Bratcher, Mike, EMNRD

From: Joshua Russo [jrusso@conchoresources.com]
Sent: Wednesday, March 02, 2011 8:21 AM
To: Bratcher, Mike, EMNRD
Cc: Pat Ellis
Subject: Houma State #1 TB - Immediate Notification

Mr. Bratcher,

Please see below the detailed description of a release that occurred at the Houma State #1 TB on 03/01/2011.

On 3-1-11 at 10:50 the produced water tank ran over at the Houma St. #1 Tank Battery. The spill was caused by a transfer pump malfunction compounded by an alarm system failure. 70 barrels of produced water was released into the unlined dike. 68 barrels of produced water were recovered. All standing fluids were recovered and contaminated soil will be disposed.

GPS coordinates, legal description, and driving directions below:

N 32* 50.130 W 103* 58.671

Houma St. #1
2310' FNL & 2310' FWL
Sec.16-T17S-R30E
Eddy County

North of Loco Hills on Goat Ropers Rd. 1.22 miles to Houma battery on West.

Joshua Russo
HSE Coordinator
550 W. Texas Ave, Suite 100
Midland, Texas 79701
Phone: (432) 683-7443
Cell: (432) 212-2399
jrusso@conchoresources.com
CONCHO

SITE INFORMATION

Report Type: Closure Report

General Site Information:						
Site:	Houma State #1					
Company:	COG Operating LLC					
Section, Township and Range	Sec 16	T17S	R30E			
Lease Number:	API-30-015-31491					
County:	Eddy County					
GPS:	32.83561° N			103.97778° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	In Loco Hills, from the intersection of Hwy 82 and Goat Roaper Rd. travel north on Goat Roaper Rd. for 1.2 miles, turn left and travel 0.4 miles, turn left and travel to site.					

Release Data:	
Date Released:	3/1/2011
Type Release:	Produced Water
Source of Contamination:	Water Tank
Fluid Released:	70 bbls
Fluids Recovered:	68 bbls

Official Communication:			
Name:	Pat Ellis		Ike Tavarez
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		432-628-4559
Fax:	(432) 684-7137		
Email:	pellis@conchoresources.com		ike.tavarez@tetratech.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

August 31, 2011

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

Re: Assessment and Closure Request for the COG Operating LLC., Houma State #1 Tank Battery, Unit J, Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Houma State #1 Tank Battery located in Unit J, Section 16, Township 17 South, Range 30 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.83561°, W 103.97778°. 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 March 3, 2011, and released approximately seventy (70) barrels of produced fluid from a water tank. To alleviate the problem, COG personnel repaired the transfer pump connected to the water tank. Sixty Eight (68) barrels of standing fluids were recovered. The spill initiated and remained inside the facility firewalls and measured approximately 10' x 100'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 16. According to the NMOCD groundwater map, the average depth to groundwater in this area is greater than 300' below surface. The average depth to groundwater map is shown in Appendix B.

Tetra Tech
1910 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.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 24, 2011, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1 and AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, AH-1, AH-2 and AH-3 samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected at 0-1' in all auger holes with concentrations of 4,330 mg/kg, 1,870 mg/kg and 2,380 mg/kg, respectively. However, the deeper samples at 1-1.5' significantly declined with depth. As a result, the spill impact was shallow and vertically defined.

Work Plan

Based on the limited extent of chloride impact (0-1') and depth to groundwater (>300'), COG request closure of the site. COG proposes to perform some general house keeping in the areas of the auger holes to remove the surface chloride impact. The final C-141 is enclosed in Appendix A.

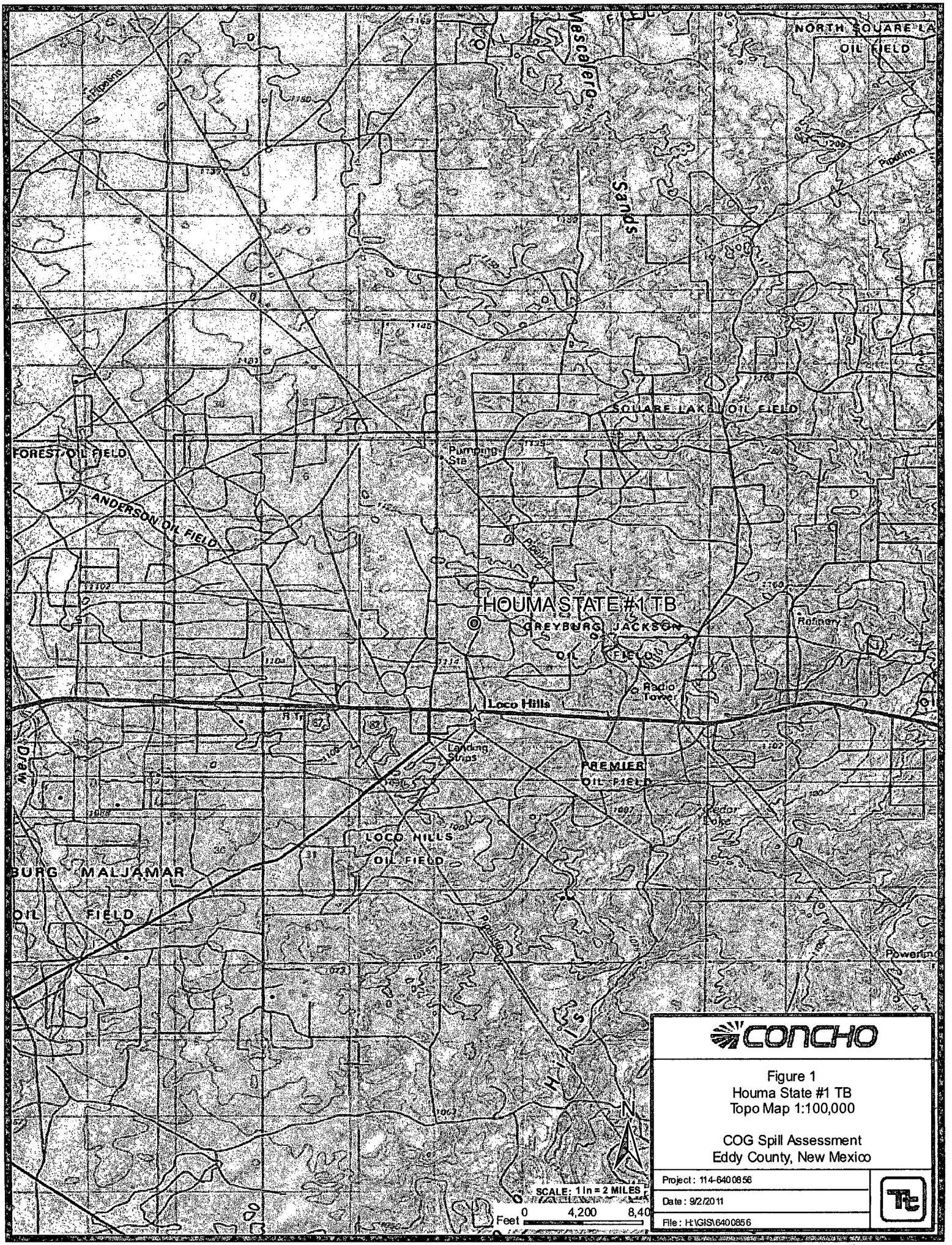
If you have any questions or comments concerning the assessment performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Tetra Tech

