	74.4 - 120
4-Bromofluorobenzene (4-BFB)	Q _{sr}	Q _{sr}	0.416	0.420	mg/Kg	5	2	21	21	74 - 120

Matrix Spike (MS-1) Spiked Sample: 313235

QC Batch: 96555
Prep Batch: 81821

Date Analyzed: 2012-11-14
QC Preparation: 2012-11-12

Analyzed By: CW
Prepared By: CW

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Param	F		C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	qs	qs	2	255	mg/Kg	1	250	191	26	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	283	mg/Kg	1	250	191	37	36.1 - 147.2	10	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	102	112	mg/Kg	1	100	102	112	78.3 - 131.6

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Calibration Standards

Standard (CCV-1)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	227	91	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	204	82	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2012-11-06

Standard (CCV-4)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2012-11-06

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Standard (CCV-1)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0877	88	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0904	90	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0922	92	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.276	92	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0887	89	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0913	91	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0927	93	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0876	88	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0895	90	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0911	91	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2012-11-06

Standard (CCV-1)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.863	86	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.913	91	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.910	91	80 - 120	2012-11-06

Standard (CCV-1)

QC Batch: 96375

Date Analyzed: 2012-11-07

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2012-11-07

Standard (CCV-2)

QC Batch: 96375

Date Analyzed: 2012-11-07

Analyzed By: AR

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-11-07

Standard (CCV-1)

QC Batch: 96376

Date Analyzed: 2012-11-07

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.9	100	85 - 115	2012-11-07

Standard (CCV-2)

QC Batch: 96376

Date Analyzed: 2012-11-07

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-11-07

Standard (CCV-1)

QC Batch: 96509

Date Analyzed: 2012-11-12

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0865	86	80 - 120	2012-11-12
Toluene		1	mg/kg	0.100	0.0886	89	80 - 120	2012-11-12
Ethylbenzene		1	mg/kg	0.100	0.0901	90	80 - 120	2012-11-12
Xylene		1	mg/kg	0.300	0.269	90	80 - 120	2012-11-12

Standard (CCV-2)

QC Batch: 96509

Date Analyzed: 2012-11-12

Analyzed By: MT

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0850	85	80 - 120	2012-11-12
Toluene		1	mg/kg	0.100	0.0875	88	80 - 120	2012-11-12
Ethylbenzene		1	mg/kg	0.100	0.0848	85	80 - 120	2012-11-12
Xylene		1	mg/kg	0.300	0.258	86	80 - 120	2012-11-12

Standard (CCV-1)

QC Batch: 96510

Date Analyzed: 2012-11-12

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.870	87	80 - 120	2012-11-12

Standard (CCV-2)

QC Batch: 96510

Date Analyzed: 2012-11-12

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.860	86	80 - 120	2012-11-12

Standard (CCV-1)

QC Batch: 96555

Date Analyzed: 2012-11-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	265	106	80 - 120	2012-11-14

Standard (CCV-2)

QC Batch: 96555

Date Analyzed: 2012-11-14

Analyzed By: CW

Report Date: November 14, 2012
114-6401558

Work Order: 12110208
COG/Air Bonita 12 Fed. #2H

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	202	81	80 - 120	2012-11-14

Standard (CCV-3)

QC Batch: 96555

Date Analyzed: 2012-11-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	217	87	80 - 120	2012-11-14

Standard (CCV-4)

QC Batch: 96555

Date Analyzed: 2012-11-14

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	250	100	80 - 120	2012-11-14

Appendix

Report Definitions

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

Laboratory Certifications

	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

- 1 Dilution due to surfactants.
- 2 Dilution due to surfactants.

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Attachments

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

