

SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Aoudad State #8 Flowline	
Company:	COG Operating LLC	
Section, Township and Range	Unit A - Sec 36 - T17S - R31E	
Lease Number:	30-015-32828	
County:	Eddy County	
GPS:	32.79225° N	103.8233° W
Surface Owner:	State	
Mineral Owner:		
Directions:	From mile marker 4 on Hwy 529, travel south on lease road 800', right 400', left 0.6 mile, at four way turn right 0.6 mile, right 0.2 mile to two track road, right 750' to location	

Release Data:

Date Released:	1/29/2011
Type Release:	Produced Fluids
Source of Contamination:	Flowline rupture
Fluid Released:	55 bbls
Fluids Recovered:	50 bbls

Official Communication:

Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	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@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)

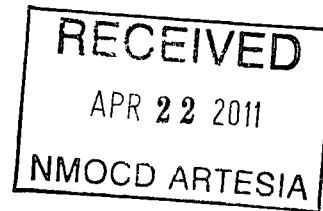
Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH

April 6, 2011

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



Re: Closure Report for the COG Operating LLC., Aoudad State #8, Unit A, Section 36, Township 17 South, Range 31 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 Aoudad State #8 flow line, Unit A, Section 36, Township 17 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.79222°, W 103.82318°. 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 January 29, 2010, and released approximately fifty five (55) barrels of produced water from a flow line that ruptured along a COG pipeline right-a-way. To alleviate the problem, COG personnel repaired the flow line and recovered fifty (50) barrels of standing fluids from the site. The spill initiated north of a two track right-of-away road impacting an area approximately 60' long by 10' wide and pooled in a native low-lying area. The initial and final C-141 forms are enclosed in Appendix A.

Groundwater

No water wells were listed within Section 36. According to the *Geology and Groundwater Resources of Eddy County, New Mexico* (Report 3), one well is located in Section 34, with a reported depth to water of 271' below surface. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 350' below surface. The *Geology and Groundwater Resources of Eddy County, New Mexico* (Report 3) well report data is shown in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

www.tetrattech.com



Regulatory

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

Soil Assessment and Analytical Results

On March 3, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of 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. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B.

Referring to Table 1, the hydrocarbon impact showed a shallow impact to the soils. The auger holes (AH-1, AH-2, and AH-3) exceeded the RRAL for TPH and BTEX from surface down to 1-1.5', 0-1', and 1-1.5' below surface, respectively. The chloride concentrations were not defined in all the auger hole locations, with chloride concentrations of 6,320 mg/kg at AH-1 (9.0'), 6,020 mg/kg at AH-2 (9.0') and 29,900 mg/kg at AH-3 (5.0').

To delineate the chloride impact, on April 23, 2010, Tetra Tech supervised the installation of two boreholes (BH-1 and BH-2) utilizing an air rotary drilling rig. Soil samples were collected to a total depth of 40' below surface and the results are summarized in Table 1. Referring to Table 1, the chloride concentrations declined in SB-1 to 260 mg/kg and SB-2 to 716 mg/kg at 40' below surface. A spike in chloride concentrations for SB-1 at 20' appears to be cross contaminated from the upper zone.



TETRA TECH

Corrective Action

On June 4, 2010, Tetra Tech met with Mike Bratcher of the NMOCD to discuss the assessment results, proposed excavation depths and concerns regarding with a deep excavation plan. In order to remediate the site, COG proposed to excavate the impacted soils. Since the impacted area is in the native sand dunes, the proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around the buried lines may not be feasible or practicable to be removed due to safety concerns. As approved in that meeting, if the depths could not be reached, a 40 mil liner would be installed at depth of 4' to 5' below surface to cap the impacted area.

On November 8, through November 10, 2010, Tetra Tech personnel supervised the removal of impacted soils. Due to the loose sand caving, the proposed depths could not be reached. As a result, the entire excavation was excavated to depth of 10'.0' below surface and lined with a 40 mil liner at approximately 4.0' below ground surface. The excavation was backfilled with clean soil and approximately 600 yds³ of soil was hauled to Controlled Recovery, Inc. for disposal. The excavation depth and liner installation area are shown on Figure 4.

Closure Request

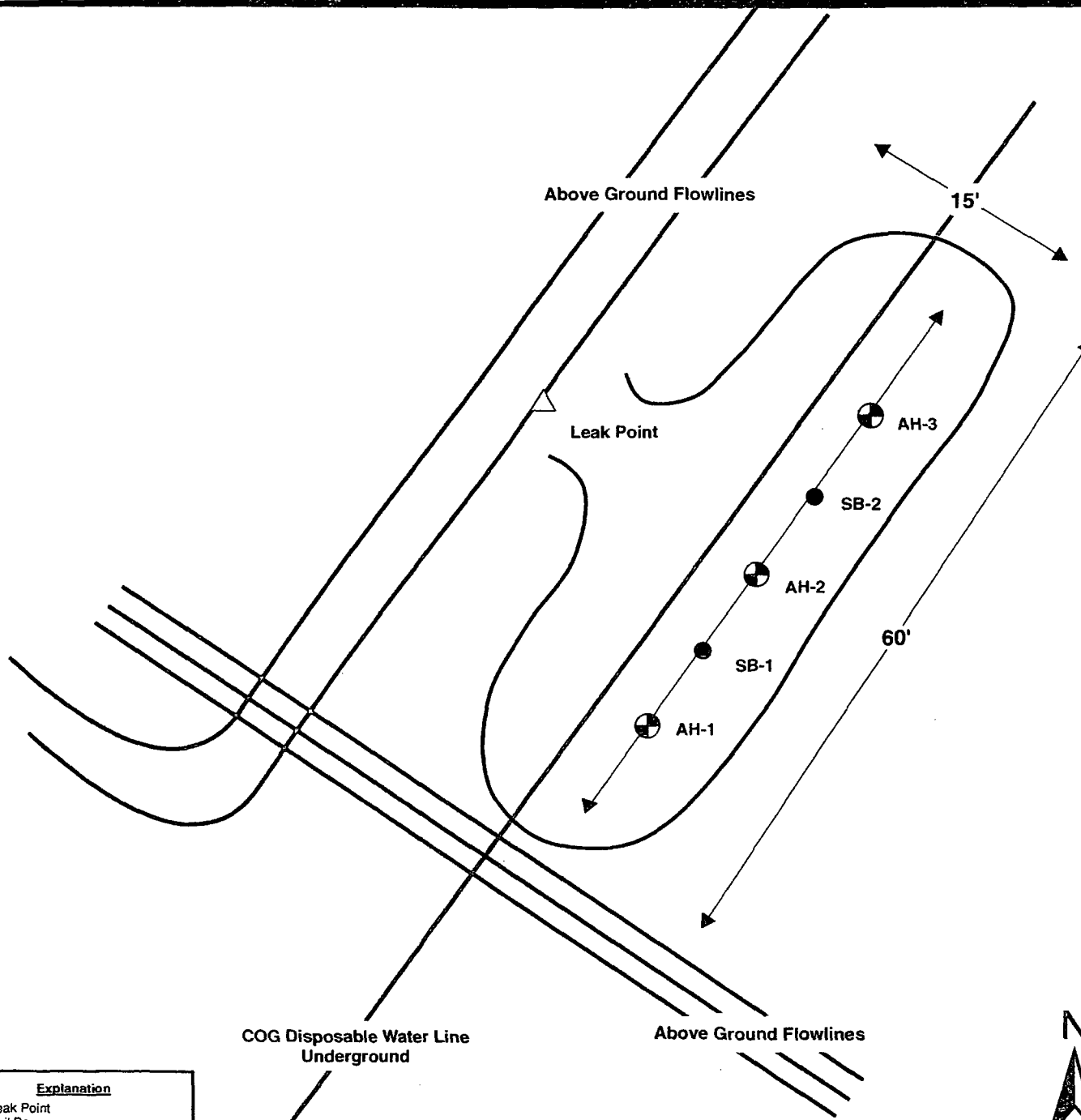
Based upon the remediation performed at this site, COG Operating LLC respectfully requests closure of this site. A form C-141 final is included in Appendix A. If you have any question or comments concerning the activities performed at the Site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Senior Project Manager

