SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	**White Star Federal Flow line**	
Company:	**COG Operating LLC**	
Section, Township and Range	**Unit H Sec. 29 T-17S R-29E**	
Lease Number:	**NMNM-14840**	
County:	**Eddy County**	
GPS:	**32.80639° N**	**104.08904° W**
Surface Owner:	**Federal**	
Mineral Owner:		
Directions:	From the intersection of Hwy 82 and Hagerman Cutoff (Loco Hills, NM) travel west on 82 (5.3 mi), turn left (0.2 mi), right (0.9 mi) to location on left.	

Release Data:

Date Released:	4/6/2011
Type Release:	Produced fluid
Source of Contamination:	Steel flowline
Fluid Released:	10 bbls
Fluids Recovered:	None

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) 631-0348
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

January 3, 2013

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., White Star Flow line, Unit H, Section 29, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the White Star, Unit H, Section 29, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80639°, W 104.08904 °. 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 April, 6, 2011, and released approximately ten (10) barrels of produced fluid from a steel flow line, no fluids were recovered. To alleviate the problem, COG personnel repaired the steel line. The spill initiated south of the White Star Federal Tank Battery, in the adjacent pasture area along approximately 15 aboveground steel lines and pooled underneath the steel lines. The spill area measured approximately 10' x 25'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 29. Based on the site location and NMOCD groundwater map, the average depth to groundwater in this area is approximately 175' below surface. The well data is shown in Appendix B.

Regulatory

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

Tetra Tech
1910 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

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 April 20, 2011, Tetra Tech personnel inspected and sampled the spill area. One auger hole (AH-1) was installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole location is shown on Figure 3.

Referring to Table 1, the surface sample of AH-1 (0-1') exceeded the RRAL for TPH and BTEX. The remaining deeper samples of AH-1 were below the RRAL for TPH and BTEX. Elevated chloride concentrations were in the subsurface soils and showed a bottom auger hole analysis of 2,450 mg/kg at 7-7.5' below surface. The chloride impact was not vertically defined.

Remedial and Closure Activities

Tetra Tech personnel supervised the excavation as outlined in the approved work plan in September 2012. The spill foot print and final excavation depths of the soil remediation were met as stated in the approved work plan. The area of AH-1 was excavated to a depth of approximately 4.0' below grade surface. An additional area was excavated 2.0' below surface due to staining and elevated chloride concentrations, this area measured approximately 10' x 35'. Approximately 50 yards^3 of impacted material was removed and disposed of at the R360 Facility. The excavated areas are shown on Figure 4.

Once excavated, Tetra Tech personnel collected confirmation samples for the excavations sidewalls and bottoms. The confirmation sampling results are shown in Table 1. Referring to Table 1, the 4.0' bottom sample showed a chloride of 1,520 mg/kg and a backhoe trench was installed to define the extents. The trench (T-1) sampling was not vertically defined showing a bottom trench sample of 3,050 mg/kg at 13.0' below surface. Based on the results, the area was lined with clay to cap the area. The BLM representative inspected the site and approved the remediation for backfill. The excavations were backfilled with clean soil to surface grade.

TETRA TECH

A borehole was originally proposed in order to vertically delineate the chloride impact. On November 28, 2012, Tetra Tech personnel were onsite to supervise the installation of a borehole. Upon inspection of the drill site, overhead lines were located above the proposed location and could not safely install the borehole. The NMOCD was contacted to discuss the access issues due to the overhead lines in the area. Due to the limited area and depth to groundwater, the NMOCD approved to defer the impacted soils.

Based on the remediation activities performed at this location, COG request closure for site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Senior Project Manager

cc: Pat Ellis – COG
cc: Terry Gregston – BLM

Figures

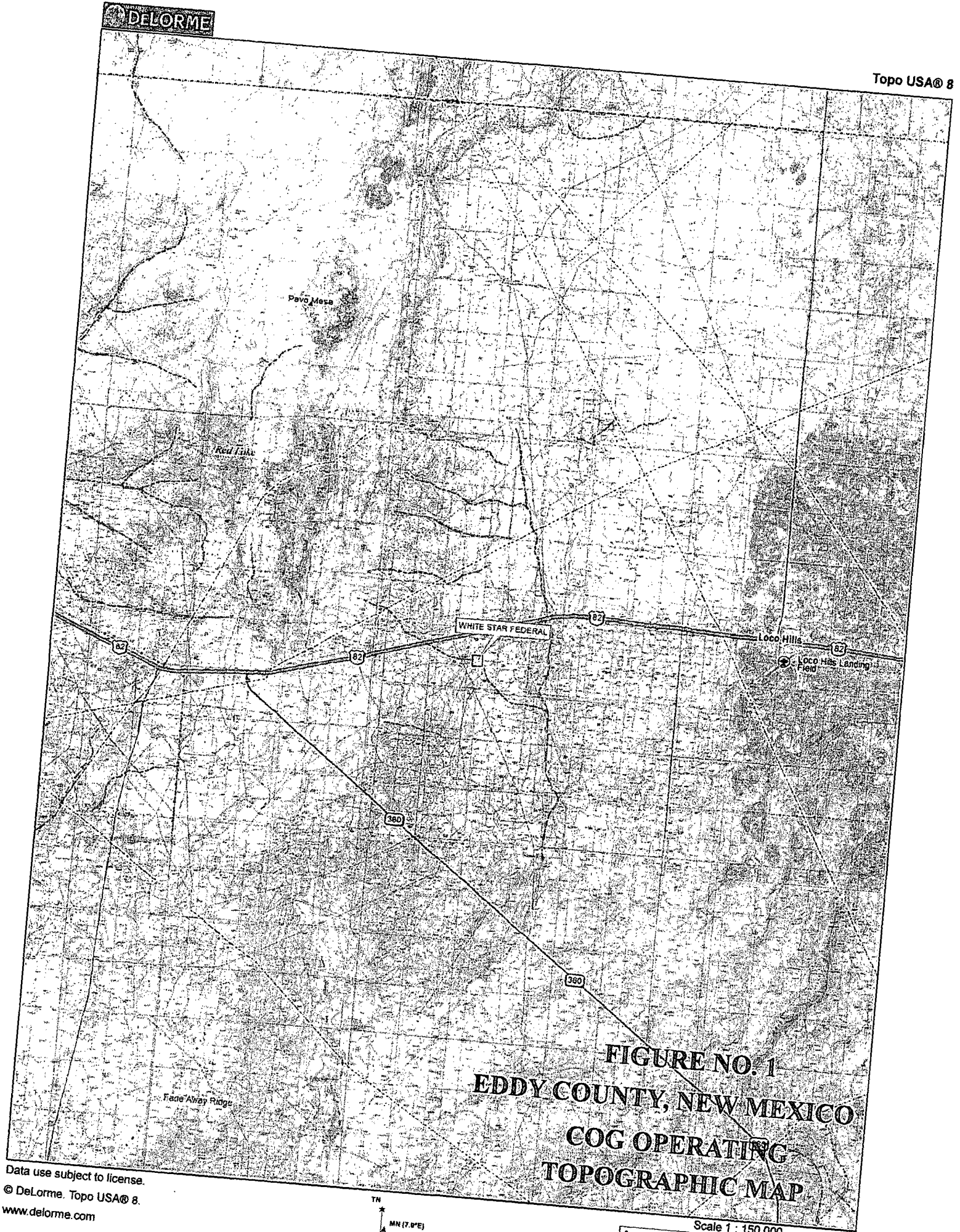


FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
COG OPERATING
TOPOGRAPHIC MAP