cc: Pat Ellis – COG

FIGURES

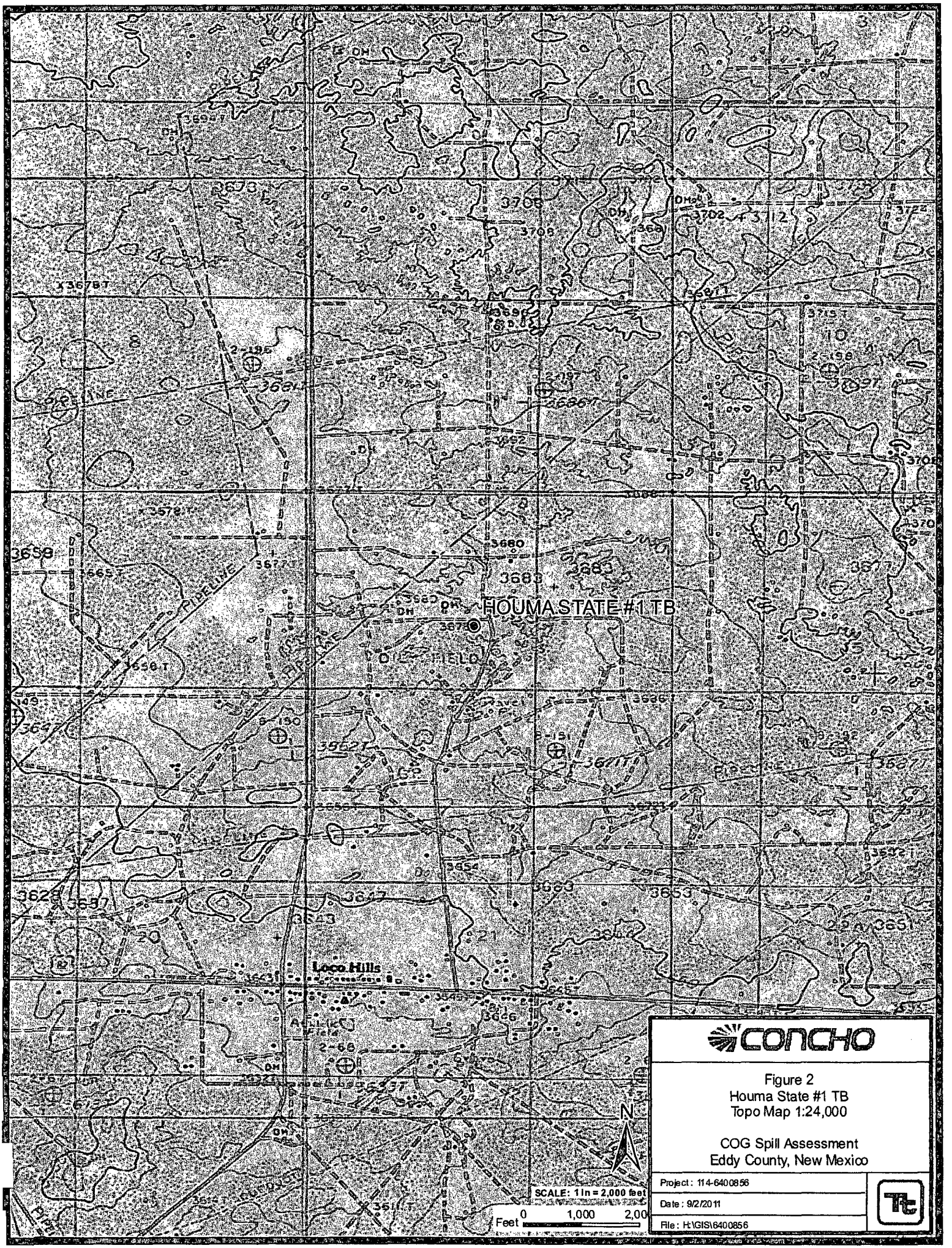


CONCHO

Figure 1
Houma State #1 TB
Topo Map 1:100,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6400856	
Date : 9/2/2011	
File : H:\GIS\6400856	