cc: Pat Ellis – COG

FIGURES

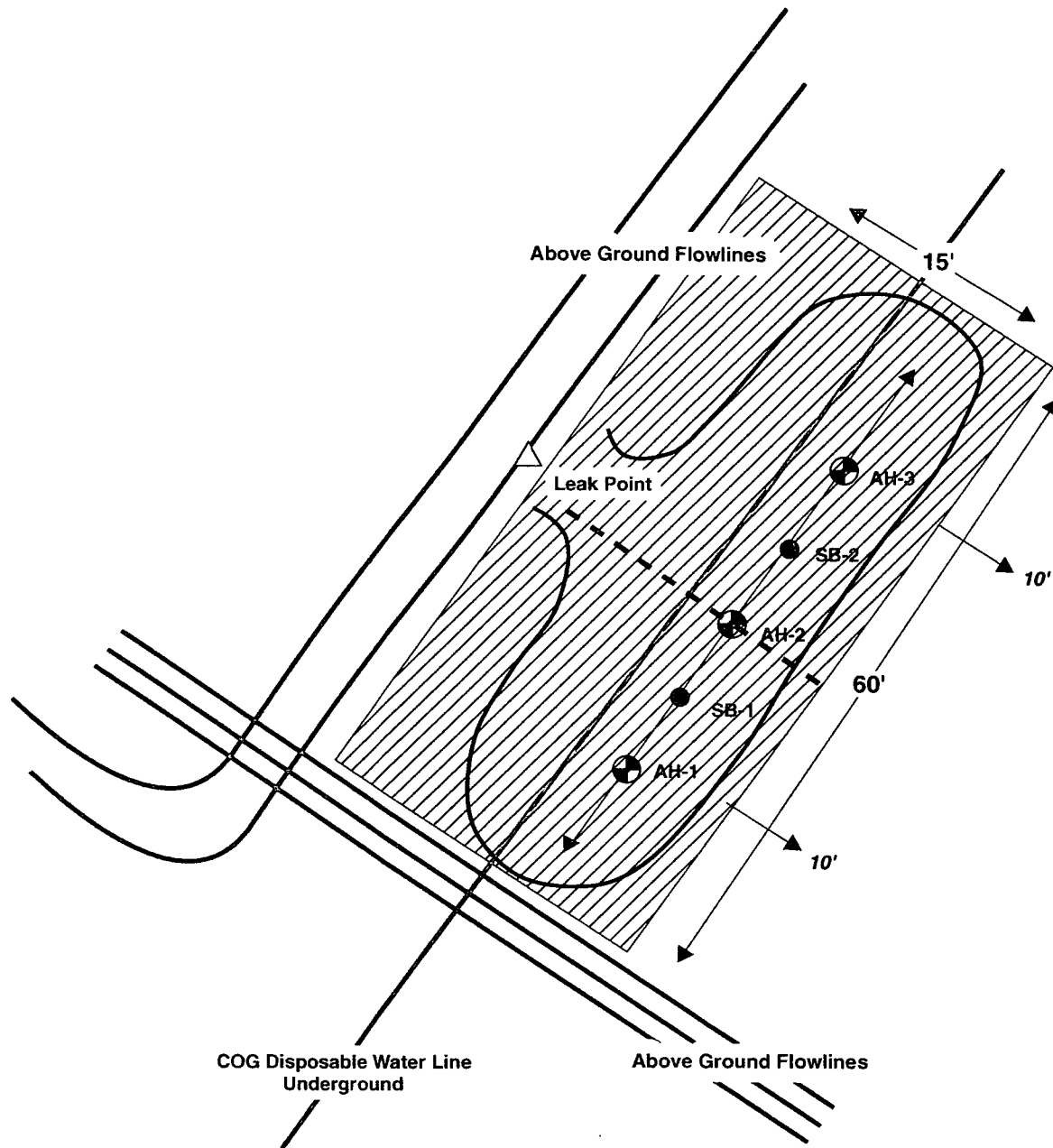


Explanation	
△	Leak Point
●	Soil Bore
⊙	Auger Hole
—	COG Disposable Water Pipeline
—	2.5" Metal Flowline



NOT TO SCALE

	
Figure 3 Aoudad State #8 Site Plan COG Operating LLC. Eddy County, New Mexico	
Project : 114-6400434	
Date : 8-2-2010	
File : H:\GIS\6400434\Fig3	



Explanation	
▲	Leak Point
●	Soil Bore
⊕	Auger Hole
—	COG Disposable Water Pipeline
—	2.5" Metal Flowline
▨	Liner (Capped Area)



NOT TO SCALE



Figure 4

Aoudad State #8
Excavation Depth & Liner

COG Operating LLC.
Eddy County, New Mexico

Project : 114-6400434

Date : 8-2-2010

File : H:\GIS\6400434Fig4



TABLES

Table 1
COG Operating LLC.
Auodad State #8
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-1	3/3/2010	0-1'	1'		X	8,710	5,840	14,550	17.6	78.2	60.7	102	2,840
		1-1.5'	1'		X	2,920	3,810	6,730	6.97	49	40	84.6	3,610
		2-2.5'	1'		X	<50.0	27	27	<0.0100	<0.0100	<0.0100	0.0854	3,520
		3-3.5'	1'		X	-	-	-	-	-	-	-	4,780
		4-4.5'	1'		X	-	-	-	-	-	-	-	4,260
		5-5.5'	1'		X	-	-	-	-	-	-	-	4,590
		6-6.5'	1'		X	-	-	-	-	-	-	-	3,150
		7-7.5'	1'		X	-	-	-	-	-	-	-	3,270
		8-8.5'	1'		X	-	-	-	-	-	-	-	2,810
		9-9.5'	1'		X	-	-	-	-	-	-	-	6,320
SB-1	4/23/2010	5'	1'		X	-	-	-	-	-	-	-	5,290
		7'	1'		X	-	-	-	-	-	-	-	11,600
		10'	1'		X	-	-	-	-	-	-	-	1,060
		15'	1'	X		-	-	-	-	-	-	-	260
		20'	1'	X		-	-	-	-	-	-	-	7,900
		25'	1'	X		-	-	-	-	-	-	-	650
		30'	1'	X		-	-	-	-	-	-	-	480
		40'	1'	X		-	-	-	-	-	-	-	430

Table 1
COG Operating LLC.
Auodad State #8
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-2	3/3/2010	0-1'	1.5'		X	4,170	2,910	7,080	4.95	30.4	22.2	46.3	390
		1-1.5'	1.5'		X	<50	<1	<50	<0.0100	<0.0100	<0.0100	<0.0100	901
		2-2.5'	1.5'		X	<50	<1	<50	<0.0100	<0.0100	<0.0100	<0.0100	4,530
		3-3.5'	1.5'		X	-	-	-	-	-	-	-	4,020
		4-4.5'	1.5'		X	-	-	-	-	-	-	-	3,440
		5-5.5'	1.5'		X	-	-	-	-	-	-	-	4,680
		6-6.5'	1.5'		X	-	-	-	-	-	-	-	3,550
		7-7.5'	1.5'		X	-	-	-	-	-	-	-	4,810
		8-8.5'	1.5'		X	-	-	-	-	-	-	-	2,940
		9-9.5'	1.5'		X	-	-	-	-	-	-	-	6,020
SB-2	4/23/2010	5'	1'		X	-	-	-	-	-	-	-	1,300
		7'	1'		X	-	-	-	-	-	-	-	3,630
		10'	1'		X	-	-	-	-	-	-	-	4,920
		15'	1'	X		-	-	-	-	-	-	-	8,960
		20'	1'	X		-	-	-	-	-	-	-	6,520
		25'	1'	X		-	-	-	-	-	-	-	9,550
		30'	1'	X		-	-	-	-	-	-	-	8,210
		40'	1'	X		-	-	-	-	-	-	-	716
AH-3	3/3/2010	0-1'			X	8,860	5,560	14,420	6.24	51.7	55.5	97.9	2,890
		1-1.5'			X	4,520	5,320	9,840	8.35	52.6	50	85.1	2,740
		2-2.5'			X	<50	<1	<50	<0.0100	0.0389	<0.0100	<0.0100	3,560
		3-3.5'			X	-	-	-	-	-	-	-	3,460
		4-4.5'			X	-	-	-	-	-	-	-	4,950
		5-5.5'			X	-	-	-	-	-	-	-	29,900

BEB Below Excavation Bottom

(--) Not Analyzed



Excavated depth



Proposed excavation depth - Depth was not achieved due to sandy formation

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company COG Operating LLC	Contact Pat Ellis
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 685-4332
Facility Name Aoudad State #8 Flow Line	Facility Type Tank Battery

Surface Owner: State	Mineral Owner	Lease No. API # 30-015-32828
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LOCATION OF RELEASE

Unit Letter A	Section 36	Township 17S	Range 31E	Feet from the 330	North/South Line N	Feet from the 1040	East/West Line E	County Eddy
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Latitude N 32.79225° Longitude W 103.8233°

NATURE OF RELEASE

Type of Release: Produced Fluid	Volume of Release 55 bbls	Volume Recovered 50 bbls
Source of Release: Flow Line	Date and Hour of Occurrence 1/29/10 1:00 p.m.	Date and Hour of Discovery 1/29/10 3:00 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom? Rick Wright	Date and Hour 1/29/10	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

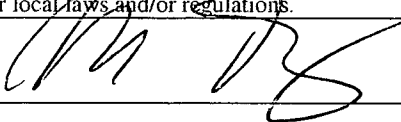
Describe Cause of Problem and Remedial Action Taken.*

A flowline ruptured and leaked, releasing produced fluids into the pasture. The ruptured flowline was immediately repaired.

Describe Area Affected and Cleanup Action Taken.*

50 barrels of fluid was picked up with a vacuum truck. Saturated soil was removed. Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted 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: 	OIL CONSERVATION DIVISION		
Printed Name: Ike Tavarez	Approved by District Supervisor:		
Title: Senior Project Manager	Approval Date:	Expiration Date:	
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:		Attached ☐
Date:	Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
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State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG Operating, LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100 Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Aoudad State #8	Facility Type	Well (Flowline)
Surface Owner	State	Mineral Owner	
		Lease No. (API#)	30-015-32828

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	36	17S	31E	330	N	1040	E	Eddy

Latitude 32.79225 Longitude 103.8233

NATURE OF RELEASE

Type of Release	Produced Fluid	Volume of Release	55bbls	Volume Recovered	50bbls
Source of Release	Flowline	Date and Hour of Occurrence	01/29/2010 1:00 p.m.	Date and Hour of Discovery	01/29/2010 3:00 p.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Mike Bratcher - OCD		
By Whom?	Rick Wright	Date and Hour	01/29/2010		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

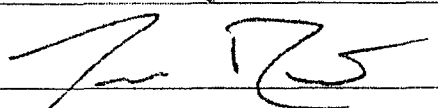
Describe Cause of Problem and Remedial Action Taken.*

A flowline ruptured and leaked, releasing produced fluids into the pasture. The ruptured flowline was immediately repaired.