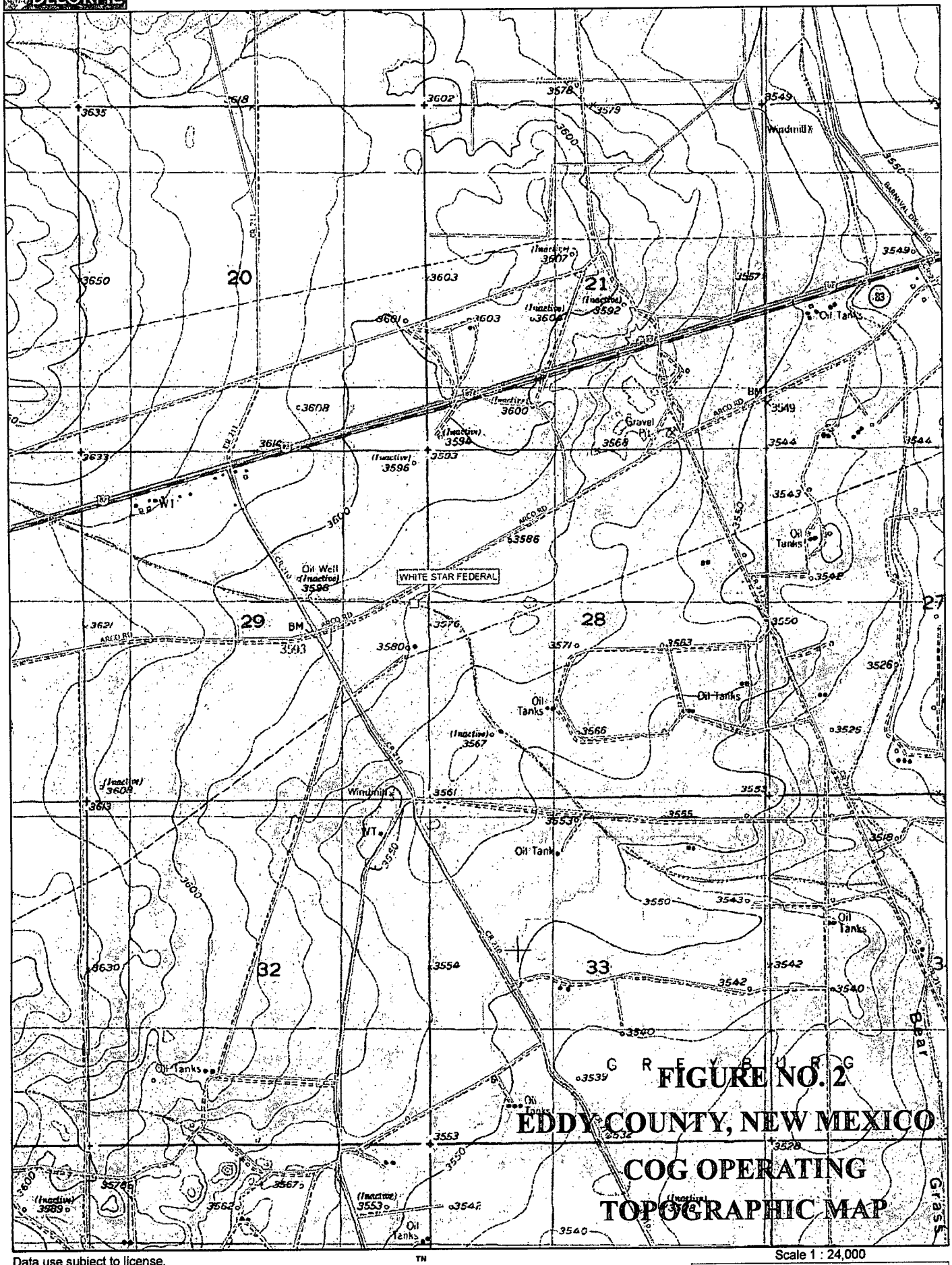


FIGURE NO. 2

EDDY COUNTY, NEW MEXICO

COG OPERATING

TOPOGRAPHIC MAP

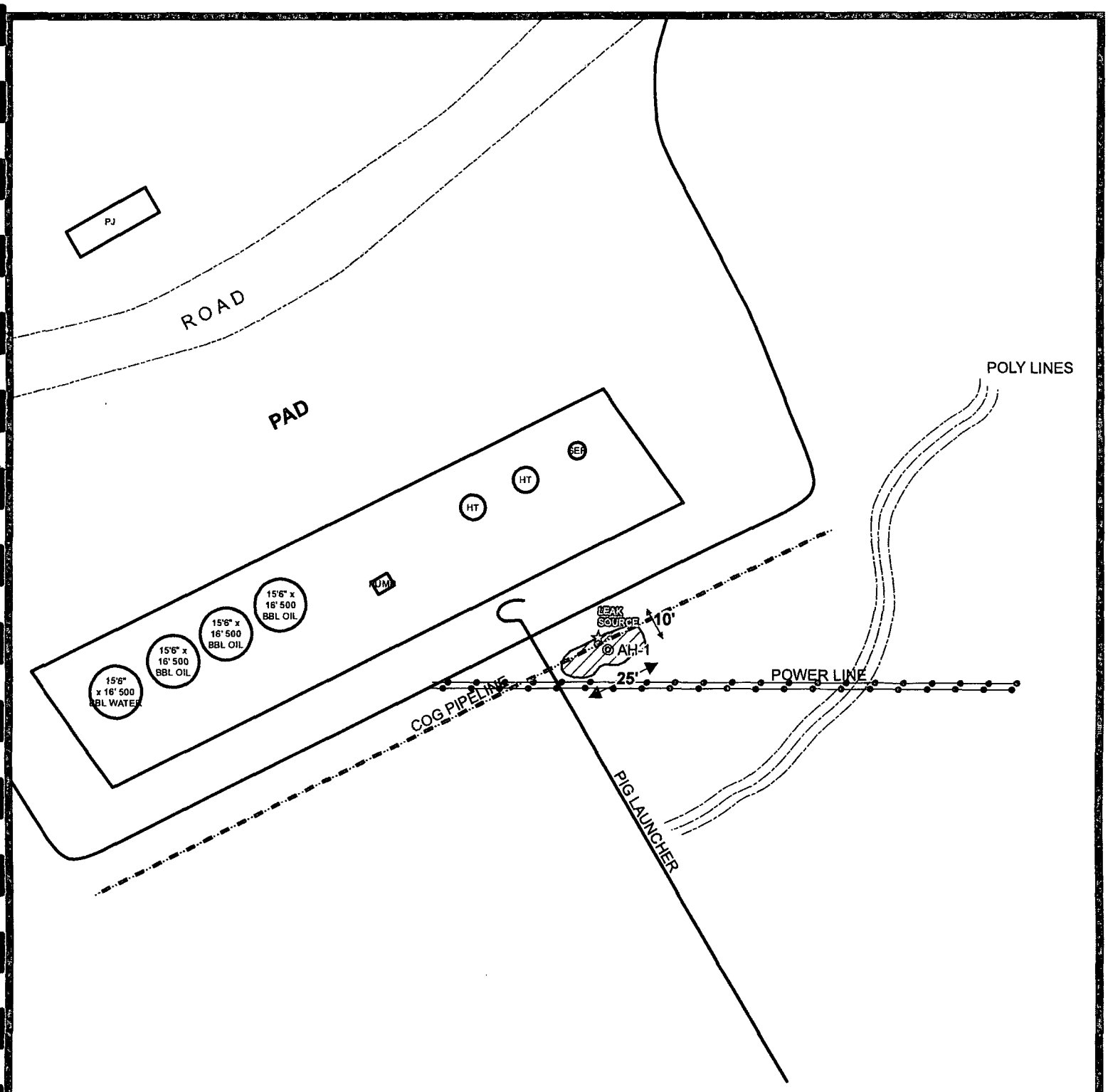
TN

MN (7.9°E)