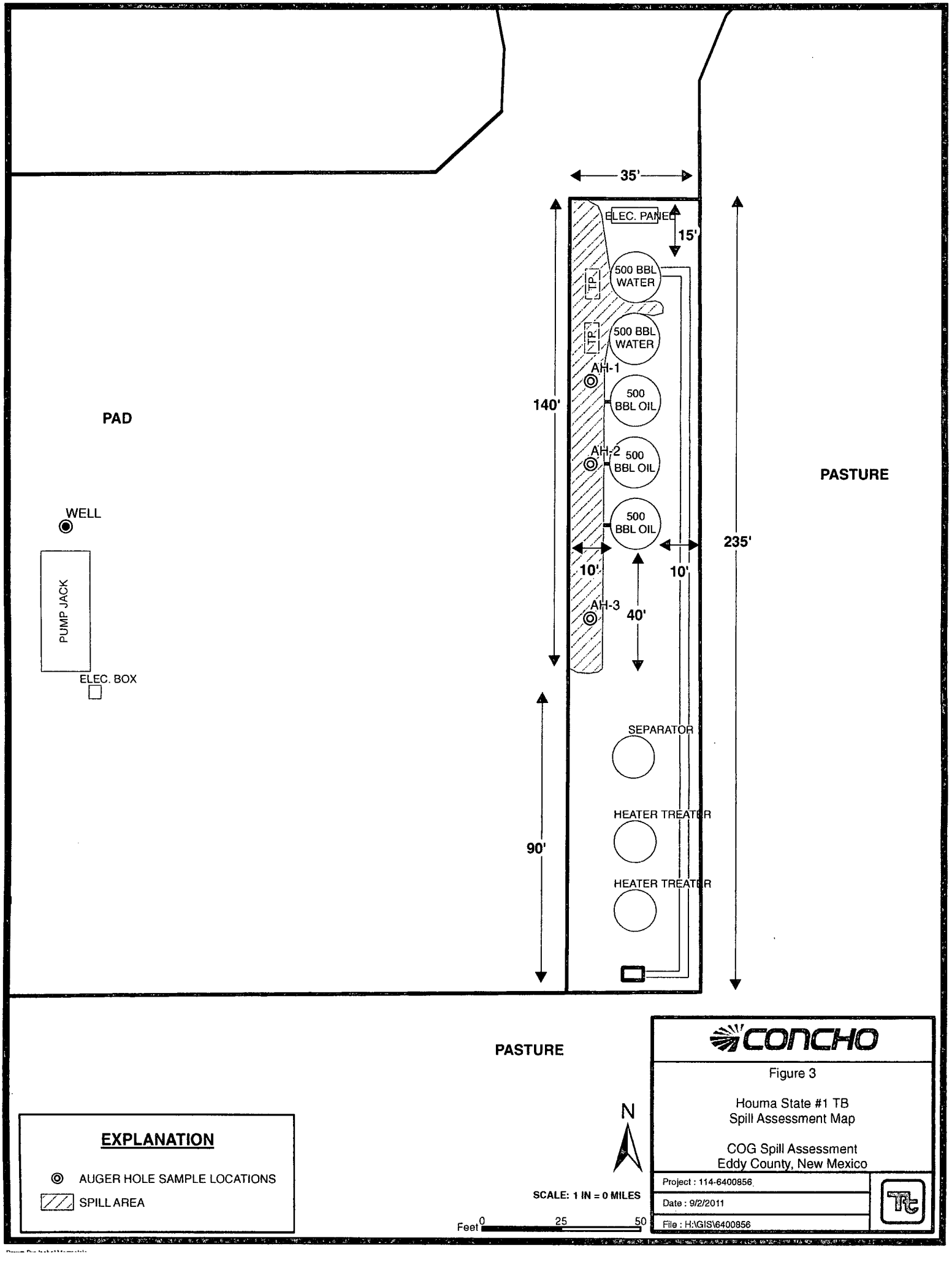
CONCHO

Figure 2
Houma State #1 TB
Topo Map 1:24,000

COG Spill Assessment
Eddy County, New Mexico

Project : 114-6400856
Date : 9/2/2011
File : H:\GIS\6400856

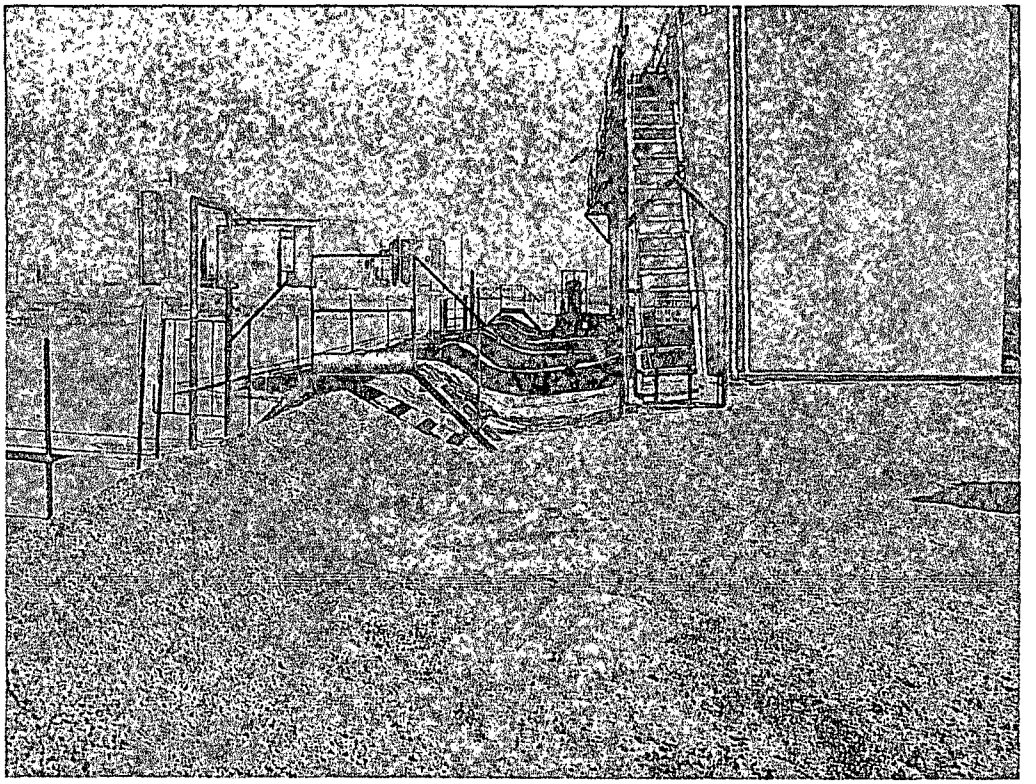
Drawn By: Isabel Marmolejo


35'
ELEC. PANEL
15'
500 BBL WATER
TP
500 BBL WATER
TP
AH-1
500 BBL OIL
140'
PAD
AH-2
500 BBL OIL
PASTURE
WELL
500 BBL OIL
235'
PUMP JACK
10'
10'
AH-3
40'
ELEC. BOX
SEPARATOR
HEATER TREATER
90'
HEATER TREATER
PASTURE
N
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
SCALE: 1 IN = 0 MILES
Feet 0 25 50
CONCHO
Figure 3
Houma State #1 TB
Spill Assessment Map
COG Spill Assessment
Eddy County, New Mexico
Project : 114-6400856
Date : 9/2/2011
File : H:\GIS\6400856