Describe Area Affected and Cleanup Action Taken.*

55bbls of produced fluid released into the area next to the ruptured flowline. A vacuum truck recovered 50bbls of produced fluid from the initial spill. One-call protocol will be made by dirt contractor who will then remove saturated soils prior to soil sampling by Tetra Tech. (The nearest location to the release is the COYOTE STATE #1 F-36-17S-31E 2310 FNL 1650 FWL 32.792027 : 103.826276). 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 your approval prior to any significant remediation.

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:				OIL CONSERVATION DIVISION	
Printed Name:	Josh Russo			Approved by District Supervisor:	
Title:	HSE Coordinator			Approval Date:	Expiration Date:
E-mail Address:	jrusso@conchoresources.com			Conditions of Approval:	Attached ☐
Date:	02/02/2010			Phone:	432-212-2399

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Aoudad State #8
Eddy County, New Mexico

16 South			30 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

16 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
290					

16 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
					265

17 South			30 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

17 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
			271		SITE

17 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
					225

18 South			30 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

18 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
					400

18 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
					117

-  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

LOCATION NUMBER	BELOW LAND SURFACE (feet)	DATE OF MEASUREMENT	YIELD (g.p.m.)	METHOD OF LIFT	USE OF WATER	REMARKS
17.28.2.240	27.6	Dec. 1, 1948	3	W	S	Depth to water measured while pump- ing.
14.220	80	-	61	W	S & D	Driller: Cy Hinshaw. See analysis, Table 3.
19.200	224.3	Dec. 2, 1948	1.2	W	S	Depth to water measured while pump- ing.
22.230	45.5	Dec. 1, 1948	-	N	N	Abandoned stock well.
17.29.22.110	79.7	Nov. 29, 1948	3 E.	W	S	Depth to water measured while pump- ing.
29.400	210	Dec. 3, 1948	1.1	W	S	do.
17.31.34.000	271 +	Dec. 6, 1948	3.5	W	S	do. See analysis, Table 3.
18.21.13.310	505	-	10 R.	W	S & D	Formerly C.C.C. well. Cased to 30 ft.
27.440	530	-	-	W	S	Cased to 120 ft.
32.430	800 (?)	-	12 R.	W	S & D	Lowered cylinder 5 ft. in 1948 because water level declined. Cased to 380 ft.
18.23.6.140	440	Jan. 12, 1950	-	W	S & D	
18.25.23.111	117.8	Jan. 1950	-	W	S	

See explanation at beginning of table.

1 Measured Dec. 3, 1948.

Summary Report

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

Report Date: March 17, 2010

Work Order: 10031010



Project Location: Eddy County, NM
Project Name: COG/Aoudad State #8
Project Number: 114-6400434

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
225025	AH-1 0-1' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225026	AH-1 1-1.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225027	AH-1 2-2.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225028	AH-1 3-3.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225029	AH-1 4-4.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225030	AH-1 5-5.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225031	AH-1 6-6.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225032	AH-1 7-7.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225033	AH-1 8-8.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225034	AH-1 9-9.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225035	AH-2 0-1' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225036	AH-2 1-1.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225037	AH-2 2-2.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225038	AH-2 3-3.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225039	AH-2 4-4.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225040	AH-2 5-5.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225041	AH-2 6-6.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225042	AH-2 7-7.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225043	AH-2 8-8.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225044	AH-2 9-9.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225045	AH-3 0-1'	soil	2010-03-03	00:00	2010-03-09
225046	AH-3 1-1.5'	soil	2010-03-03	00:00	2010-03-09
225047	AH-3 2-2.5'	soil	2010-03-03	00:00	2010-03-09
225048	AH-3 3-3.5'	soil	2010-03-03	00:00	2010-03-09
225049	AH-3 4-4.5'	soil	2010-03-03	00:00	2010-03-09
225050	AH-3 5-5.5'	soil	2010-03-03	00:00	2010-03-09

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)
225025 - AH-1 0-1' 1' BEB	17.6	78.2	60.7	102	8710	5840
225026 - AH-1 1-1.5' 1' BEB	6.97	49.0	40.0	84.6	2920	3810
225027 - AH-1 2-2.5' 1' BEB	<0.0100	<0.0100	<0.0100	0.0854	<50.0	26.8
225035 - AH-2 0-1' 1.5' BEB	4.95	30.4	22.2	46.3	4170	2910
225036 - AH-2 1-1.5' 1.5' BEB	<0.0100	<0.0100	<0.0100	<0.0100	<50.0	<1.00
225037 - AH-2 2-2.5' 1.5' BEB	<0.0100	<0.0100	<0.0100	<0.0100	<50.0	<1.00
225045 - AH-3 0-1'	6.24	51.7	55.5	97.9	8860	5560
225046 - AH-3 1-1.5'	8.35	52.6	50.0	85.1	4520	5320
225047 - AH-3 2-2.5'	<0.0100	0.0389	<0.0100	<0.0100	<50.0	<1.00

Sample: 225025 - AH-1 0-1' 1' BEB

Param	Flag	Result	Units	RL
Chloride		2840	mg/Kg	4.00

Sample: 225026 - AH-1 1-1.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		3610	mg/Kg	4.00

Sample: 225027 - AH-1 2-2.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		3520	mg/Kg	4.00

Sample: 225028 - AH-1 3-3.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		4780	mg/Kg	4.00

Sample: 225029 - AH-1 4-4.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		4260	mg/Kg	4.00

Sample: 225030 - AH-1 5-5.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		4590	mg/Kg	4.00

Sample: 225031 - AH-1 6-6.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		3150	mg/Kg	4.00

Sample: 225032 - AH-1 7-7.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		3270	mg/Kg	4.00

Sample: 225033 - AH-1 8-8.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		2810	mg/Kg	4.00

Sample: 225034 - AH-1 9-9.5' 1' BEB

Param	Flag	Result	Units	RL
Chloride		632	mg/Kg	4.00

Sample: 225035 - AH-2 0-1' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		390	mg/Kg	4.00

Sample: 225036 - AH-2 1-1.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		901	mg/Kg	4.00

Sample: 225037 - AH-2 2-2.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		4530	mg/Kg	4.00

Sample: 225038 - AH-2 3-3.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		4020	mg/Kg	4.00

Sample: 225039 - AH-2 4-4.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		3440	mg/Kg	4.00

Sample: 225040 - AH-2 5-5.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		4680	mg/Kg	4.00

Sample: 225041 - AH-2 6-6.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		3550	mg/Kg	4.00

Sample: 225042 - AH-2 7-7.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		4810	mg/Kg	4.00

Sample: 225043 - AH-2 8-8.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		2940	mg/Kg	4.00

Sample: 225044 - AH-2 9-9.5' 1.5' BEB

Param	Flag	Result	Units	RL
Chloride		6020	mg/Kg	4.00

Sample: 225045 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		2890	mg/Kg	4.00

Sample: 225046 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		2740	mg/Kg	4.00

Sample: 225047 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		3560	mg/Kg	4.00

Sample: 225048 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		3460	mg/Kg	4.00

Sample: 225049 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		4950	mg/Kg	4.00

Sample: 225050 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		29900	mg/Kg	4.00



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6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019

HUB: 1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX
LELAP-02003
Kansas E-10317

El Paso: T104704221-08-TX
LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: March 17, 2010

Work Order: 10031010



Project Location: Eddy County, NM
Project Name: COG/Aoudad State #8
Project Number: 114-6400434

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
225025	AH-1 0-1' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225026	AH-1 1-1.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225027	AH-1 2-2.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225028	AH-1 3-3.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225029	AH-1 4-4.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225030	AH-1 5-5.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225031	AH-1 6-6.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225032	AH-1 7-7.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225033	AH-1 8-8.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09
225034	AH-1 9-9.5' 1' BEB	soil	2010-03-03	00:00	2010-03-09

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
225035	AH-2 0-1' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225036	AH-2 1-1.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225037	AH-2 2-2.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225038	AH-2 3-3.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225039	AH-2 4-4.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225040	AH-2 5-5.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225041	AH-2 6-6.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225042	AH-2 7-7.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225043	AH-2 8-8.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225044	AH-2 9-9.5' 1.5' BEB	soil	2010-03-03	00:00	2010-03-09
225045	AH-3 0-1'	soil	2010-03-03	00:00	2010-03-09
225046	AH-3 1-1.5'	soil	2010-03-03	00:00	2010-03-09
225047	AH-3 2-2.5'	soil	2010-03-03	00:00	2010-03-09
225048	AH-3 3-3.5'	soil	2010-03-03	00:00	2010-03-09
225049	AH-3 4-4.5'	soil	2010-03-03	00:00	2010-03-09
225050	AH-3 5-5.5'	soil	2010-03-03	00:00	2010-03-09

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 37 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