Scale 1 : 24,000

1" = 2,000.0 ft

Data Zoom 13-6



EXPLANATION

- ◎ AUGER HOLE SAMPLE LOCATION
- ☆ LEAK SOURCE
- SPILL AREA

N

SCALE: 1 IN = 50 FEET

Feet 0 20 40

CONCHO

Figure 3

White Star Federal

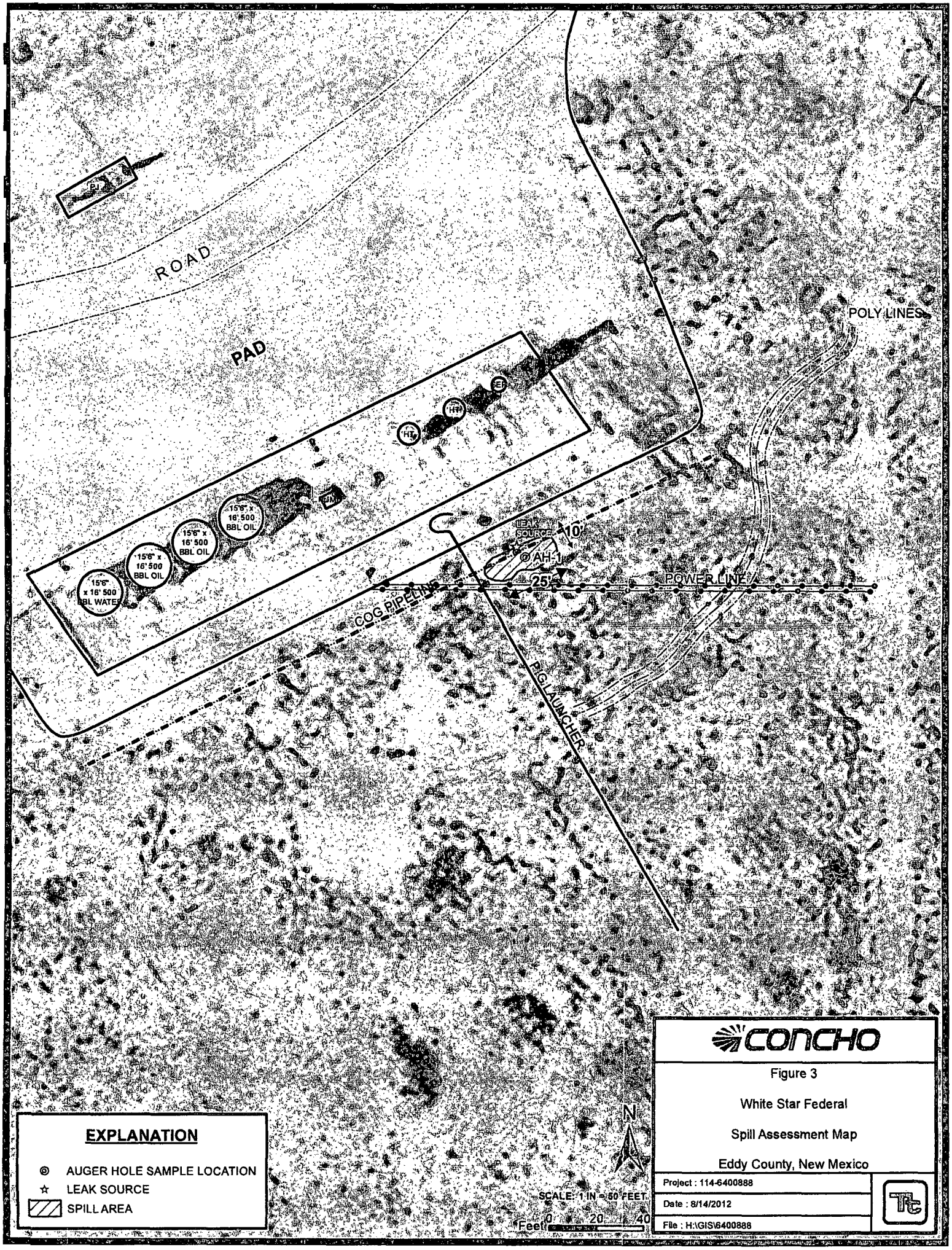
Spill Assessment Map

Eddy County, New Mexico

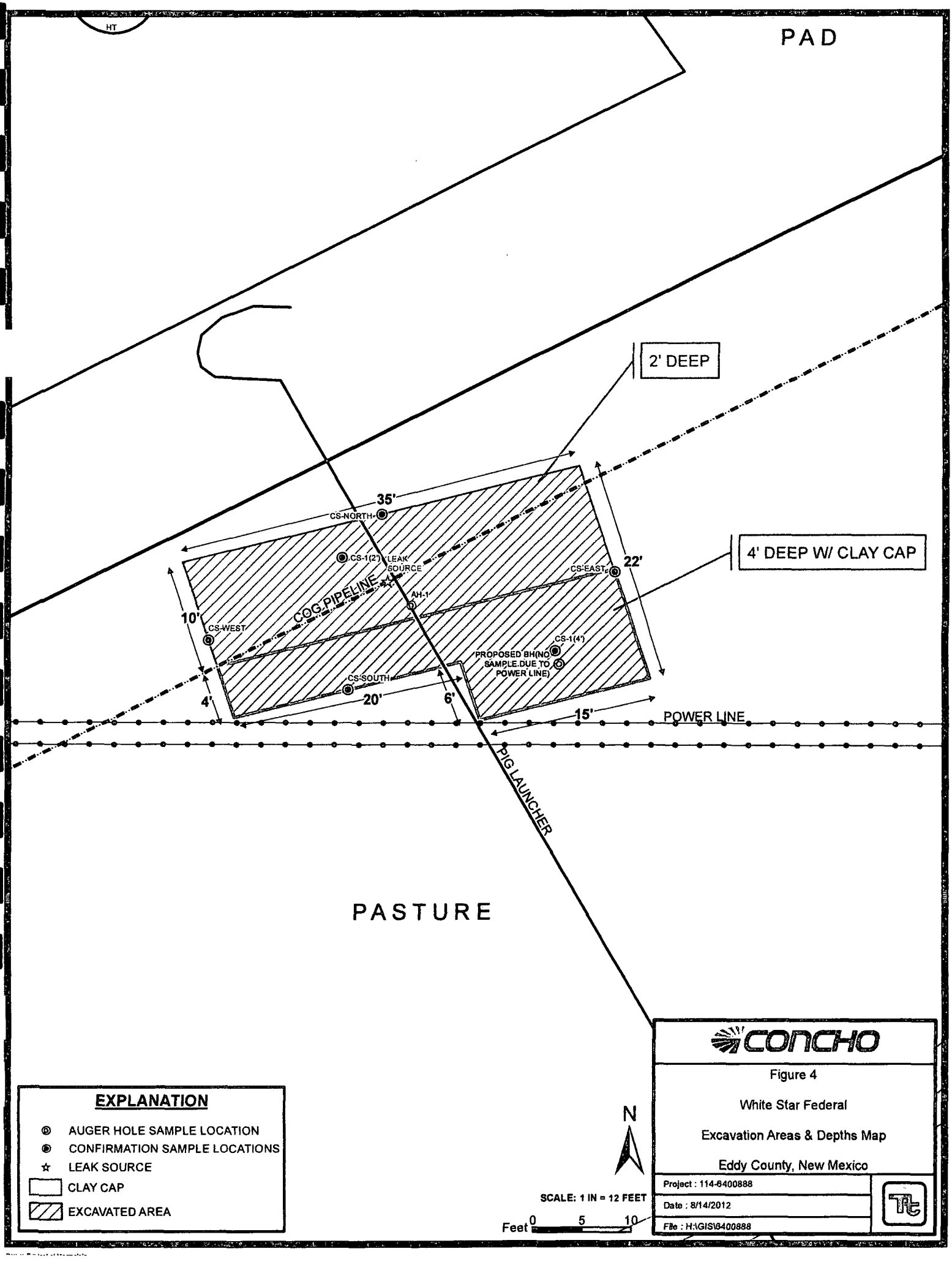
Project : 114-6400888

Date : 8/14/2012

File : H:\GIS\6400888



Drawn By: Isabel Marmolejo


PAD
2' DEEP
4' DEEP W/ CLAY CAP
35'
22'
10'
4'
20'
6'
15'
CS-NORTH
CS-1(2')
LEAK SOURCE
CS-EAST
AH-1
COG PIPELINE
CS-WEST
CS-1(4')
PROPOSED BH(NO SAMPLE.DUE TO POWER LINE)
CS-SOUTH
POWER LINE
PIG LAUNCHER
PASTURE
EXPLANATION
AUGER HOLE SAMPLE LOCATION
CONFIRMATION SAMPLE LOCATIONS
LEAK SOURCE
CLAY CAP
EXCAVATED AREA
N
SCALE: 1 IN = 12 FEET
Feet 0 5 10
CONCHO
Figure 4
White Star Federal
Excavation Areas & Depths Map
Eddy County, New Mexico
Project : 114-6400888
Date : 8/14/2012
File : H:\GIS\6400888

Tables

Table 1
COG Operating LLC.
White Star Federal
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	4/20/2011	0-1'		X	2,160	17,200	19,360	12.7	85.0	56.2	92.3	4,880
	"	1-1.5'		X	406	379	785	1.64	12.8	11.4	18.4	7,330
	"	2-2.5'		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	1,830
	"	3-3.5'		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	2,530
	"	4-4.5'		X	-	-	-	-	-	-	-	2,890
	"	5-5.5'	X		-	-	-	-	-	-	-	1,680
	"	6-6.5'	X		-	-	-	-	-	-	-	1,630
	"	7-7.5'	X		-	-	-	-	-	-	-	2,450
T-1	9/20/2012	5	X		-	-	-	-	-	-	-	768
	"	7	X		-	-	-	-	-	-	-	2,170
	"	9	X		-	-	-	-	-	-	-	6,120
	"	11	X		-	-	-	-	-	-	-	6,780
	"	13	X		-	-	-	-	-	-	-	3,050
CS-1 Bottom Hole	9/21/2012	2	X		-	-	-	-	-	-	-	581
CS-1 Bottom Hole	"	4	X		-	-	-	-	-	-	-	1,520
CS-1 North Wall	"	-	X		-	-	-	-	-	-	-	<20.0
CS-1 South Wall	"	-	X		-	-	-	-	-	-	-	57.1
CS-1 East Wall	"	-	X		-	-	-	-	-	-	-	<20.0
CS-1 West Wall	"	-	X		-	-	-	-	-	-	-	<20.0