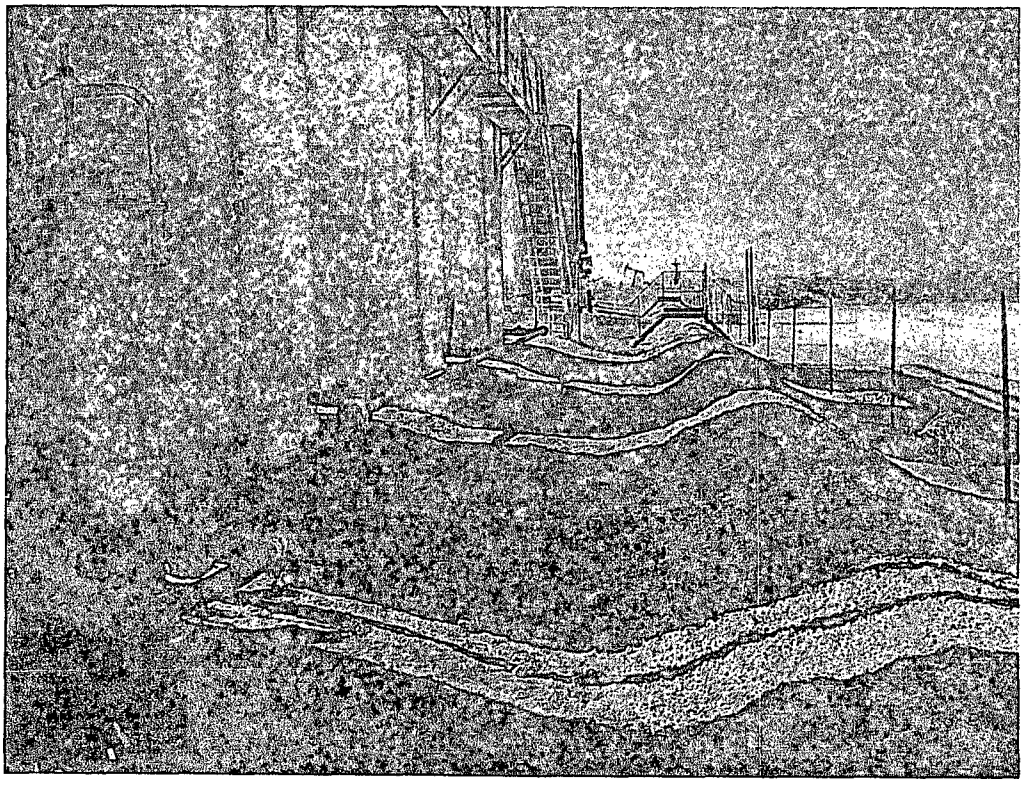
PHOTOGRAPHS

COG Operating LLC
Houma State #1
Eddy County, New Mexico

TETRA TECH



View North – AH-3, 2, 1



View South – AH-1, 2, 3

TABLES

Table 1
COG Operating LLC.
HOUMA STATE #1 TANK BATTERY
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	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	3/24/2011	0-1'	X		39.2	280	319.2	<0.0200	0.172	<0.0200	0.552	4,330
	"	1-1.5'	X		-	-	-	-	-	-	-	255
	"	2-2.5'	X		-	-	-	-	-	-	-	398
	"	3-3.5'	X		-	-	-	-	-	-	-	416
	"	4-4.5'	X		-	-	-	-	-	-	-	326
AH-2	3/24/2011	0-1'	X		384	590	974	0.447	1.05	0.974	5.17	1,870
	"	1-1.5'	X		-	-	-	-	-	-	-	208
	"	2-2.5'	X		-	-	-	-	-	-	-	<200
	"	3-3.5'	X		-	-	-	-	-	-	-	<200
	"	4-4.5'	X		-	-	-	-	-	-	-	<200
	"	5-5.5'	X		-	-	-	-	-	-	-	460
	"	6-6.5'	X		-	-	-	-	-	-	-	489
	"	7-7.5'	X		-	-	-	-	-	-	-	<200
	"	8-8.5'	X		-	-	-	-	-	-	-	<200

Table 1
COG Operating LLC.
HOUMA STATE #1 TANK BATTERY
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	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-3	3/24/2011	0-1'	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	2,380
	"	1-1.5'	X		-	-	-	-	-	-	-	<200
	"	2-2.5'	X		-	-	-	-	-	-	-	<200
	"	3-3.5'	X		-	-	-	-	-	-	-	<200
	"	4-4.5'	X		-	-	-	-	-	-	-	<200
	"	5-5.5'	X		-	-	-	-	-	-	-	<200
	"	6-6.5'	X		-	-	-	-	-	-	-	<200
	"	7-7.5'	X		-	-	-	-	-	-	-	<200
	"	8-8.5'	X		-	-	-	-	-	-	-	267
	"	9-9.5'	X		-	-	-	-	-	-	-	271

(--) Not Analyzed

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 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Houma State #1	Facility Type	Tank Battery

Surface Owner State	Mineral Owner	Lease No. (API#) 30-015-31491

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	16	17S	30E					Eddy

Latitude 32 50.130 **Longitude** 103 58.671

NATURE OF RELEASE

Type of Release Produced water	Volume of Release 70bbls	Volume Recovered 68bbls
Source of Release Water tank	Date and Hour of Occurrence 03/01/2011	Date and Hour of Discovery 03/01/2011 10:50 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher—OCD	
By Whom? Josh Russo	Date and Hour 03/02/2011 9:21 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

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OCT 11 2011
NMOCD ARTESIA

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The transfer pump malfunctioned at the battery and the high level alarm was never set off. The transfer pump has been fixed and returned to service, the alarm system has been repaired.

Describe Area Affected and Cleanup Action Taken.*

Initially 70bbls of produced water was released from the water tank and we were able to recover 68bbls with a vacuum truck. The entire release was contained inside the berm walls of the facility. The spill area measured 5' x 140' within the facility. 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 for approval prior to any significant remediation work.

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

Signature:	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: 03/07/2011 Phone: 432-212-2399		

* 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 1300 Midland, Texas 79701**	Telephone No. **(432) 685-4332**
Facility Name **Houma State #1**	Facility Type **Tank Battery**

Surface Owner: State	Mineral Owner	Lease No. (API#) 30-015-31491

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	16	17S	30E					

Latitude N 32.83561° **Longitude** W 103.97778

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 70 bbls	Volume Recovered 68 bbls
Source of Release: Water Tank	Date and Hour of Occurrence 3/1/2011	Date and Hour of Discovery 3/1/2011 10:50 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom? **Mike Bratcher - NMOCD**	
By Whom? Josh Russo	Date and Hour 3/1/2011 9:21 a.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

RECEIVED
OCT 11 2011
NMOCD ARTESIA

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The transfer pump malfunctioned at the Tank Battery and the high level alarm was never set off. The transfer pump has been fixed and returned to service, the alarm system has been repaired.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define the spills extent. Based on the assessment, COG will perform some general house keeping in the spill areas of auger holes to remove the surface chloride impacted soil. Tetra Tech prepared closure report and submitted to NMOCD for review and approval.