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Aoudad State #8 were received by TraceAnalysis, Inc. on 2010-03-09 and assigned to work order 10031010. Samples for work order 10031010 were received intact at a temperature of 7.6 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	58349	2010-03-11 at 15:00	68187	2010-03-11 at 14:27
BTEX	S 8021B	58381	2010-03-12 at 15:00	68230	2010-03-12 at 10:38
Chloride (Titration)	SM 4500-Cl B	58323	2010-03-11 at 09:53	68200	2010-03-12 at 15:30
Chloride (Titration)	SM 4500-Cl B	58324	2010-03-11 at 12:54	68201	2010-03-12 at 15:30
Chloride (Titration)	SM 4500-Cl B	58325	2010-03-11 at 12:55	68202	2010-03-12 at 15:31
Chloride (Titration)	SM 4500-Cl B	58326	2010-03-11 at 12:55	68300	2010-03-16 at 14:58
TPH DRO - NEW	Mod. 8015B	58292	2010-03-10 at 14:49	68138	2010-03-10 at 14:49
TPH DRO - NEW	Mod. 8015B	58430	2010-03-15 at 14:33	68283	2010-03-15 at 14:33
TPH GRO	S 8015B	58349	2010-03-11 at 15:00	68188	2010-03-11 at 14:54
TPH GRO	S 8015B	58381	2010-03-12 at 15:00	68231	2010-03-12 at 11:05

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 10031010 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: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

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Analytical Report

Sample: 225025 - AH-1 0-1' 1' BEB

Laboratory: Midland
Analysis: BTEX
QC Batch: 68187
Prep Batch: 58349

Analytical Method: S 8021B
Date Analyzed: 2010-03-11
Sample Preparation: 2010-03-11

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

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		17.6	mg/Kg	100	0.0100
Toluene		78.2	mg/Kg	100	0.0100
Ethylbenzene		60.7	mg/Kg	100	0.0100
Xylene		102	mg/Kg	100	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		92.2	mg/Kg	100	100	92	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		132	mg/Kg	100	100	132	43.1 - 158.4

Sample: 225025 - AH-1 0-1' 1' BEB

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 68200
Prep Batch: 58323

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-11

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2840	mg/Kg	100	4.00

Sample: 225025 - AH-1 0-1' 1' BEB

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 68138
Prep Batch: 58292

Analytical Method: Mod. 8015B
Date Analyzed: 2010-03-10
Sample Preparation: 2010-03-10

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

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		8710	mg/Kg	10	50.0

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	1	1390	mg/Kg	10	100	1390	70 - 130

Sample: 225025 - AH-1 0-1' 1' BEB

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 68188
Prep Batch: 58349

Analytical Method: S 8015B
Date Analyzed: 2010-03-11
Sample Preparation: 2010-03-11

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

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		5840	mg/Kg	100	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		123	mg/Kg	100	100	123	65.3 - 145
4-Bromofluorobenzene (4-BFB)	2	160	mg/Kg	100	100	160	61.7 - 131.1

Sample: 225026 - AH-1 1-1.5' 1' BEB

Laboratory: Midland
Analysis: BTEX
QC Batch: 68230
Prep Batch: 58381

Analytical Method: S 8021B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-12

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

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		6.97	mg/Kg	20	0.0100
Toluene		49.0	mg/Kg	20	0.0100
Ethylbenzene		40.0	mg/Kg	20	0.0100
Xylene		84.6	mg/Kg	20	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		20.8	mg/Kg	20	20.0	104	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)	3	39.0	mg/Kg	20	20.0	195	43.1 - 158.4

Sample: 225026 - AH-1 1-1.5' 1' BEB

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 68201
Prep Batch: 58324

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-11

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

¹High surrogate recovery due to peak interference.

²High surrogate recovery due to peak interference.

³High surrogate recovery due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3610	mg/Kg	100	4.00

Sample: 225026 - AH-1 1-1.5' 1' BEB

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
Prep Batch: 58430 Sample Preparation: 2010-03-15 Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		2920	mg/Kg	10	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	⁴	527	mg/Kg	10	100	527	70 - 130

Sample: 225026 - AH-1 1-1.5' 1' BEB

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		3810	mg/Kg	20	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	⁵	29.8	mg/Kg	20	20.0	149	65.3 - 145
4-Bromofluorobenzene (4-BFB)	⁶	54.8	mg/Kg	20	20.0	274	61.7 - 131.1

Sample: 225027 - AH-1 2-2.5' 1' BEB

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 68230 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

⁴High surrogate recovery due to peak interference.

⁵High surrogate recovery due to peak interference.

⁶High surrogate recovery due to peak interference.

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		0.0854	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	⁷	0.919	mg/Kg	1	2.00	46	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		1.14	mg/Kg	1	2.00	57	43.1 - 158.4

Sample: 225027 - AH-1 2-2.5' 1' BEB

Laboratory: Midland
 Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
 QC Batch: 68201 Date Analyzed: 2010-03-12 Analyzed By: AR
 Prep Batch: 58324 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3520	mg/Kg	100	4.00

Sample: 225027 - AH-1 2-2.5' 1' BEB

Laboratory: Midland
 Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
 QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
 Prep Batch: 58430 Sample Preparation: 2010-03-15 Prepared By: kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		96.7	mg/Kg	1	100	97	70 - 130

Sample: 225027 - AH-1 2-2.5' 1' BEB

Laboratory: Midland
 Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
 QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
 Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

⁷Surrogate out due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL
GRO		26.8	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.38	mg/Kg	1	2.00	69	65.3 - 145
4-Bromofluorobenzene (4-BFB)		1.52	mg/Kg	1	2.00	76	61.7 - 131.1

Sample: 225028 - AH-1 3-3.5' 1' BEB

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2010-03-12	Analyzed By: AR
QC Batch: 68201	Sample Preparation: 2010-03-11	Prepared By: AR
Prep Batch: 58324		

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4780	mg/Kg	100	4.00

Sample: 225029 - AH-1 4-4.5' 1' BEB

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2010-03-12	Analyzed By: AR
QC Batch: 68201	Sample Preparation: 2010-03-11	Prepared By: AR
Prep Batch: 58324		

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4260	mg/Kg	100	4.00

Sample: 225030 - AH-1 5-5.5' 1' BEB

Laboratory: Midland	Analytical Method: SM 4500-Cl B	Prep Method: N/A
Analysis: Chloride (Titration)	Date Analyzed: 2010-03-12	Analyzed By: AR
QC Batch: 68201	Sample Preparation: 2010-03-11	Prepared By: AR
Prep Batch: 58324		

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4590	mg/Kg	100	4.00

Report Date: March 17, 2010
114-6400434

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Sample: 225031 - AH-1 6-6.5' 1' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-03-12	Analyzed By:	AR
QC Batch:	68201	Sample Preparation:	2010-03-11	Prepared By:	AR
Prep Batch:	58324				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3150	mg/Kg	100	4.00

Sample: 225032 - AH-1 7-7.5' 1' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-03-12	Analyzed By:	AR
QC Batch:	68201	Sample Preparation:	2010-03-11	Prepared By:	AR
Prep Batch:	58324				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3270	mg/Kg	100	4.00

Sample: 225033 - AH-1 8-8.5' 1' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-03-12	Analyzed By:	AR
QC Batch:	68201	Sample Preparation:	2010-03-11	Prepared By:	AR
Prep Batch:	58324				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2810	mg/Kg	100	4.00

Sample: 225034 - AH-1 9-9.5' 1' BEB

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-03-12	Analyzed By:	AR
QC Batch:	68201	Sample Preparation:	2010-03-11	Prepared By:	AR
Prep Batch:	58324				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6320	mg/Kg	100	4.00

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Sample: 225035 - AH-2 0-1' 1.5' BEB

Laboratory: Midland

Analysis: BTEX

QC Batch: 68187

Prep Batch: 58349

Analytical Method: S 8021B

Date Analyzed: 2010-03-11

Sample Preparation: 2010-03-11

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		4.95	mg/Kg	20	0.0100
Toluene		30.4	mg/Kg	20	0.0100
Ethylbenzene		22.2	mg/Kg	20	0.0100
Xylene		46.3	mg/Kg	20	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		19.3	mg/Kg	20	20.0	96	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)	⁸	33.3	mg/Kg	20	20.0	166	43.1 - 158.4

Sample: 225035 - AH-2 0-1' 1.5' BEB

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 68201

Prep Batch: 58324

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-03-12

Sample Preparation: 2010-03-11

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		390	mg/Kg	50	4.00

Sample: 225035 - AH-2 0-1' 1.5' BEB

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 68138

Prep Batch: 58292

Analytical Method: Mod. 8015B

Date Analyzed: 2010-03-10

Sample Preparation: 2010-03-10

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		4170	mg/Kg	10	50.0

continued ...

⁸High surrogate recovery due to peak interference.

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sample continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	⁹	793	mg/Kg	10	100	793	70 - 130

Sample: 225035 - AH-2 0-1' 1.5' BEB

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 68188
Prep Batch: 58349

Analytical Method: S 8015B
Date Analyzed: 2010-03-11
Sample Preparation: 2010-03-11

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

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		2910	mg/Kg	20	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		25.5	mg/Kg	20	20.0	128	65.3 - 145
4-Bromofluorobenzene (4-BFB)	¹⁰	33.6	mg/Kg	20	20.0	168	61.7 - 131.1

Sample: 225036 - AH-2 1-1.5' 1.5' BEB

Laboratory: Midland
Analysis: BTEX
QC Batch: 68230
Prep Batch: 58381

Analytical Method: S 8021B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-12

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

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.27	mg/Kg	1	2.00	114	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		2.54	mg/Kg	1	2.00	127	43.1 - 158.4

⁹High surrogate recovery due to peak interference.