(--) Not Analyzed

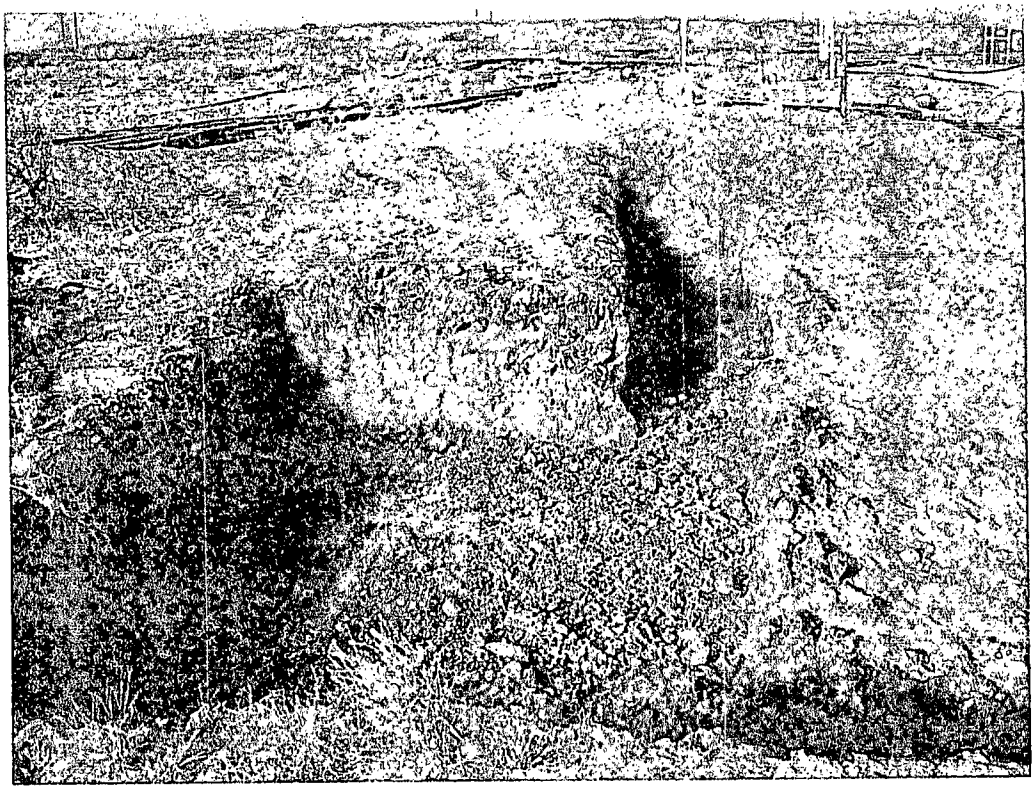
Excavation Depths

Clay Liner Installed

Photos

COG Operating LLC
White Star Federal
Eddy County, New Mexico

TETRA TECH

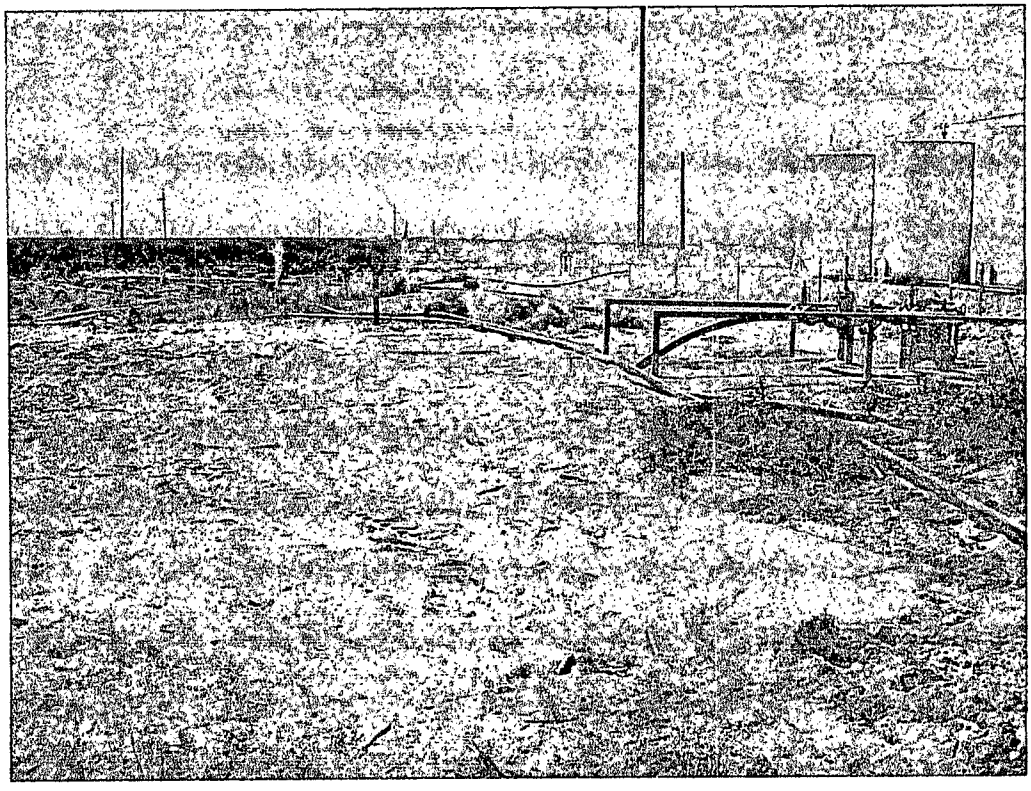


View West – Area of AH-1 and T-1

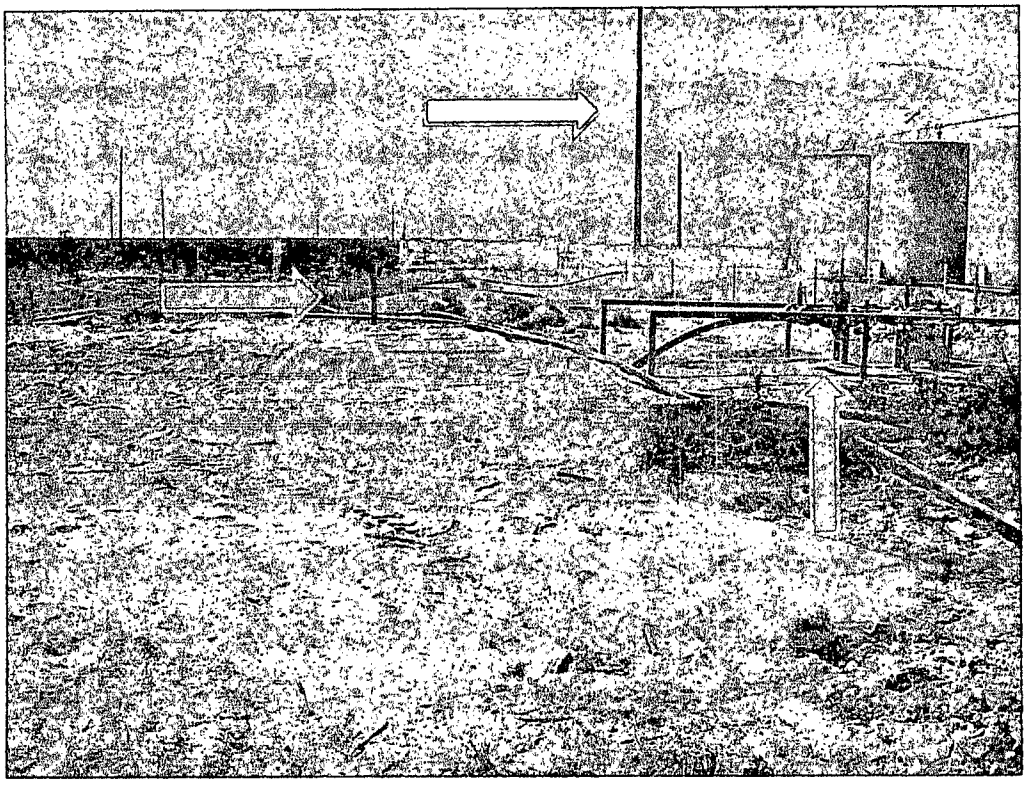
Clay Liner

COG Operating LLC
White Star Federal
Eddy County, New Mexico

TETRA TECH



View West - Backfill



Limited Access – Underground and Overhead Lines

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

RECEIVED
JAN 14 2013
NMOCD ARTESIA

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) 230-0077**
Facility Name	**White Star Federal**	Facility Type	**Flowline**