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: Project Manager	Approval Date: / Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval: / Attached ☐
Date: 8/31/11 Phone: (432) 682-4559	

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
COG - Houma State #1
Eddy County, New Mexico

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 **110**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31 **290**	32	33	34	35

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **80**	23	24
30	29 **210** **208'**	28	27	26	25
31	32	33	34	35 153	36

17 South 30 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16 SITE	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
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31	32	33	34 **271**	35

18 South 29 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 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
7	8	9	10	11
18	17	16	15	14 **317**
19	20	21	22	23
30	29	28	27	26
31	32	33	34	35 **261**

New Mexico State Engineers Well Reports
USGS Well Reports
Geology and Groundwater Conditions in Southern Eddy, County, NM
NMOCD - Groundwater Data

APPENDIX C

Summary Report

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

Report Date: April 4, 2011

Work Order: 11032824

Project Location: Eddy Co, NM
Project Name: COG/Houma State #1 TB
Project Number: 114-6400856

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
261925	AH-1 0-1'	soil	2011-03-24	00:00	2011-03-28
261926	AH-1 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261927	AH-1 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261928	AH-1 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261929	AH-1 4-4.5'	soil	2011-03-24	00:00	2011-03-28
261930	AH-2 0-1'	soil	2011-03-24	00:00	2011-03-28
261931	AH-2 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261932	AH-2 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261933	AH-2 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261934	AH-2 4-4.5'	soil	2011-03-24	00:00	2011-03-28
261935	AH-2 5-5.5'	soil	2011-03-24	00:00	2011-03-28
261936	AH-2 6-6.5'	soil	2011-03-24	00:00	2011-03-28
261937	AH-2 7-7.5'	soil	2011-03-24	00:00	2011-03-28
261938	AH-2 8-8.5'	soil	2011-03-24	00:00	2011-03-28
261939	AH-3 0-1'	soil	2011-03-24	00:00	2011-03-28
261940	AH-3 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261941	AH-3 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261942	AH-3 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261943	AH-3 4-4.5'	soil	2011-03-24	00:00	2011-03-28
261944	AH-3 5-5.5'	soil	2011-03-24	00:00	2011-03-28
261945	AH-3 6-6.5'	soil	2011-03-24	00:00	2011-03-28
261946	AH-3 7-7.5'	soil	2011-03-24	00:00	2011-03-28
261947	AH-3 8-8.5'	soil	2011-03-24	00:00	2011-03-28
261948	AH-3 9-9.5'	soil	2011-03-24	00:00	2011-03-28

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
261925 - AH-1 0-1'	<0.0200	**0.172**	<0.0200	**0.552**	**280**	**39.2**
261930 - AH-2 0-1'	**0.447**	**1.05**	**0.974**	**5.17**	**590**	**384**
261939 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 261925 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4330**	mg/Kg	4.00

Sample: 261926 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**255**	mg/Kg	4.00

Sample: 261927 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**398**	mg/Kg	4.00

Sample: 261928 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**416**	mg/Kg	4.00

Sample: 261929 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**326**	mg/Kg	4.00

Sample: 261930 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**1870**	mg/Kg	4.00

Sample: 261931 - AH-2 1-1.5'

continued ...

sample 261931 continued ...

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Chloride		**208**	mg/Kg	4.00

Sample: 261932 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261933 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261934 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261935 - AH-2 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**460**	mg/Kg	4.00

Sample: 261936 - AH-2 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**489**	mg/Kg	4.00

Sample: 261937 - AH-2 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261938 - AH-2 8-8.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261939 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2380**	mg/Kg	4.00

Sample: 261940 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261941 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261942 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261943 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261944 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261945 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261946 - AH-3 7-7.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4.00

Sample: 261947 - AH-3 8-8.5'

Param	Flag	Result	Units	RL
Chloride		**267**	mg/Kg	4.00

Sample: 261948 - AH-3 9-9.5'

Param	Flag	Result	Units	RL
Chloride		**271**	mg/Kg	4.00

TRACEANALYSIS, INC.

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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

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

Report Date: April 4, 2011

Work Order: 11032824

Project Location: Eddy Co, NM
Project Name: COG/Houma State #1 TB
Project Number: 114-6400856

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
261925	AH-1 0-1'	soil	2011-03-24	00:00	2011-03-28
261926	AH-1 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261927	AH-1 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261928	AH-1 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261929	AH-1 4-4.5'	soil	2011-03-24	00:00	2011-03-28
261930	AH-2 0-1'	soil	2011-03-24	00:00	2011-03-28
261931	AH-2 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261932	AH-2 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261933	AH-2 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261934	AH-2 4-4.5'	soil	2011-03-24	00:00	2011-03-28

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
261935	AH-2 5-5.5'	soil	2011-03-24	00:00	2011-03-28
261936	AH-2 6-6.5'	soil	2011-03-24	00:00	2011-03-28
261937	AH-2 7-7.5'	soil	2011-03-24	00:00	2011-03-28
261938	AH-2 8-8.5'	soil	2011-03-24	00:00	2011-03-28
261939	AH-3 0-1'	soil	2011-03-24	00:00	2011-03-28
261940	AH-3 1-1.5'	soil	2011-03-24	00:00	2011-03-28
261941	AH-3 2-2.5'	soil	2011-03-24	00:00	2011-03-28
261942	AH-3 3-3.5'	soil	2011-03-24	00:00	2011-03-28
261943	AH-3 4-4.5'	soil	2011-03-24	00:00	2011-03-28
261944	AH-3 5-5.5'	soil	2011-03-24	00:00	2011-03-28
261945	AH-3 6-6.5'	soil	2011-03-24	00:00	2011-03-28
261946	AH-3 7-7.5'	soil	2011-03-24	00:00	2011-03-28
261947	AH-3 8-8.5'	soil	2011-03-24	00:00	2011-03-28
261948	AH-3 9-9.5'	soil	2011-03-24	00:00	2011-03-28

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.