¹⁰High surrogate recovery due to peak interference.

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Sample: 225036 - AH-2 1-1.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		901	mg/Kg	50	4.00

Sample: 225036 - AH-2 1-1.5' 1.5' BEB

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
Prep Batch: 58430 Sample Preparation: 2010-03-15 Prepared By: kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		101	mg/Kg	1	100	101	70 - 130

Sample: 225036 - AH-2 1-1.5' 1.5' BEB

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	¹¹	3.27	mg/Kg	1	2.00	164	65.3 - 145
4-Bromofluorobenzene (4-BFB)	¹²	3.12	mg/Kg	1	2.00	156	61.7 - 131.1

¹¹ High surrogate recovery. Sample non-detect, result bias high.

¹² High surrogate recovery. Sample non-detect, result bias high.

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Sample: 225037 - AH-2 2-2.5' 1.5' BEB

Laboratory: Midland
Analysis: BTEX
QC Batch: 68230
Prep Batch: 58381

Analytical Method: S 8021B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-12

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

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.92	mg/Kg	1	2.00	96	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		2.14	mg/Kg	1	2.00	107	43.1 - 158.4

Sample: 225037 - AH-2 2-2.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 68202
Prep Batch: 58325

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-03-12
Sample Preparation: 2010-03-11

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4530	mg/Kg	100	4.00

Sample: 225037 - AH-2 2-2.5' 1.5' BEB

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 68283
Prep Batch: 58430

Analytical Method: Mod. 8015B
Date Analyzed: 2010-03-15
Sample Preparation: 2010-03-15

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

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		98.6	mg/Kg	1	100	99	70 - 130

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Sample: 225037 - AH-2 2-2.5' 1.5' BEB

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.77	mg/Kg	1	2.00	138	65.3 - 145
4-Bromofluorobenzene (4-BFB)	¹³	2.64	mg/Kg	1	2.00	132	61.7 - 131.1

Sample: 225038 - AH-2 3-3.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4020	mg/Kg	100	4.00

Sample: 225039 - AH-2 4-4.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3440	mg/Kg	100	4.00

Sample: 225040 - AH-2 5-5.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

¹³High surrogate recovery. Sample non-detect, result bias high.

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Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4680	mg/Kg	100	4.00

Sample: 225041 - AH-2 6-6.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3550	mg/Kg	100	4.00

Sample: 225042 - AH-2 7-7.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4810	mg/Kg	100	4.00

Sample: 225043 - AH-2 8-8.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2940	mg/Kg	100	4.00

Sample: 225044 - AH-2 9-9.5' 1.5' BEB

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 Sample Preparation: 2010-03-11 Prepared By: AR

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Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6020	mg/Kg	100	4.00

Sample: 225045 - AH-3 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 68187

Prep Batch: 58349

Analytical Method: S 8021B

Date Analyzed: 2010-03-11

Sample Preparation: 2010-03-11

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		6.24	mg/Kg	50	0.0100
Toluene		51.7	mg/Kg	50	0.0100
Ethylbenzene		55.5	mg/Kg	50	0.0100
Xylene		97.9	mg/Kg	50	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		46.9	mg/Kg	50	50.0	94	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)	¹⁴	83.2	mg/Kg	50	50.0	166	43.1 - 158.4

Sample: 225045 - AH-3 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 68202

Prep Batch: 58325

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-03-12

Sample Preparation: 2010-03-11

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2890	mg/Kg	100	4.00

Sample: 225045 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 68138

Prep Batch: 58292

Analytical Method: Mod. 8015B

Date Analyzed: 2010-03-10

Sample Preparation: 2010-03-10

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		8860	mg/Kg	10	50.0

¹⁴ High surrogate recovery due to peak interference.

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	¹⁵	1420	mg/Kg	10	100	1420	70 - 130

Sample: 225045 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68188 Date Analyzed: 2010-03-11 Analyzed By: AG
Prep Batch: 58349 Sample Preparation: 2010-03-11 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		5560	mg/Kg	50	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		62.6	mg/Kg	50	50.0	125	65.3 - 145
4-Bromofluorobenzene (4-BFB)	¹⁶	101	mg/Kg	50	50.0	202	61.7 - 131.1

Sample: 225046 - AH-3 1-1.5'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 68230 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		8.35	mg/Kg	50	0.0100
Toluene		52.6	mg/Kg	50	0.0100
Ethylbenzene		50.0	mg/Kg	50	0.0100
Xylene		85.1	mg/Kg	50	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		47.5	mg/Kg	50	50.0	95	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		73.2	mg/Kg	50	50.0	146	43.1 - 158.4

Sample: 225046 - AH-3 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 Sample Preparation: 2010-03-11 Prepared By: AR

¹⁵High surrogate recovery due to peak interference.

¹⁶High surrogate recovery due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2740	mg/Kg	100	4.00

Sample: 225046 - AH-3 1-1.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
Prep Batch: 58430 Sample Preparation: 2010-03-15 Prepared By: kg

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		4520	mg/Kg	10	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	¹⁷	765	mg/Kg	10	100	765	70 - 130

Sample: 225046 - AH-3 1-1.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		5320	mg/Kg	50	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		68.1	mg/Kg	50	50.0	136	65.3 - 145
4-Bromofluorobenzene (4-BFB)	¹⁸	96.7	mg/Kg	50	50.0	193	61.7 - 131.1

Sample: 225047 - AH-3 2-2.5'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 68230 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

¹⁷High surrogate recovery due to peak interference.

¹⁸High surrogate recovery due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		0.0389	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		<0.0100	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.79	mg/Kg	1	2.00	90	60.4 - 141.2
4-Bromofluorobenzene (4-BFB)		2.00	mg/Kg	1	2.00	100	43.1 - 158.4

Sample: 225047 - AH-3 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3560	mg/Kg	100	4.00

Sample: 225047 - AH-3 2-2.5'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: Mod. 8015B Prep Method: N/A
QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
Prep Batch: 58430 Sample Preparation: 2010-03-15 Prepared By: kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		95.5	mg/Kg	1	100	96	70 - 130

Sample: 225047 - AH-3 2-2.5'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015B Prep Method: S 5035
QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 Sample Preparation: 2010-03-12 Prepared By: AG

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Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<1.00	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.61	mg/Kg	1	2.00	130	65.3 - 145
4-Bromofluorobenzene (4-BFB)		2.46	mg/Kg	1	2.00	123	61.7 - 131.1

Sample: 225048 - AH-3 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3460	mg/Kg	100	4.00

Sample: 225049 - AH-3 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4950	mg/Kg	100	4.00

Sample: 225050 - AH-3 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 Sample Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		29900	mg/Kg	100	4.00

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Method Blank (1) QC Batch: 68138

QC Batch: 68138
Prep Batch: 58292

Date Analyzed: 2010-03-10
QC Preparation: 2010-03-10

Analyzed By: kg
Prepared By: kg

Parameter	Flag	MDL Result	Units	RL
DRO		<5.86	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		87.9	mg/Kg	1	100	88	70 - 130

Method Blank (1) QC Batch: 68187

QC Batch: 68187
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00410	mg/Kg	0.01
Toluene		<0.00310	mg/Kg	0.01
Ethylbenzene		<0.00240	mg/Kg	0.01
Xylene		<0.00650	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	64.9 - 142.7
4-Bromofluorobenzene (4-BFB)		1.68	mg/Kg	1	2.00	84	43.9 - 141.9

Method Blank (1) QC Batch: 68188

QC Batch: 68188
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.396	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.54	mg/Kg	1	2.00	127	66.2 - 145
4-Bromofluorobenzene (4-BFB)		1.98	mg/Kg	1	2.00	99	62 - 120.5

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Method Blank (1) QC Batch: 68200

QC Batch: 68200 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58323 QC Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 68201

QC Batch: 68201 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58324 QC Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 68202

QC Batch: 68202 Date Analyzed: 2010-03-12 Analyzed By: AR
Prep Batch: 58325 QC Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 68230

QC Batch: 68230 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 QC Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00410	mg/Kg	0.01
Toluene		<0.00310	mg/Kg	0.01
Ethylbenzene		<0.00240	mg/Kg	0.01
Xylene		<0.00650	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.87	mg/Kg	1	2.00	94	64.9 - 142.7
4-Bromofluorobenzene (4-BFB)		2.03	mg/Kg	1	2.00	102	43.9 - 141.9

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Method Blank (1) QC Batch: 68231

QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG
Prep Batch: 58381 QC Preparation: 2010-03-12 Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.396	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.54	mg/Kg	1	2.00	127	66.2 - 145
4-Bromofluorobenzene (4-BFB)		2.38	mg/Kg	1	2.00	119	62 - 120.5

Method Blank (1) QC Batch: 68283

QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg
Prep Batch: 58430 QC Preparation: 2010-03-15 Prepared By: kg

Parameter	Flag	MDL Result	Units	RL
DRO		<5.86	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		85.4	mg/Kg	1	100	85	70 - 130

Method Blank (1) QC Batch: 68300

QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR
Prep Batch: 58326 QC Preparation: 2010-03-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 68138 Date Analyzed: 2010-03-10 Analyzed By: kg
Prep Batch: 58292 QC Preparation: 2010-03-10 Prepared By: kg