Surface Owner: Federal	Mineral Owner	Lease No. NMNM-14840

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	29	17S	29E					Eddy

Latitude N 32.80639° **Longitude** W 104.08904°

NATURE OF RELEASE

Type of Release: Produced Fluid	Volume of Release 10 bbls	Volume Recovered None
Source of Release: Equalizer	Date and Hour of Occurrence 04/06/2011	Date and Hour of Discovery 04/06/2011 9:00 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

A steel flowline ruptured causing the release. The steel flowline was clamped and is being replaced with poly line.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to define the spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal at the R360 facility. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it to the 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 (Agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached ☐
Date: 1-3-13 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	White Star Federal	Facility Type	Flowline

Surface Owner Federal	Mineral Owner	Lease No. NMNM-14840

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	29	17S	29E					Eddy

Latitude 32 48.392 **Longitude** 104 05.366

NATURE OF RELEASE

Type of Release Produced fluid	Volume of Release 10bbls	Volume Recovered None
Source of Release Steel flowline	Date and Hour of Occurrence 04/06/2011	Date and Hour of Discovery 04/06/2011 9:00 a.m.
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

A steel flowline ruptured causing the release. The steel flowline was clamped and is being replaced with poly line.

Describe Area Affected and Cleanup Action Taken.*

Initially 10bbls of produced fluid was released from the flowline and we were unable to recover any fluid. The spill area measures 12' x 20' in the pasture off to the south of the White Star Federal Tank Battery. Tetra Tech will sample the spill site area to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD / BLM for approval prior to any significant remediation work.

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

Signature:	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: 04/15/2011 Phone: 432-212-2399		

* Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - White Star Federal
Eddy County, New Mexico

16 South 28 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 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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 79	23	24
30	29	28	27	26	25
31	32	33	34 53	35	36

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	23	24
30	29 SITE	28	27	26	25
31	32	33	34	35	36

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

18 South 28 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 65	36

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

- 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

Appendix C

Summary Report

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

Report Date: September 27, 2012

Work Order: 12092418

Project Location: Eddy Co., NM
Project Name: COG/White Star
Project Number: 114-6400888

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
310093	Trench-1 5'	soil	2012-09-20	00:00	2012-09-24
310094	Trench-1 7'	soil	2012-09-20	00:00	2012-09-24
310095	Trench-1 9'	soil	2012-09-20	00:00	2012-09-24
310096	Trench-1 11'	soil	2012-09-20	00:00	2012-09-24
310097	Trench-1 13'	soil	2012-09-20	00:00	2012-09-24
310098	CS-1 North Wall	soil	2012-09-21	00:00	2012-09-24
310099	CS-1 South Wall	soil	2012-09-21	00:00	2012-09-24
310100	CS-1 East Wall	soil	2012-09-21	00:00	2012-09-24
310101	CS-1 West Wall	soil	2012-09-21	00:00	2012-09-24
310102	CS-1 Bottom Hole 2'	soil	2012-09-21	00:00	2012-09-24
310103	CS-1 Bottom Hole 4'	soil	2012-09-21	00:00	2012-09-24

Sample: 310093 - Trench-1 5'

Param	Flag	Result	Units	RL
Chloride		**768**	mg/Kg	4

Sample: 310094 - Trench-1 7'

Param	Flag	Result	Units	RL
Chloride		**2170**	mg/Kg	4

Sample: 310095 - Trench-1 9'

Param	Flag	Result	Units	RL
Chloride		**6120**	mg/Kg	4

Sample: 310096 - Trench-1 11'

Param	Flag	Result	Units	RL
Chloride		**6780**	mg/Kg	4

Sample: 310097 - Trench-1 13'

Param	Flag	Result	Units	RL
Chloride		**3050**	mg/Kg	4

Sample: 310098 - CS-1 North Wall

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

Sample: 310099 - CS-1 South Wall

Param	Flag	Result	Units	RL
Chloride		**57.1**	mg/Kg	4

Sample: 310100 - CS-1 East Wall

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

Sample: 310101 - CS-1 West Wall

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

Sample: 310102 - CS-1 Bottom Hole 2'

Param	Flag	Result	Units	RL
Chloride		**581**	mg/Kg	4

Sample: 310103 - CS-1 Bottom Hole 4'

Param	Flag	Result	Units	RL
Chloride		**1520**	mg/Kg	4

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: September 27, 2012

Work Order: 12092418

Project Location: Eddy Co., NM
Project Name: COG/White Star
Project Number: 114-6400888

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
310093	Trench-1 5'	soil	2012-09-20	00:00	2012-09-24
310094	Trench-1 7'	soil	2012-09-20	00:00	2012-09-24
310095	Trench-1 9'	soil	2012-09-20	00:00	2012-09-24
310096	Trench-1 11'	soil	2012-09-20	00:00	2012-09-24
310097	Trench-1 13'	soil	2012-09-20	00:00	2012-09-24
310098	CS-1 North Wall	soil	2012-09-21	00:00	2012-09-24
310099	CS-1 South Wall	soil	2012-09-21	00:00	2012-09-24
310100	CS-1 East Wall	soil	2012-09-21	00:00	2012-09-24
310101	CS-1 West Wall	soil	2012-09-21	00:00	2012-09-24
310102	CS-1 Bottom Hole 2'	soil	2012-09-21	00:00	2012-09-24
310103	CS-1 Bottom Hole 4'	soil	2012-09-21	00:00	2012-09-24

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

Report Contents

Case Narrative

Samples for project COG/White Star were received by TraceAnalysis, Inc. on 2012-09-24 and assigned to work order 12092418. Samples for work order 12092418 were received intact at a temperature of 2.9 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	80669	2012-09-26 at 09:52	95215	2012-09-27 at 10:48
Chloride (Titration)	SM 4500-Cl B	80669	2012-09-26 at 09:52	95216	2012-09-27 at 10:49

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 12092418 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: 310093 - Trench-1 5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**768**	mg/Kg	5	4.00

Sample: 310094 - Trench-1 7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2170**	mg/Kg	10	4.00

Sample: 310095 - Trench-1 9'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**6120**	mg/Kg	10	4.00

Sample: 310096 - Trench-1 11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**6780**	mg/Kg	10	4.00

Sample: 310097 - Trench-1 13'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**3050**	mg/Kg	10	4.00

Sample: 310098 - CS-1 North Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

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

Sample: 310099 - CS-1 South Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**57.1**	mg/Kg	5	4.00

Sample: 310100 - CS-1 East Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

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

Sample: 310101 - CS-1 West Wall

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

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

Sample: 310102 - CS-1 Bottom Hole 2'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**581**	mg/Kg	5	4.00

Sample: 310103 - CS-1 Bottom Hole 4'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	Sample Preparation:	2012-09-26	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride			**1520**		mg/Kg	10	4.00

Method Blanks

Method Blank (1) QC Batch: 95215

QC Batch:	95215	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	QC Preparation:	2012-09-26	Prepared By:	AR

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

Method Blank (1) QC Batch: 95216

QC Batch:	95216	Date Analyzed:	2012-09-27	Analyzed By:	AR
Prep Batch:	80669	QC Preparation:	2012-09-26	Prepared By:	AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 95215 | Date Analyzed: 2012-09-27 | Analyzed By: AR
Prep Batch: 80669 | QC Preparation: 2012-09-26 | Prepared By: AR

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

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2550	mg/Kg	1	2500	<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: 95216 | Date Analyzed: 2012-09-27 | Analyzed By: AR
Prep Batch: 80669 | QC Preparation: 2012-09-26 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2490	mg/Kg	1	2500	<3.85	100	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2580	mg/Kg	1	2500	<3.85	103	85 - 115	4	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: 310098

QC Batch: 95215 | Date Analyzed: 2012-09-27 | Analyzed By: AR
Prep Batch: 80669 | QC Preparation: 2012-09-26 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2500	mg/Kg	5	2500	<19.2	100	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2620	mg/Kg	5	2500	<19.2	105	78.9 - 121	5	20