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/Houma State #1 TB were received by TraceAnalysis, Inc. on 2011-03-28 and assigned to work order 11032824. Samples for work order 11032824 were received intact at a temperature of 3.6 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	67886	2011-04-01 at 11:35	80015	2011-04-02 at 14:30
BTEX	S 8021B	67887	2011-04-01 at 11:35	80017	2011-04-03 at 08:12
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79938	2011-03-31 at 13:31
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79939	2011-03-31 at 13:31
Chloride (Titration)	SM 4500-Cl B	67767	2011-03-29 at 13:28	79940	2011-03-31 at 13:32
TPH DRO - NEW	S 8015 D	67823	2011-03-30 at 10:06	79924	2011-03-30 at 10:06
TPH GRO	S 8015 D	67886	2011-04-01 at 11:35	80016	2011-04-02 at 14:30
TPH GRO	S 8015 D	67887	2011-04-01 at 11:35	80018	2011-04-03 at 08:12

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 11032824 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.

Analytical Report

Sample: 261925 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80015	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.0200		mg/Kg	1	0.0200
Toluene		**0.172**		mg/Kg	1	0.0200
Ethylbenzene		<0.0200		mg/Kg	1	0.0200
Xylene		**0.552**		mg/Kg	1	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.26	mg/Kg	1	2.00	113	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.32	mg/Kg	1	2.00	116	38.4 - 157

Sample: 261925 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**4330**		mg/Kg	100	4.00

Sample: 261925 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	Prepared By:	kg

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**280**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	[1]	141	mg/Kg	1	100	141	70 - 130

Sample: 261925 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80016	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**39.2**	mg/Kg	1	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.35	mg/Kg	1	2.00	118	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.36	mg/Kg	1	2.00	118	42 - 159

Sample: 261926 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**255**	mg/Kg	50	4.00

Sample: 261927 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**398**	mg/Kg	50	4.00

[1] High surrogate recovery due to peak interference.

Sample: 261928 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**416**	mg/Kg	50	4.00

Sample: 261929 - AH-1 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**326**	mg/Kg	50	4.00

Sample: 261930 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80015	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		**0.447**	mg/Kg	5	0.0200
Toluene		**1.05**	mg/Kg	5	0.0200
Ethylbenzene		**0.974**	mg/Kg	5	0.0200
Xylene		**5.17**	mg/Kg	5	0.0200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		5.26	mg/Kg	5	5.00	105	52.8 - 137
4-Bromofluorobenzene (4-BFB)		7.03	mg/Kg	5	5.00	141	38.4 - 157

Sample: 261930 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**1870**		mg/Kg	100	4.00

Sample: 261930 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	Prepared By:	kg

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**590**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	[2]	176	mg/Kg	1	100	176	70 - 130

Sample: 261930 - AH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80016	Date Analyzed:	2011-04-02	Analyzed By:	ME
Prep Batch:	67886	Sample Preparation:	2011-04-01	Prepared By:	ME

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		**384**		mg/Kg	5	2.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		5.48	mg/Kg	5	5.00	110	48.5 - 152
4-Bromofluorobenzene (4-BFB)		6.44	mg/Kg	5	5.00	129	42 - 159

[2]High surrogate recovery due to peak interference.

Sample: 261931 - AH-2 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**208**	mg/Kg	50	4.00

Sample: 261932 - AH-2 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261933 - AH-2 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79938	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261934 - AH-2 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261935 - AH-2 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**460**	mg/Kg	50	4.00

Sample: 261936 - AH-2 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**489**	mg/Kg	50	4.00

Sample: 261937 - AH-2 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261938 - AH-2 8-8.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261939 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80017	Date Analyzed:	2011-04-03	Analyzed By:	ME
Prep Batch:	67887	Sample Preparation:	2011-04-01	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.37	mg/Kg	1	2.00	118	52.8 - 137
4-Bromofluorobenzene (4-BFB)		2.40	mg/Kg	1	2.00	120	38.4 - 157

Sample: 261939 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2380**	mg/Kg	100	4.00

Sample: 261939 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	Sample Preparation:	2011-03-30	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		117	mg/Kg	1	100	117	70 - 130

Sample: 261939 - AH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80018	Date Analyzed:	2011-04-03	Analyzed By:	ME
Prep Batch:	67887	Sample Preparation:	2011-04-01	Prepared By:	ME

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.50	mg/Kg	1	2.00	125	48.5 - 152
4-Bromofluorobenzene (4-BFB)		2.31	mg/Kg	1	2.00	116	42 - 159

Sample: 261940 - AH-3 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261941 - AH-3 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261942 - AH-3 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261943 - AH-3 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79939	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261944 - AH-3 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79940	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261945 - AH-3 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79940	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261946 - AH-3 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79940	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

Sample: 261947 - AH-3 8-8.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79940	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**267**	mg/Kg	50	4.00

Sample: 261948 - AH-3 9-9.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	79940	Date Analyzed:	2011-03-31	Analyzed By:	AR
Prep Batch:	67767	Sample Preparation:	2011-03-29	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**271**	mg/Kg	50	4.00

Method Blank (1) QC Batch: 79924

QC Batch:	79924	Date Analyzed:	2011-03-30	Analyzed By:	kg
Prep Batch:	67823	QC Preparation:	2011-03-30	Prepared By:	kg

Parameter	Flag	MDL Result	Units	RL
DRO		<15.7	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		121	mg/Kg	1	100	121	70 - 130

Method Blank (1) QC Batch: 79938

QC Batch: 79938 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

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

Method Blank (1) QC Batch: 79939

QC Batch: 79939 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

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

Method Blank (1) QC Batch: 79940

QC Batch: 79940 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

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

Method Blank (1) QC Batch: 80015

QC Batch: 80015 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0118	mg/Kg	0.02
Toluene		<0.00600	mg/Kg	0.02
Ethylbenzene		<0.00850	mg/Kg	0.02
Xylene		<0.00613	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.78	mg/Kg	1	2.00	89	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.73	mg/Kg	1	2.00	86	55.4 - 124

Method Blank (1) QC Batch: 80016

QC Batch: 80016 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
GRO		<0.753	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.88	mg/Kg	1	2.00	94	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.66	mg/Kg	1	2.00	83	52.4 - 130

Method Blank (1) QC Batch: 80017

QC Batch: 80017 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0118	mg/Kg	0.02
Toluene		<0.00600	mg/Kg	0.02
Ethylbenzene		<0.00850	mg/Kg	0.02
Xylene		<0.00613	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.57	mg/Kg	1	2.00	78	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.72	mg/Kg	1	2.00	86	55.4 - 124