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRÖ	225	mg/Kg	1	250	<5.86	90	57.4 - 133.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRÖ	226	mg/Kg	1	250	<5.86	90	57.4 - 133.4	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
n-Tricosane	109	104	mg/Kg	1	100	109	104	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 68187
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.79	mg/Kg	1	2.00	<0.00410	90	75.4 - 115.7
Toluene	1.78	mg/Kg	1	2.00	<0.00310	89	78.4 - 113.6
Ethylbenzene	1.75	mg/Kg	1	2.00	<0.00240	88	76 - 114.2
Xylene	5.26	mg/Kg	1	6.00	<0.00650	88	76.9 - 113.6

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.82	mg/Kg	1	2.00	<0.00410	91	75.4 - 115.7	2	20
Toluene	1.81	mg/Kg	1	2.00	<0.00310	90	78.4 - 113.6	2	20
Ethylbenzene	1.82	mg/Kg	1	2.00	<0.00240	91	76 - 114.2	4	20
Xylene	5.45	mg/Kg	1	6.00	<0.00650	91	76.9 - 113.6	4	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)	1.68	1.76	mg/Kg	1	2.00	84	88	65 - 142.9
4-Bromofluorobenzene (4-BFB)	1.89	2.01	mg/Kg	1	2.00	94	100	43.8 - 144.9

Laboratory Control Spike (LCS-1)

QC Batch: 68188
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.3	mg/Kg	1	20.0	<0.396	82	52.5 - 114.3

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.6	mg/Kg	1	20.0	<0.396	83	52.5 - 114.3	2	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)	2.39	2.18	mg/Kg	1	2.00	120	109	66.2 - 148.7
4-Bromofluorobenzene (4-BFB)	2.23	2.05	mg/Kg	1	2.00	112	102	64.1 - 127.4

Laboratory Control Spike (LCS-1)

QC Batch: 68200
Prep Batch: 58323

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.0	mg/Kg	1	100	<2.18	99	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.9	mg/Kg	1	100	<2.18	100	85 - 115	1	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: 68201
Prep Batch: 58324

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.0	mg/Kg	1	100	<2.18	99	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	100	mg/Kg	1	100	<2.18	100	85 - 115	1	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: 68202

Date Analyzed: 2010-03-12

Analyzed By: AR

Prep Batch: 58325

QC Preparation: 2010-03-11

Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.2	mg/Kg	1	100	<2.18	99	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	101	mg/Kg	1	100	<2.18	101	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: 68230

Date Analyzed: 2010-03-12

Analyzed By: AG

Prep Batch: 58381

QC Preparation: 2010-03-12

Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.78	mg/Kg	1	2.00	<0.00410	89	75.4 - 115.7
Toluene	1.78	mg/Kg	1	2.00	<0.00310	89	78.4 - 113.6
Ethylbenzene	1.74	mg/Kg	1	2.00	<0.00240	87	76 - 114.2
Xylene	5.19	mg/Kg	1	6.00	<0.00650	86	76.9 - 113.6

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.82	mg/Kg	1	2.00	<0.00410	91	75.4 - 115.7	2	20
Toluene	1.81	mg/Kg	1	2.00	<0.00310	90	78.4 - 113.6	2	20
Ethylbenzene	1.76	mg/Kg	1	2.00	<0.00240	88	76 - 114.2	1	20
Xylene	5.31	mg/Kg	1	6.00	<0.00650	88	76.9 - 113.6	2	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)	1.72	1.47	mg/Kg	1	2.00	86	74	65 - 142.9
4-Bromofluorobenzene (4-BFB)	2.04	1.75	mg/Kg	1	2.00	102	88	43.8 - 144.9

Laboratory Control Spike (LCS-1)

QC Batch: 68231

Date Analyzed: 2010-03-12

Analyzed By: AG

Prep Batch: 58381

QC Preparation: 2010-03-12

Prepared By: AG

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	15.9	mg/Kg	1	20.0	<0.396	80	52.5 - 114.3

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.7	mg/Kg	1	20.0	<0.396	78	52.5 - 114.3	1	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)	2.36	2.36	mg/Kg	1	2.00	118	118	66.2 - 148.7
4-Bromofluorobenzene (4-BFB)	2.34	2.33	mg/Kg	1	2.00	117	116	64.1 - 127.4

Laboratory Control Spike (LCS-1)

QC Batch: 68283
Prep Batch: 58430

Date Analyzed: 2010-03-15
QC Preparation: 2010-03-15

Analyzed By: kg
Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	187	mg/Kg	1	250	<5.86	75	57.4 - 133.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	215	mg/Kg	1	250	<5.86	86	57.4 - 133.4	14	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	89.4	103	mg/Kg	1	100	89	103	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 68300
Prep Batch: 58326

Date Analyzed: 2010-03-16
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.4	mg/Kg	1	100	<2.18	98	85 - 115

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

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Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.9	mg/Kg	1	100	<2.18	100	85 - 115	2	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: 224995

QC Batch: 68138
Prep Batch: 58292

Date Analyzed: 2010-03-10
QC Preparation: 2010-03-10

Analyzed By: kg
Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	198	mg/Kg	1	250	<5.86	79	35.2 - 167.1

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	198	mg/Kg	1	250	<5.86	79	35.2 - 167.1	0	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	94.2	93.3	mg/Kg	1	100	94	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 224995

QC Batch: 68187
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	¹⁹ 1.65	mg/Kg	1	2.00	<0.00410	82	57.7 - 140.7
Toluene	1.67	mg/Kg	1	2.00	<0.00310	84	53.4 - 146.6
Ethylbenzene	1.67	mg/Kg	1	2.00	<0.00240	84	62.1 - 141.6
Xylene	5.02	mg/Kg	1	6.00	<0.00650	84	61.2 - 142.7

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	<0.00410	mg/Kg	1	2.00	<0.00410		57.7 - 140.7		20
Toluene	<0.00310	mg/Kg	1	2.00	<0.00310		53.4 - 146.6		20
Ethylbenzene	<0.00240	mg/Kg	1	2.00	<0.00240		62.1 - 141.6		20
Xylene	<0.00650	mg/Kg	1	6.00	<0.00650		61.2 - 142.7		20

¹⁹SPECIAL - MSD was run but not reported due to prep error (spiked with wrong spiking solution). •

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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)	1.60	0.00	mg/Kg	1	2	80		61.7 - 139.6
4-Bromofluorobenzene (4-BFB)	1.79	0.00	mg/Kg	1	2	90		49.6 - 146.7

Matrix Spike (MS-1) Spiked Sample: 224992

QC Batch: 68188
Prep Batch: 58349

Date Analyzed: 2010-03-11
QC Preparation: 2010-03-11

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	18.4	mg/Kg	1	20.0	<0.396	92	10 - 198.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	18.5	mg/Kg	1	20.0	<0.396	92	10 - 198.3	0	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)	2.17	1.58	mg/Kg	1	2	108	79	65.5 - 143
4-Bromofluorobenzene (4-BFB)	2.20	1.66	mg/Kg	1	2	110	83	58.6 - 140

Matrix Spike (MS-1) Spiked Sample: 225025

QC Batch: 68200
Prep Batch: 58323

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11400	mg/Kg	100	10000	2840	86	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	11600	mg/Kg	100	10000	2840	88	85 - 115	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: 225035

QC Batch: 68201
Prep Batch: 58324

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10400	mg/Kg	100	10000	390	100	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10600	mg/Kg	100	10000	390	102	85 - 115	2	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: 225045

QC Batch: 68202
Prep Batch: 58325

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12800	mg/Kg	100	10000	2890	99	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12900	mg/Kg	100	10000	2890	100	85 - 115	1	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: 225222

QC Batch: 68230
Prep Batch: 58381

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-12

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.89	mg/Kg	1	2.00	<0.00410	94	57.7 - 140.7
Toluene	1.92	mg/Kg	1	2.00	0.0664	93	53.4 - 146.6
Ethylbenzene	1.96	mg/Kg	1	2.00	<0.00240	98	62.1 - 141.6
Xylene	5.91	mg/Kg	1	6.00	0.1979	95	61.2 - 142.7

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.95	mg/Kg	1	2.00	<0.00410	98	57.7 - 140.7	3	20
Toluene	2.00	mg/Kg	1	2.00	0.0664	97	53.4 - 146.6	4	20
Ethylbenzene	2.01	mg/Kg	1	2.00	<0.00240	100	62.1 - 141.6	2	20
Xylene	6.06	mg/Kg	1	6.00	0.1979	98	61.2 - 142.7	2	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)	1.90	1.93	mg/Kg	1	2	95	96	61.7 - 139.6
4-Bromofluorobenzene (4-BFB)	2.19	2.20	mg/Kg	1	2	110	110	49.6 - 146.7

Matrix Spike (MS-1) Spiked Sample: 225126

QC Batch: 68231
Prep Batch: 58381

Date Analyzed: 2010-03-12
QC Preparation: 2010-03-12

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.0	mg/Kg	1	20.0	<0.396	85	10 - 198.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	19.6	mg/Kg	1	20.0	<0.396	98	10 - 198.3	14	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)	2.79	2.82	mg/Kg	1	2	140	141	65.5 - 143
4-Bromofluorobenzene (4-BFB)	²⁰ 2.97	2.86	mg/Kg	1	2	148	143	58.6 - 140

Matrix Spike (MS-1) Spiked Sample: 225036

QC Batch: 68283
Prep Batch: 58430

Date Analyzed: 2010-03-15
QC Preparation: 2010-03-15

Analyzed By: kg
Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	180	mg/Kg	1	250	<5.86	72	35.2 - 167.1

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

²⁰High surrogate recovery due to peak interference.