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

Matrix Spike (MS-1) Spiked Sample: 310103

QC Batch: 95216 | Date Analyzed: 2012-09-27 | Analyzed By: AR
Prep Batch: 80669 | QC Preparation: 2012-09-26 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3860	mg/Kg	10	2500	1520	94	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			4070	mg/Kg	10	2500	1520	102	78.9 - 121	5	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 95215 | Date Analyzed: 2012-09-27 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.6	99	85 - 115	2012-09-27

Standard (CCV-2)

QC Batch: 95215 | Date Analyzed: 2012-09-27 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-09-27

Standard (CCV-1)

QC Batch: 95216 | Date Analyzed: 2012-09-27 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-09-27

Standard (CCV-2)

QC Batch: 95216 | Date Analyzed: 2012-09-27 | Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.8	99	85 - 115	2012-09-27

Appendix

Report Definitions

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

Laboratory Certifications

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

Standard Flags

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

Attachments

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

12098418

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 2

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6400888

PROJECT NAME: COG / White Star Fed Flowline Eddy Co, NM

LAB I.D. NUMBER	DATE 2012	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	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
30093	9-20		S		X	Trench-1 5'	1				X													X				
094						Trench-1 7'																						
095						Trench-1 9'																						
096						Trench-1 11'																						
097						Trench-1 13'																						
098	9-21					CS-1 Northwall																						
099						CS-1 Southwall																						
100						CS-1 Eastwall																						
101						CS-1 Westwall																						
102						CS-1 Bottom Hole 2'																						

RELINQUISHED BY: (Signature) — Date: 9-21-12 Time: 1230 — RECEIVED BY: (Signature) — Date: 09/21/12 Time: 1230

RELINQUISHED BY: (Signature) — Date: 09/21/12 Time: 1230 — RECEIVED BY: (Signature) — Date: 9/21/12 Time: 1230

RELINQUISHED BY: (Signature) — Date: Time: — RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) Robert Gubbs Jr — Date: 9-21-12 Time: 1200

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

TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace — RECEIVED BY: (Signature)

ADDRESS: — CITY: Midland STATE: TX ZIP: — CONTACT: Sandra PHONE: — DATE: — TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 29° Intact

REMARKS: Midland all

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

1RP-4241S

Analysis Request of Chain of Custody Record

PAGE: 2 of 2

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:	SITE MANAGER:
COG	Ike Tavarez

PROJECT NO.:	PROJECT NAME:
114-640-0888	COG / White Star Red Hills Line 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	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
103	5-21-2012		S		X	CS-1 Bottom Hole 4'	1				X													X				

RELINQUISHED BY: (Signature) — Date: 5-21-12 Time: 1230
RECEIVED BY: (Signature) — Date: 05/24/12 Time: 1210

RELINQUISHED BY: (Signature) — Date: 05/24/12 Time: 1210
RECEIVED BY: (Signature) — Date: 5/24/12 Time: 1210

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) Robert Grubbs Jr — Date: 5-21-12 Time: 1210

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

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: Maude PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Good Intact

REMARKS:

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

Summary Report

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

Report Date: April 29, 2011

Work Order: 11042203

Project Location: Eddy Co., NM
Project Name: COG/White Star
Project Number: 114-6400888

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
264380	AH-1 0-1'	soil	2011-04-20	00:00	2011-04-21
264381	AH-1 1-1.5'	soil	2011-04-20	00:00	2011-04-21
264382	AH-1 2-2.5'	soil	2011-04-20	00:00	2011-04-21
264383	AH-1 3-3.5'	soil	2011-04-20	00:00	2011-04-21
264384	AH-1 4-4.5'	soil	2011-04-20	00:00	2011-04-21
264385	AH-1 5-5.5'	soil	2011-04-20	00:00	2011-04-21
264386	AH-1 6-6.5'	soil	2011-04-20	00:00	2011-04-21
264387	AH-1 7-7.5'	soil	2011-04-20	00:00	2011-04-21

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
264380 - AH-1 0-1'	**12.7**	**85.0**	**56.2**	**92.3**	**17200**	**2160**
264381 - AH-1 1-1.5'	**1.64**	**12.8**	**11.4**	**18.4**	**379**	**406**
264382 - AH-1 2-2.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
264383 - AH-1 3-3.5'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 264380 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**4880**	mg/Kg	4.00

Sample: 264381 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		**7330**	mg/Kg	4.00

Sample: 264382 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		**1830**	mg/Kg	4.00

Sample: 264383 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		**2530**	mg/Kg	4.00

Sample: 264384 - AH-1 4-4.5'

Param	Flag	Result	Units	RL
Chloride		**2890**	mg/Kg	4.00

Sample: 264385 - AH-1 5-5.5'

Param	Flag	Result	Units	RL
Chloride		**1680**	mg/Kg	4.00

Sample: 264386 - AH-1 6-6.5'

Param	Flag	Result	Units	RL
Chloride		**1630**	mg/Kg	4.00

Sample: 264387 - AH-1 7-7.5'

Param	Flag	Result	Units	RL
Chloride		**2450**	mg/Kg	4.00

TRACEANALYSIS, INC.

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

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

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

Report Date: April 29, 2011

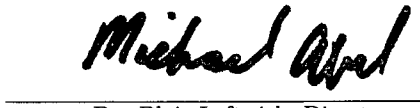
Work Order: 11042203

Project Location: Eddy Co., NM
Project Name: COG/White Star
Project Number: 114-6400888

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
264380	AH-1 0-1'	soil	2011-04-20	00:00	2011-04-21
264381	AH-1 1-1.5'	soil	2011-04-20	00:00	2011-04-21
264382	AH-1 2-2.5'	soil	2011-04-20	00:00	2011-04-21
264383	AH-1 3-3.5'	soil	2011-04-20	00:00	2011-04-21
264384	AH-1 4-4.5'	soil	2011-04-20	00:00	2011-04-21
264385	AH-1 5-5.5'	soil	2011-04-20	00:00	2011-04-21
264386	AH-1 6-6.5'	soil	2011-04-20	00:00	2011-04-21
264387	AH-1 7-7.5'	soil	2011-04-20	00:00	2011-04-21

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

Report Contents

Case Narrative

Samples for project COG/White Star were received by TraceAnalysis, Inc. on 2011-04-21 and assigned to work order 11042203. Samples for work order 11042203 were received intact at a temperature of 9.4 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	68447	2011-04-25 at 09:04	80636	2011-04-25 at 09:04
BTEX	S 8021B	68516	2011-04-27 at 15:47	80730	2011-04-27 at 15:47
Chloride (Titration)	SM 4500-Cl B	68435	2011-04-25 at 11:20	80725	2011-04-27 at 15:42
TPH DRO - NEW	S 8015 D	68456	2011-04-25 at 09:52	80646	2011-04-25 at 09:52
TPH DRO - NEW	S 8015 D	68529	2011-04-27 at 10:16	80739	2011-04-27 at 10:16
TPH GRO	S 8015 D	68447	2011-04-25 at 09:04	80637	2011-04-25 at 09:04
TPH GRO	S 8015 D	68516	2011-04-27 at 15:47	80731	2011-04-27 at 15:47

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 11042203 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: 264380 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80636	Date Analyzed:	2011-04-25	Analyzed By:	ME
Prep Batch:	68447	Sample Preparation:	2011-04-25	Prepared By:	ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**12.7**	mg/Kg	20	0.0200
Toluene		1	**85.0**	mg/Kg	20	0.0200
Ethylbenzene		1	**56.2**	mg/Kg	20	0.0200
Xylene		1	**92.3**	mg/Kg	20	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	22.3	mg/Kg	20	20.0	112	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1	38.2	mg/Kg	20	20.0	191	38.4 - 157

Sample: 264380 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**4880**	mg/Kg	100	4.00

Sample: 264380 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	80646	Date Analyzed:	2011-04-25	Analyzed By:	kg
Prep Batch:	68456	Sample Preparation:	2011-04-25	Prepared By:	kg

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**17200**	mg/Kg	10	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		1	469	mg/Kg	10	100	469	70 - 130

Sample: 264380 - AH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80637	Date Analyzed:	2011-04-25	Analyzed By:	ME
Prep Batch:	68447	Sample Preparation:	2011-04-25	Prepared By:	ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**2160**	mg/Kg	20	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	21.7	mg/Kg	20	20.0	108	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1	37.6	mg/Kg	20	20.0	188	42 - 159