Method Blank (1) QC Batch: 80018

QC Batch: 80018 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Parameter	Flag	MDL Result	Units	RL
GRO		1.58	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.63	mg/Kg	1	2.00	82	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.66	mg/Kg	1	2.00	83	52.4 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 79924 | Date Analyzed: 2011-03-30 | Analyzed By: kg
Prep Batch: 67823 | QC Preparation: 2011-03-30 | Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	256	mg/Kg	1	250	<15.7	102	47.5 - 144.1

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	261	mg/Kg	1	250	<15.7	104	47.5 - 144.1	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
n-Tricosane	126	122	mg/Kg	1	100	126	122	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 79938 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.6	mg/Kg	1	100	<3.85	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<3.85	103	85 - 115	5	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 79939 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

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

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<3.85	102	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 79940 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.0	mg/Kg	1	100	<3.85	97	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	102	mg/Kg	1	100	<3.85	102	85 - 115	5	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: 80015 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.70	mg/Kg	1	2.00	<0.0118	85	81.9 - 108
Toluene	1.76	mg/Kg	1	2.00	<0.00600	88	81.9 - 107
Ethylbenzene	1.91	mg/Kg	1	2.00	<0.00850	96	78.4 - 107
Xylene	5.75	mg/Kg	1	6.00	<0.00613	96	79.1 - 107

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	1.76	mg/Kg	1	2.00	<0.0118	88	81.9 - 108	4	20
Toluene	1.81	mg/Kg	1	2.00	<0.00600	90	81.9 - 107	3	20
Ethylbenzene	1.96	mg/Kg	1	2.00	<0.00850	98	78.4 - 107	3	20
Xylene	5.89	mg/Kg	1	6.00	<0.00613	98	79.1 - 107	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)	1.74	1.51	mg/Kg	1	2.00	87	76	70.2 - 114

continued ...

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	1.84	1.59	mg/Kg	1	2.00	92	80	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 80016 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	17.7	mg/Kg	1	20.0	<0.753	88	60.9 - 95.4

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
GRO	16.8	mg/Kg	1	20.0	<0.753	84	60.9 - 95.4	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.03	1.68	mg/Kg	1	2.00	102	84	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.93	1.60	mg/Kg	1	2.00	96	80	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 80017 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.77	mg/Kg	1	2.00	<0.0118	88	81.9 - 108
Toluene	1.80	mg/Kg	1	2.00	<0.00600	90	81.9 - 107
Ethylbenzene	1.89	mg/Kg	1	2.00	<0.00850	94	78.4 - 107
Xylene	5.75	mg/Kg	1	6.00	<0.00613	96	79.1 - 107

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	1.75	mg/Kg	1	2.00	<0.0118	88	81.9 - 108	1	20
Toluene	1.75	mg/Kg	1	2.00	<0.00600	88	81.9 - 107	3	20
Ethylbenzene	1.83	mg/Kg	1	2.00	<0.00850	92	78.4 - 107	3	20
Xylene	5.58	mg/Kg	1	6.00	<0.00613	93	79.1 - 107	3	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)	1.69	1.68	mg/Kg	1	2.00	84	84	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.90	1.91	mg/Kg	1	2.00	95	96	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 80018 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	19.0	mg/Kg	1	20.0	<0.753	95	60.9 - 95.4

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
GRO	19.0	mg/Kg	1	20.0	<0.753	95	60.9 - 95.4	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
Trifluorotoluene (TFT)	1.93	1.98	mg/Kg	1	2.00	96	99	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.98	2.00	mg/Kg	1	2.00	99	100	68.2 - 132

Matrix Spike (MS-1) Spiked Sample: 261939

QC Batch: 79924 | Date Analyzed: 2011-03-30 | Analyzed By: kg
Prep Batch: 67823 | QC Preparation: 2011-03-30 | Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	242	mg/Kg	1	250	<15.7	97	11.7 - 152.3

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
DRO	233	mg/Kg	1	250	<15.7	93	11.7 - 152.3	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	121	126	mg/Kg	1	100	121	126	70 - 130

Matrix Spike (MS-1) Spiked Sample: 261933

QC Batch: 79938 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

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

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	<385	103	80 - 120	3	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: 261943

QC Batch: 79939 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	9980	mg/Kg	100	10000	<385	100	80 - 120

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	<385	103	80 - 120	3	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: 261959

QC Batch: 79940 | Date Analyzed: 2011-03-31 | Analyzed By: AR
Prep Batch: 67767 | QC Preparation: 2011-03-29 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10500	mg/Kg	100	10000	<385	101	80 - 120

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	10800	mg/Kg	100	10000	<385	104	80 - 120	3	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: 261925

QC Batch: 80015 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	[3]	1.61	mg/Kg	1	2.00	<0.0118	80	80.5 - 112
Toluene	[4]	1.70	mg/Kg	1	2.00	0.1724	76	82.4 - 113
Ethylbenzene		1.72	mg/Kg	1	2.00	<0.00850	86	83.9 - 114
Xylene	[5]	5.25	mg/Kg	1	6.00	0.552	78	84 - 114

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	1.74	mg/Kg	1	2.00	<0.0118	87	80.5 - 112	8	20
Toluene	1.88	mg/Kg	1	2.00	0.1724	85	82.4 - 113	10	20
Ethylbenzene	1.96	mg/Kg	1	2.00	<0.00850	98	83.9 - 114	13	20
Xylene	5.97	mg/Kg	1	6.00	0.552	90	84 - 114	13	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	2.28	mg/Kg	1	2	94	114	41.3 - 117
4-Bromofluorobenzene (4-BFB)	2.12	2.41	mg/Kg	1	2	106	120	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 261891

QC Batch: 80016 | Date Analyzed: 2011-04-02 | Analyzed By: ME
Prep Batch: 67886 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	19.5	mg/Kg	1	20.0	<0.753	98	61.8 - 114

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	21.1	mg/Kg	1	20.0	<0.753	106	61.8 - 114	8	20

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

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.44	2.49	mg/Kg	1	2	122	124	50 - 162
4-Bromofluorobenzene (4-BFB)	2.29	2.35	mg/Kg	1	2	114	118	50 - 162

Matrix Spike (MS-1) Spiked Sample: 261976

QC Batch: 80017 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.83	mg/Kg	1	2.00	<0.0118	92	80.5 - 112
Toluene	1.90	mg/Kg	1	2.00	<0.00600	95	82.4 - 113
Ethylbenzene	2.10	mg/Kg	1	2.00	<0.00850	105	83.9 - 114
Xylene	6.36	mg/Kg	1	6.00	<0.00613	106	84 - 114