²¹High surrogate recovery due to peak interference.

Report Date: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

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Eddy County, NM

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	188	mg/Kg	1	250	<5.86	75	35.2 - 167.1	4	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	93.6	95.4	mg/Kg	1	100	94	95	70 - 130

Matrix Spike (MS-1) Spiked Sample: 225059

QC Batch: 68300
Prep Batch: 58326

Date Analyzed: 2010-03-16
QC Preparation: 2010-03-11

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10000	mg/Kg	100	10000	232	98	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10200	mg/Kg	100	10000	232	100	85 - 115	2	20

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

Standard (CCV-3)

QC Batch: 68138

Date Analyzed: 2010-03-10

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	224	90	80 - 120	2010-03-10

Standard (CCV-4)

QC Batch: 68138

Date Analyzed: 2010-03-10

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	222	89	80 - 120	2010-03-10

Standard (CCV-2)

QC Batch: 68187

Date Analyzed: 2010-03-11

Analyzed By: AG

Report Date: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

Page Number: 33 of 37
Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0905	90	80 - 120	2010-03-11
Toluene		mg/Kg	0.100	0.0895	90	80 - 120	2010-03-11
Ethylbenzene		mg/Kg	0.100	0.0877	88	80 - 120	2010-03-11
Xylene		mg/Kg	0.300	0.264	88	80 - 120	2010-03-11

Standard (CCV-3)

QC Batch: 68187

Date Analyzed: 2010-03-11

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0917	92	80 - 120	2010-03-11
Toluene		mg/Kg	0.100	0.0911	91	80 - 120	2010-03-11
Ethylbenzene		mg/Kg	0.100	0.0886	89	80 - 120	2010-03-11
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-03-11

Standard (CCV-2)

QC Batch: 68188

Date Analyzed: 2010-03-11

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.03	103	80 - 120	2010-03-11

Standard (CCV-3)

QC Batch: 68188

Date Analyzed: 2010-03-11

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.03	103	80 - 120	2010-03-11

Standard (ICV-1)

QC Batch: 68200

Date Analyzed: 2010-03-12

Analyzed By: AR

Report Date: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

Page Number: 34 of 37
Eddy County, NM

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.5	98	85 - 115	2010-03-12

Standard (CCV-1)

QC Batch: 68200

Date Analyzed: 2010-03-12

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-03-12

Standard (ICV-1)

QC Batch: 68201

Date Analyzed: 2010-03-12

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-03-12

Standard (CCV-1)

QC Batch: 68201

Date Analyzed: 2010-03-12

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.4	99	85 - 115	2010-03-12

Standard (ICV-1)

QC Batch: 68202

Date Analyzed: 2010-03-12

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2010-03-12

Standard (CCV-1)

QC Batch: 68202

Date Analyzed: 2010-03-12

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.7	100	85 - 115	2010-03-12

Standard (CCV-1)

QC Batch: 68230

Date Analyzed: 2010-03-12

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0864	86	80 - 120	2010-03-12
Toluene		mg/Kg	0.100	0.0913	91	80 - 120	2010-03-12
Ethylbenzene		mg/Kg	0.100	0.0840	84	80 - 120	2010-03-12
Xylene		mg/Kg	0.300	0.255	85	80 - 120	2010-03-12

Standard (CCV-2)

QC Batch: 68230

Date Analyzed: 2010-03-12

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0917	92	80 - 120	2010-03-12
Toluene		mg/Kg	0.100	0.0912	91	80 - 120	2010-03-12
Ethylbenzene		mg/Kg	0.100	0.0908	91	80 - 120	2010-03-12
Xylene		mg/Kg	0.300	0.272	91	80 - 120	2010-03-12

Standard (CCV-3)

QC Batch: 68230

Date Analyzed: 2010-03-12

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0947	95	80 - 120	2010-03-12
Toluene		mg/Kg	0.100	0.0938	94	80 - 120	2010-03-12
Ethylbenzene		mg/Kg	0.100	0.0926	93	80 - 120	2010-03-12
Xylene		mg/Kg	0.300	0.276	92	80 - 120	2010-03-12

Standard (CCV-1)

QC Batch: 68231

Date Analyzed: 2010-03-12

Analyzed By: AG

Report Date: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

Page Number: 36 of 37
Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.15	115	80 - 120	2010-03-12

Standard (CCV-2)

QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.00	100	80 - 120	2010-03-12

Standard (CCV-3)

QC Batch: 68231 Date Analyzed: 2010-03-12 Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.14	114	80 - 120	2010-03-12

Standard (CCV-1)

QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	206	82	80 - 120	2010-03-15

Standard (CCV-2)

QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	204	82	80 - 120	2010-03-15

Standard (CCV-3)

QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg

Report Date: March 17, 2010
114-6400434

Work Order: 10031010
COG/Aoudad State #8

Page Number: 37 of 37
Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	296	118	80 - 120	2010-03-15

Standard (CCV-4)

QC Batch: 68283 Date Analyzed: 2010-03-15 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	204	82	80 - 120	2010-03-15

Standard (ICV-1)

QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-03-16

Standard (CCV-1)

QC Batch: 68300 Date Analyzed: 2010-03-16 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.1	99	85 - 115	2010-03-16

Analysis Request of Chain of Custody Record



TETRA TECH

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

PAGE: 3

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6400434

PROJECT NAME:

*COG / Aardad State #8
Eddy Co, N*

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

TEX 8021B
TPH 8015 MOD > JTK1005 (Ext to C35)

PAH 8270

RCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

025025

3/3

S

X

AH-1

0-1'

1' BEB

1

X

XX

026

1

1

1

AH-1

1-1.5'

1' BEB

1

027

1

1

1

AH-1

2-2.5'

1' BEB

1

028

1

1

1

AH-1

3-3.5'

1' BEB

1

029

1

1

1

AH-1

4-4.5'

1' BEB

1

030

1

1

1

AH-1

5-5.5'

1' BEB

1

031

1

1

1

AH-1

6-6.5'

1' BEB

1

032

1

1

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AH-1

7-7.5'

1' BEB

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033

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AH-1

8-8.5'

1' BEB

1

034

1

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AH-1

9-9.5'

1' BEB

Y

3/3/10

RELINQUISHED BY: (Signature)

[Signature]

Date: *3/4/10*

Time: *16:10*

RECEIVED BY: (Signature)

[Signature]

Date: *3/4/10*

Time: *16:10*

SAMPLED BY: (Print & Initial)

Robert L. L. S.

Date: *3-3-10*

Time: *2:00*

RELINQUISHED BY: (Signature)

[Signature]

Date: _____

Time: _____

RECEIVED BY: (Signature)

[Signature]

Date: _____

Time: _____

SAMPLE SHIPPED BY: (Circle)

FEDEX BUS

AIRBILL #:

HAND DELIVERED UPS

OTHER:

RECEIVING LABORATORY:

Tetra

RECEIVED BY: (Signature)

[Signature]

ADDRESS:

CITY: *Midland* STATE: *TX*

ZIP:

CONTACT:

Phone

PHONE

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

7.6 c intact

REMARKS:

If total TPH exceeds 5,000 mg/kg run deeper samples / If Benzene exceeds 10 mg/kg run deeper samples / If total BTEX exceeds 50 mg/kg run deeper samples

TETRA TECH CONTACT PERSON:

Ike Tavaraz

Results by:

[Signature]

RUSH Charges

Authorized:

Yes No

Order #: 10031010

2
3

(Circle or Specify Method No.)



(432) 682-4559 • Fax (432) 682-3946

PRESERVATIVE

Arkansas State #8

ONE

112

NO

AH-

124-

A44-2

A41-2

PH-1

44-2

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84-7

15-1

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AT-2

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Date: _____
Time: _____

1611

Date: _____
Time: _____
Note: _____

Time: _____

E: _____

111

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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3754

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

RUSH Charges Authorized: Yes No
--

Analysis Request of Chain of Custody Record



TETRA TECH

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

PAGE: 3

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PROJECT NO.:

PROJECT NAME:

LAB I.D.
NUMBER

DATE
8/10

TIME

MATRIX

COMP

GRAB

225045

8-3

S

X

AH-3

0-1'

046

AH-3

1-1.5'

047

AH-3

2-2.5'

048

AH-3

3-3.5'

049

AH-3

4-4.5'

050

✓

✓

✓

AH-3

5-5.5'

Summary Report

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

Report Date: May 4, 2010

Work Order: 10042612



Project Location: Eddy County, NM
Project Name: COG/Aoudad State #8
Project Number: 114-6400434

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
229537	SB-1 5' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229538	SB-1 7' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229539	SB-1 10' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229540	SB-1 15' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229541	SB-1 20' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229542	SB-1 25' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229543	SB-1 30' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229544	SB-1 40' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229545	SB-2 5' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229546	SB-2 7' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229547	SB-2 10' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229548	SB-2 15' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229549	SB-2 20' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229550	SB-2 25' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229551	SB-2 30' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229552	SB-2 40' (1' BEB)	soil	2010-04-23	00:00	2010-04-23

Sample: 229537 - SB-1 5' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		5290	mg/Kg	4.00

Sample: 229538 - SB-1 7' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		11600	mg/Kg	4.00

Sample: 229539 - SB-1 10' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		1060	mg/Kg	4.00

Sample: 229540 - SB-1 15' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		260	mg/Kg	4.00

Sample: 229541 - SB-1 20' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		7900	mg/Kg	4.00