Sample: 264381 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80730	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		1	**1.64**	mg/Kg	5	0.0200
Toluene		1	**12.8**	mg/Kg	5	0.0200
Ethylbenzene		1	**11.4**	mg/Kg	5	0.0200
Xylene		1	**18.4**	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	5.98	mg/Kg	5	5.00	120	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1	9.05	mg/Kg	5	5.00	181	38.4 - 157

Sample: 264381 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**7330**	mg/Kg	100	4.00

Sample: 264381 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	80739	Date Analyzed:	2011-04-27	Analyzed By:	kg
Prep Batch:	68529	Sample Preparation:	2011-04-27	Prepared By:	kg

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**379**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		1	140	mg/Kg	1	100	140	70 - 130

Sample: 264381 - AH-1 1-1.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80731	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO		1	**406**	mg/Kg	5	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	5.43	mg/Kg	5	5.00	109	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1	8.42	mg/Kg	5	5.00	168	42 - 159

Sample: 264382 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80730	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.30	mg/Kg	1	2.00	115	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1	2.31	mg/Kg	1	2.00	116	38.4 - 157

Sample: 264382 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1830**	mg/Kg	100	4.00

Sample: 264382 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	80739	Date Analyzed:	2011-04-27	Analyzed By:	kg
Prep Batch:	68529	Sample Preparation:	2011-04-27	Prepared By:	kg

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

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

Sample: 264382 - AH-1 2-2.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80731	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.16	mg/Kg	1	2.00	108	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1	1.99	mg/Kg	1	2.00	100	42 - 159

Sample: 264383 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	80730	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.73	mg/Kg	1	2.00	136	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1	2.64	mg/Kg	1	2.00	132	38.4 - 157

Sample: 264383 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

continued ...

sample 264383 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2530**	mg/Kg	100	4.00

Sample: 264383 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	80739	Date Analyzed:	2011-04-27	Analyzed By:	kg
Prep Batch:	68529	Sample Preparation:	2011-04-27	Prepared By:	kg

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		1	94.4	mg/Kg	1	100	94	70 - 130

Sample: 264383 - AH-1 3-3.5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	80731	Date Analyzed:	2011-04-27	Analyzed By:	ME
Prep Batch:	68516	Sample Preparation:	2011-04-27	Prepared By:	ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.48	mg/Kg	1	2.00	124	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1	2.24	mg/Kg	1	2.00	112	42 - 159

Sample: 264384 - AH-1 4-4.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

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

Sample: 264385 - AH-1 5-5.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1680**	mg/Kg	100	4.00

Sample: 264386 - AH-1 6-6.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1630**	mg/Kg	100	4.00

Sample: 264387 - AH-1 7-7.5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	80725	Date Analyzed:	2011-04-27	Analyzed By:	AR
Prep Batch:	68435	Sample Preparation:	2011-04-27	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2450**	mg/Kg	100	4.00

Method Blanks

Method Blank (1) QC Batch: 80636

QC Batch: 80636 Date Analyzed: 2011-04-25 Analyzed By: ME
Prep Batch: 68447 QC Preparation: 2011-04-25 Prepared By: ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.08	mg/Kg	1	2.00	104	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1	2.23	mg/Kg	1	2.00	112	55.4 - 124

Method Blank (1) QC Batch: 80637

QC Batch: 80637 Date Analyzed: 2011-04-25 Analyzed By: ME
Prep Batch: 68447 QC Preparation: 2011-04-25 Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	2.02	mg/Kg	1	2.00	101	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1	1.93	mg/Kg	1	2.00	96	52.4 - 130

Method Blank (1) QC Batch: 80646

QC Batch: 80646 Date Analyzed: 2011-04-25 Analyzed By: kg
Prep Batch: 68456 QC Preparation: 2011-04-25 Prepared By: kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.7	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		1	104	mg/Kg	1	100	104	70 - 130

Method Blank (1) QC Batch: 80725

QC Batch: 80725 Date Analyzed: 2011-04-27 Analyzed By: AR
Prep Batch: 68435 QC Preparation: 2011-04-25 Prepared By: AR

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

Method Blank (1) QC Batch: 80730

QC Batch: 80730 Date Analyzed: 2011-04-27 Analyzed By: ME
Prep Batch: 68516 QC Preparation: 2011-04-27 Prepared By: ME

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	1.89	mg/Kg	1	2.00	94	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1	1.85	mg/Kg	1	2.00	92	55.4 - 124

Method Blank (1) QC Batch: 80731

QC Batch: 80731 Date Analyzed: 2011-04-27 Analyzed By: ME
Prep Batch: 68516 QC Preparation: 2011-04-27 Prepared By: ME

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.753	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1	1.74	mg/Kg	1	2.00	87	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1	1.59	mg/Kg	1	2.00	80	52.4 - 130

Method Blank (1) QC Batch: 80739

QC Batch:	80739	Date Analyzed:	2011-04-27	Analyzed By:	kg
Prep Batch:	68529	QC Preparation:	2011-04-27	Prepared By:	kg

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.7	mg/Kg	50

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 80636 | Date Analyzed: 2011-04-25 | Analyzed By: ME
Prep Batch: 68447 | QC Preparation: 2011-04-25 | Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.64	mg/Kg	1	2.00	<0.0118	82	81.9 - 108
Toluene		1	1.98	mg/Kg	1	2.00	<0.00600	99	81.9 - 107
Ethylbenzene		1	2.09	mg/Kg	1	2.00	<0.00850	104	78.4 - 107
Xylene		1	6.30	mg/Kg	1	6.00	<0.00613	105	79.1 - 107

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.68	mg/Kg	1	2.00	<0.0118	84	81.9 - 108	2	20
Toluene		1	2.10	mg/Kg	1	2.00	<0.00600	105	81.9 - 107	6	20
Ethylbenzene		1	2.06	mg/Kg	1	2.00	<0.00850	103	78.4 - 107	1	20
Xylene		1	6.40	mg/Kg	1	6.00	<0.00613	107	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	2.10	2.11	mg/Kg	1	2.00	105	106	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1	2.38	2.41	mg/Kg	1	2.00	119	120	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 80637 | Date Analyzed: 2011-04-25 | Analyzed By: ME
Prep Batch: 68447 | QC Preparation: 2011-04-25 | Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.0	mg/Kg	1	20.0	<0.753	85	60.9 - 95.4

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

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control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	16.7	mg/Kg	1	20.0	<0.753	84	60.9 - 95.4	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	2.07	1.95	mg/Kg	1	2.00	104	98	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1	2.09	2.00	mg/Kg	1	2.00	104	100	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 80646 | Date Analyzed: 2011-04-25 | Analyzed By: kg
Prep Batch: 68456 | QC Preparation: 2011-04-25 | Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	218	mg/Kg	1	250	<15.7	87	47.5 - 144.1

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	213	mg/Kg	1	250	<15.7	85	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	1	106	106	mg/Kg	1	100	106	106	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 80725 | Date Analyzed: 2011-04-27 | Analyzed By: AR
Prep Batch: 68435 | QC Preparation: 2011-04-25 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			98.1	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	F	C	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: 80730 | Date Analyzed: 2011-04-27 | Analyzed By: ME
Prep Batch: 68516 | QC Preparation: 2011-04-27 | Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.06	mg/Kg	1	2.00	<0.0118	103	81.9 - 108
Toluene		1	2.07	mg/Kg	1	2.00	<0.00600	104	81.9 - 107
Ethylbenzene		1	2.07	mg/Kg	1	2.00	<0.00850	104	78.4 - 107
Xylene		1	6.23	mg/Kg	1	6.00	<0.00613	104	79.1 - 107

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.12	mg/Kg	1	2.00	<0.0118	106	81.9 - 108	3	20
Toluene		1	2.13	mg/Kg	1	2.00	<0.00600	106	81.9 - 107	3	20
Ethylbenzene		1	2.14	mg/Kg	1	2.00	<0.00850	107	78.4 - 107	3	20
Xylene		1	6.43	mg/Kg	1	6.00	<0.00613	107	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	2.05	1.84	mg/Kg	1	2.00	102	92	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1	2.11	1.93	mg/Kg	1	2.00	106	96	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 80731 | Date Analyzed: 2011-04-27 | Analyzed By: ME
Prep Batch: 68516 | QC Preparation: 2011-04-27 | Prepared By: ME

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	13.5	mg/Kg	1	20.0	<0.753	68	60.9 - 95.4