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	1.77	mg/Kg	1	2.00	<0.0118	88	80.5 - 112	3	20
Toluene	1.84	mg/Kg	1	2.00	<0.00600	92	82.4 - 113	3	20
Ethylbenzene	2.05	mg/Kg	1	2.00	<0.00850	102	83.9 - 114	2	20
Xylene	6.20	mg/Kg	1	6.00	<0.00613	103	84 - 114	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)	[6]	2.36	2.27	mg/Kg	1	2	118	114	41.3 - 117
4-Bromofluorobenzene (4-BFB)		2.52	2.47	mg/Kg	1	2	126	124	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 261939

QC Batch: 80018 | Date Analyzed: 2011-04-03 | Analyzed By: ME
Prep Batch: 67887 | QC Preparation: 2011-04-01 | Prepared By: ME

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	19.8	mg/Kg	1	20.0	<0.753	99	61.8 - 114

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

[6]High surrogate recovery due to peak interference.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	20.8	mg/Kg	1	20.0	<0.753	104	61.8 - 114	5	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)	2.43	2.52	mg/Kg	1	2	122	126	50 - 162
4-Bromofluorobenzene (4-BFB)	2.41	2.54	mg/Kg	1	2	120	127	50 - 162

Standard (CCV-2)

QC Batch: 79924 Date Analyzed: 2011-03-30 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	258	103	80 - 120	2011-03-30

Standard (CCV-3)

QC Batch: 79924 Date Analyzed: 2011-03-30 Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	272	109	80 - 120	2011-03-30

Standard (ICV-1)

QC Batch: 79938 Date Analyzed: 2011-03-31 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2011-03-31

Standard (CCV-1)

QC Batch: 79938 Date Analyzed: 2011-03-31 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2011-03-31

Standard (ICV-1)

QC Batch: 79939 | Date Analyzed: 2011-03-31 | 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	2011-03-31

Standard (CCV-1)

QC Batch: 79939 | Date Analyzed: 2011-03-31 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2011-03-31

Standard (ICV-1)

QC Batch: 79940 | Date Analyzed: 2011-03-31 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2011-03-31

Standard (CCV-1)

QC Batch: 79940 | Date Analyzed: 2011-03-31 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2011-03-31

Standard (CCV-2)

QC Batch: 80015 | Date Analyzed: 2011-04-02 | Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0885	88	80 - 120	2011-04-02
Toluene		mg/Kg	0.100	0.0908	91	80 - 120	2011-04-02

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/Kg	0.100	0.0974	97	80 - 120	2011-04-02
Xylene		mg/Kg	0.300	0.294	98	80 - 120	2011-04-02

Standard (CCV-3)

QC Batch: 80015 Date Analyzed: 2011-04-02 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0872	87	80 - 120	2011-04-02
Toluene		mg/Kg	0.100	0.0887	89	80 - 120	2011-04-02
Ethylbenzene		mg/Kg	0.100	0.0935	94	80 - 120	2011-04-02
Xylene		mg/Kg	0.300	0.282	94	80 - 120	2011-04-02

Standard (CCV-2)

QC Batch: 80016 Date Analyzed: 2011-04-02 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.20	120	80 - 120	2011-04-02

Standard (CCV-3)

QC Batch: 80016 Date Analyzed: 2011-04-02 Analyzed By: ME

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	2011-04-02

Standard (CCV-1)

QC Batch: 80017 Date Analyzed: 2011-04-03 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0820	82	80 - 120	2011-04-03

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Toluene		mg/Kg	0.100	0.0847	85	80 - 120	2011-04-03
Ethylbenzene		mg/Kg	0.100	0.0893	89	80 - 120	2011-04-03
Xylene		mg/Kg	0.300	0.271	90	80 - 120	2011-04-03

Standard (CCV-2)

QC Batch: 80017 Date Analyzed: 2011-04-03 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0888	89	80 - 120	2011-04-03
Toluene		mg/Kg	0.100	0.0903	90	80 - 120	2011-04-03
Ethylbenzene		mg/Kg	0.100	0.0972	97	80 - 120	2011-04-03
Xylene		mg/Kg	0.300	0.293	98	80 - 120	2011-04-03

Standard (CCV-1)

QC Batch: 80018 Date Analyzed: 2011-04-03 Analyzed By: ME

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.06	106	80 - 120	2011-04-03

Standard (CCV-2)

QC Batch: 80018 Date Analyzed: 2011-04-03 Analyzed By: ME

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	2011-04-03

Work Order #: 11032824

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: 1 OF: 3

CLIENT NAME:	SITE MANAGER:
COG	Ike Tavarez

PROJECT NO.:	PROJECT NAME:
114-640 0856	COG / Houma State #1 TB Eddy Co, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
261925	3/24		S		X	AH-1 0-1'	1				X	
926						1'-1.5'						
927						2'-2.5'						
928						3'-3.5'						
929						4'-4.5'						
930						AH-2 0-1'						
931						1'-1.5'						
932						2'-2.5'						
933						3'-3.5'						
934						4'-4.5'						

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
X	X											X				
X	X															

RELINQUISHED BY: (Signature)	Date: 3-28-11 Time: 12:20	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Initial) JT/DE Date: 3/24/11 Time:

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

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Xenco
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 3.28.11 TIME: 12:20

SAMPLE CONDITION WHEN RECEIVED: 3.6 °C ice

REMARKS: If total TPH exceeds 5,000 mg/kg run deeper samples

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

If any Grab Samples for BTEX, Benzene exceed 10 mg/kg or Total BTEX exceed 50 mg/kg

*WO#: 11032824

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: 3

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-L400856

PROJECT NAME: COG / Houra Grace #1 Eddy Co, NM

LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP.	GRAB	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	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chlorides	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
201935	3/24		3		X	AH-2 5'-5.5'	1				X													X				
936						6'-6.5'																						
937						7'-7.5'																						
938						8'-8.5'																						
939						AH-3 0-1'							X	X														
940						1'-1.5'																						
941						2'-2.5'																						
942						3'-3.5'																						
943						4'-4.5'																						
944						5'-5.5'																						

RELINQUISHED BY: (Signature) Date: 3-28-11 Time: 12:20

RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) JY/DE Date: 3/24/11 Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

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

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RECEIVING LABORATORY: Xenco

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: 3-28-11 TIME: 12:20

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.6° C on ice

REMARKS: If total TPH exceeds 5,000 mg/kg run deeper samples

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