Sample: 229542 - SB-1 25' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		650	mg/Kg	4.00

Sample: 229543 - SB-1 30' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		480	mg/Kg	4.00

Sample: 229544 - SB-1 40' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		430	mg/Kg	4.00

Sample: 229545 - SB-2 5' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		1300	mg/Kg	4.00

Sample: 229546 - SB-2 7' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		3630	mg/Kg	4.00

Sample: 229547 - SB-2 10' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		4920	mg/Kg	4.00

Sample: 229548 - SB-2 15' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		8960	mg/Kg	4.00

Sample: 229549 - SB-2 20' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		6520	mg/Kg	4.00

Sample: 229550 - SB-2 25' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		9550	mg/Kg	4.00

Sample: 229551 - SB-2 30' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		8210	mg/Kg	4.00

Sample: 229552 - SB-2 40' (1' BEB)

Param	Flag	Result	Units	RL
Chloride		716	mg/Kg	4.00



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 888•588•3443 915•585•3443 FAX 915•585•4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313
6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260
E-Mail: lab@traceanalysis.com

Certifications

WBENC: 237019 HUB: 1752439743100-86536 DBE: VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

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

Analytical and Quality Control Report

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

Report Date: May 4, 2010

Work Order: 10042612



Project Location: Eddy County, NM
Project Name: COG/Aoudad State #8
Project Number: 114-6400434

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
229537	SB-1 5' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229538	SB-1 7' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229539	SB-1 10' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229540	SB-1 15' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229541	SB-1 20' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229542	SB-1 25' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229543	SB-1 30' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229544	SB-1 40' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229545	SB-2 5' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229546	SB-2 7' (1' BEB)	soil	2010-04-23	00:00	2010-04-23

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
229547	SB-2 10' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229548	SB-2 15' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229549	SB-2 20' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229550	SB-2 25' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229551	SB-2 30' (1' BEB)	soil	2010-04-23	00:00	2010-04-23
229552	SB-2 40' (1' BEB)	soil	2010-04-23	00:00	2010-04-23

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

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project COG/Aoudad State #8 were received by TraceAnalysis, Inc. on 2010-04-23 and assigned to work order 10042612. Samples for work order 10042612 were received intact at a temperature of 24.0 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	59456	2010-04-28 at 08:51	69515	2010-04-29 at 12:17
Chloride (Titration)	SM 4500-Cl B	59457	2010-04-28 at 08:51	69630	2010-05-03 at 15:07

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 10042612 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: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

Page Number: 4 of 10
Eddy County, NM

Analytical Report

Sample: 229537 - SB-1 5' (1' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-04-29	Analyzed By:	AR
QC Batch:	69515	Sample Preparation:	2010-04-28	Prepared By:	AR
Prep Batch:	59456				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		5290	mg/Kg	100	4.00

Sample: 229538 - SB-1 7' (1' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-04-29	Analyzed By:	AR
QC Batch:	69515	Sample Preparation:	2010-04-28	Prepared By:	AR
Prep Batch:	59456				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		11600	mg/Kg	100	4.00

Sample: 229539 - SB-1 10' (1' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-04-29	Analyzed By:	AR
QC Batch:	69515	Sample Preparation:	2010-04-28	Prepared By:	AR
Prep Batch:	59456				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1060	mg/Kg	50	4.00

Sample: 229540 - SB-1 15' (1' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-04-29	Analyzed By:	AR
QC Batch:	69515	Sample Preparation:	2010-04-28	Prepared By:	AR
Prep Batch:	59456				

Report Date: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

Page Number: 5 of 10
Eddy County, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		260	mg/Kg	50	4.00

Sample: 229541 - SB-1 20' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7900	mg/Kg	100	4.00

Sample: 229542 - SB-1 25' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		650	mg/Kg	50	4.00

Sample: 229543 - SB-1 30' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		480	mg/Kg	50	4.00

Sample: 229544 - SB-1 40' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Report Date: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

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Eddy County, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		430	mg/Kg	50	4.00

Sample: 229545 - SB-2 5' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1300	mg/Kg	50	4.00

Sample: 229546 - SB-2 7' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3630	mg/Kg	100	4.00

Sample: 229547 - SB-2 10' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4920	mg/Kg	100	4.00

Sample: 229548 - SB-2 15' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Report Date: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

Page Number: 7 of 10
Eddy County, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8960	mg/Kg	100	4.00

Sample: 229549 - SB-2 20' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6520	mg/Kg	100	4.00

Sample: 229550 - SB-2 25' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9550	mg/Kg	100	4.00

Sample: 229551 - SB-2 30' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8210	mg/Kg	100	4.00

Sample: 229552 - SB-2 40' (1' BEB)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 Sample Preparation: 2010-04-28 Prepared By: AR

Report Date: May 4, 2010
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COG/Aoudad State #8

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Eddy County, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		716	mg/Kg	50	4.00

Method Blank (1) QC Batch: 69515

QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 QC Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Method Blank (1) QC Batch: 69630

QC Batch: 69630 Date Analyzed: 2010-05-03 Analyzed By: AR
Prep Batch: 59457 QC Preparation: 2010-04-28 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<2.18	mg/Kg	4

Laboratory Control Spike (LCS-1)

QC Batch: 69515 Date Analyzed: 2010-04-29 Analyzed By: AR
Prep Batch: 59456 QC Preparation: 2010-04-28 Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.7	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.5	mg/Kg	1	100	<2.18	100	85 - 115	2	20

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

Report Date: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

Page Number: 9 of 10
Eddy County, NM

Laboratory Control Spike (LCS-1)

QC Batch: 69630
Prep Batch: 59457

Date Analyzed: 2010-05-03
QC Preparation: 2010-04-28

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	101	mg/Kg	1	100	<2.18	101	85 - 115	0	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: 229546

QC Batch: 69515
Prep Batch: 59456

Date Analyzed: 2010-04-29
QC Preparation: 2010-04-28

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	13700	mg/Kg	100	10000	3630	101	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	13900	mg/Kg	100	10000	3630	103	85 - 115	1	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: 229579

QC Batch: 69630
Prep Batch: 59457

Date Analyzed: 2010-05-03
QC Preparation: 2010-04-28

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10200	mg/Kg	100	10000	<218	102	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10300	mg/Kg	100	10000	<218	103	85 - 115	1	20

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

Report Date: May 4, 2010
114-6400434

Work Order: 10042612
COG/Aoudad State #8

Page Number: 10 of 10
Eddy County, NM

Standard (ICV-1)

QC Batch: 69515

Date Analyzed: 2010-04-29

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.0	98	85 - 115	2010-04-29

Standard (CCV-1)

QC Batch: 69515

Date Analyzed: 2010-04-29

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-04-29

Standard (ICV-1)

QC Batch: 69630

Date Analyzed: 2010-05-03

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.6	99	85 - 115	2010-05-03

Standard (CCV-1)

QC Batch: 69630

Date Analyzed: 2010-05-03

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-05-03

Order #: 10042612

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-640 0434

PROJECT NAME:

COG / Aoudad State #8

Eddy Co., NM

SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP	GRAB	Ecody Co., NM SAMPLE IDENTIFICATION	NUMBER OF FILTERED (Y)	HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015	PAH 8270	RCRA Metal	TCLP Metal	TCLP Volatili	TCLP Semi V	RCI	GC-MS Vol. I	GC-MS Semi	PCB's 8080/	Pest. 808/80	Chloride	Gamma Spe	Alpha Beta (	PLM (Asbes	Major Anion			
229337	4/23		S		X	SB-1 5' (1' BEB)	1																		X						
538	4/23		S		X	SB-1 7' (1' BEB)	1																		X						
539	4/23		S		X	SB-1 10' (1' BEB)	1																		X						
540	4/23		S		X	SD-1 15' (1' BEB)	1																		X						
541	4/23		S		X	SB-1 20' (1' BEB)	1																		X						
542	4/23		S		X	SD-1 25' (1' BEB)	1																		X						
543	4/23		S		X	SD-1 30' (1' BEB)	1																		X						
544	4/23		S		X	SD-1 40' (1' BEB)	1																		X						
545	4/23		S		X	SB-2 5' (1' BEB)	1																		X						
546	4/23		S		X	SB-2 7' (1' BEB)	1																		X						

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

24.0°C intact

X All tests Midland

Ike Tavaraz

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.

Order #: 10042612

Analysis Request of Chain of Custody Record



TETRA TECH

1910 N. Big Spring St.

Midland, Texas 79705

(432) 682-4559 • Fax (432) 682-3946

PAGE: 2 OF: 2

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavares

PROJECT NO.:

114-6400434

PROJECT NAME:

COG / Aardal State #8

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co., NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

BTEX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

PCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 809/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

229547

4/23

SB-2 10' (1' BEB)

1

X

548

4/23

SB-2 15' (1' BEB)

1

X

549

4/23

SB-2 20' (1' BEB)

1

X

550

4/23

SB-2 25' (1' BEB)

1

X

551

4/23

SB-2 30' (1' BEB)

1

X

552

4/23

SB-2 40' (1' BEB)

1

X

RELINQUISHED BY: (Signature)

Date:

4/23/10

Time:

1700

RECEIVED BY: (Signature)

Date:

4/23/10

Time:

17:00

SAMPLED BY: (Print & Initial)

Kim

Date:

4/23/10

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

TRACE

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

TETRA TECH CONTACT PERSON:

Ike Tavares

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

24.0°C intact

REMARKS:

All test Midland

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