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	14.8	mg/Kg	1	20.0	<0.753	74	60.9 - 95.4	9	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	1.90	1.77	mg/Kg	1	2.00	95	88	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1	1.83	1.73	mg/Kg	1	2.00	92	86	68.2 - 132

Laboratory Control Spike (LCS-1)

QC Batch: 80739 | Date Analyzed: 2011-04-27 | Analyzed By: kg
Prep Batch: 68529 | QC Preparation: 2011-04-27 | Prepared By: kg

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	222	mg/Kg	1	250	<15.7	89	47.5 - 144.1

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	246	mg/Kg	1	250	<15.7	98	47.5 - 144.1	10	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	1	115	120	mg/Kg	1	100	115	120	70 - 130

Matrix Spike (MS-1) Spiked Sample: 264496

QC Batch: 80636 | Date Analyzed: 2011-04-25 | Analyzed By: ME
Prep Batch: 68447 | QC Preparation: 2011-04-25 | Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.67	mg/Kg	1	2.00	<0.0118	84	80.5 - 112
Toluene		1	2.12	mg/Kg	1	2.00	<0.00600	106	82.4 - 113
Ethylbenzene		1	2.31	mg/Kg	1	2.00	<0.00850	116	83.9 - 114
Xylene		1	7.01	mg/Kg	1	6.00	<0.00613	117	84 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.50	mg/Kg	1	2.00	<0.0118	75	80.5 - 112	11	20
Toluene		1	1.93	mg/Kg	1	2.00	<0.00600	96	82.4 - 113	9	20
Ethylbenzene		1	2.11	mg/Kg	1	2.00	<0.00850	106	83.9 - 114	9	20
Xylene		1	6.40	mg/Kg	1	6.00	<0.00613	107	84 - 114	9	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	2.40	2.08	mg/Kg	1	2	120	104	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1	2.64	2.31	mg/Kg	1	2	132	116	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 264479

QC Batch: 80637 | Date Analyzed: 2011-04-25 | Analyzed By: ME
Prep Batch: 68447 | QC Preparation: 2011-04-25 | Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.0	mg/Kg	1	20.0	<0.753	75	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.0	mg/Kg	1	20.0	<0.753	85	61.8 - 114	12	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	2.16	2.32	mg/Kg	1	2	108	116	50 - 162
4-Bromofluorobenzene (4-BFB)	1	2.22	2.37	mg/Kg	1	2	111	118	50 - 162

Matrix Spike (MS-1) Spiked Sample: 264479

QC Batch: 80646 | Date Analyzed: 2011-04-25 | Analyzed By: kg
Prep Batch: 68456 | QC Preparation: 2011-04-25 | Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	208	mg/Kg	1	250	<15.7	83	11.7 - 152.3

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	236	mg/Kg	1	250	<15.7	94	11.7 - 152.3	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
n-Tricosane	1	102	110	mg/Kg	1	100	102	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 264387

QC Batch: 80725 | Date Analyzed: 2011-04-27 | Analyzed By: AR
Prep Batch: 68435 | QC Preparation: 2011-04-25 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			11900	mg/Kg	100	10000	2450	94	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			12300	mg/Kg	100	10000	2450	98	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: 264497

QC Batch: 80730 | Date Analyzed: 2011-04-27 | Analyzed By: ME
Prep Batch: 68516 | QC Preparation: 2011-04-27 | Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.18	mg/Kg	1	2.00	<0.0118	109	80.5 - 112
Toluene		1	2.20	mg/Kg	1	2.00	0.166	102	82.4 - 113
Ethylbenzene		1	2.26	mg/Kg	1	2.00	0.1608	105	83.9 - 114
Xylene		1	6.78	mg/Kg	1	6.00	0.4904	105	84 - 114

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

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.10	mg/Kg	1	2.00	<0.0118	105	80.5 - 112	4	20
Toluene		1	2.14	mg/Kg	1	2.00	0.166	99	82.4 - 113	3	20
Ethylbenzene		1	2.22	mg/Kg	1	2.00	0.1608	103	83.9 - 114	2	20
Xylene		1	6.70	mg/Kg	1	6.00	0.4904	103	84 - 114	1	20

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

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1	2.25	2.43	mg/Kg	1	2	112	122	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1	2.25	2.48	mg/Kg	1	2	112	124	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 264383

QC Batch: 80731 | Date Analyzed: 2011-04-27 | Analyzed By: ME
Prep Batch: 68516 | QC Preparation: 2011-04-27 | Prepared By: ME

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<0.753	78	61.8 - 114

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.4	mg/Kg	1	20.0	<0.753	77	61.8 - 114	1	20

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

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1	2.37	2.14	mg/Kg	1	2	118	107	50 - 162
4-Bromofluorobenzene (4-BFB)	1	2.23	2.10	mg/Kg	1	2	112	105	50 - 162

Matrix Spike (MS-1) Spiked Sample: 264455

QC Batch: 80739 | Date Analyzed: 2011-04-27 | Analyzed By: kg
Prep Batch: 68529 | QC Preparation: 2011-04-27 | Prepared By: kg

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	233	mg/Kg	1	250	<15.7	93	11.7 - 152.3

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	224	mg/Kg	1	250	<15.7	90	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	1	103	106	mg/Kg	1	100	103	106	70 - 130

Calibration Standards

Standard (CCV-2)

QC Batch: 80636 | Date Analyzed: 2011-04-25 | Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0806	81	80 - 120	2011-04-25
Toluene		1	mg/Kg	0.100	0.100	100	80 - 120	2011-04-25
Ethylbenzene		1	mg/Kg	0.100	0.105	105	80 - 120	2011-04-25
Xylene		1	mg/Kg	0.300	0.318	106	80 - 120	2011-04-25

Standard (CCV-3)

QC Batch: 80636 | Date Analyzed: 2011-04-25 | Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.0853	85	80 - 120	2011-04-25
Toluene		1	mg/Kg	0.100	0.105	105	80 - 120	2011-04-25
Ethylbenzene		1	mg/Kg	0.100	0.109	109	80 - 120	2011-04-25
Xylene		1	mg/Kg	0.300	0.327	109	80 - 120	2011-04-25

Standard (CCV-2)

QC Batch: 80637 | Date Analyzed: 2011-04-25 | Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.898	90	80 - 120	2011-04-25

Standard (CCV-3)

QC Batch: 80637 | Date Analyzed: 2011-04-25 | Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.08	108	80 - 120	2011-04-25

Standard (CCV-1)

QC Batch: 80646 Date Analyzed: 2011-04-25 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	212	85	80 - 120	2011-04-25

Standard (CCV-2)

QC Batch: 80646 Date Analyzed: 2011-04-25 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	230	92	80 - 120	2011-04-25

Standard (ICV-1)

QC Batch: 80725 Date Analyzed: 2011-04-27 Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2011-04-27

Standard (CCV-1)

QC Batch: 80725 Date Analyzed: 2011-04-27 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.6	100	85 - 115	2011-04-27

Standard (CCV-1)

QC Batch: 80730 Date Analyzed: 2011-04-27 Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.107	107	80 - 120	2011-04-27
Toluene		1	mg/Kg	0.100	0.108	108	80 - 120	2011-04-27
Ethylbenzene		1	mg/Kg	0.100	0.108	108	80 - 120	2011-04-27
Xylene		1	mg/Kg	0.300	0.328	109	80 - 120	2011-04-27

Standard (CCV-2)

QC Batch: 80730 Date Analyzed: 2011-04-27 Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-04-27
Toluene		1	mg/Kg	0.100	0.103	103	80 - 120	2011-04-27
Ethylbenzene		1	mg/Kg	0.100	0.102	102	80 - 120	2011-04-27
Xylene		1	mg/Kg	0.300	0.308	103	80 - 120	2011-04-27

Standard (CCV-1)

QC Batch: 80731 Date Analyzed: 2011-04-27 Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.935	94	80 - 120	2011-04-27

Standard (CCV-2)

QC Batch: 80731 Date Analyzed: 2011-04-27 Analyzed By: ME

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	1.01	101	80 - 120	2011-04-27

Standard (CCV-2)

QC Batch: 80739 Date Analyzed: 2011-04-27 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	294	118	80 - 120	2011-04-27

Standard (CCV-3)

QC Batch: 80739 Date Analyzed: 2011-04-27 Analyzed By: kg

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	274	110	80 - 120	2011-04-27

Appendix

Laboratory Certifications

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

Standard Flags

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

Attachments

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

WO#: 11042203

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: COG

SITE MANAGER: Ike Tavarez

PROJECT NO.: 114-6400888

PROJECT NAME: White Star

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	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
264380	4/20		S		X	AH-1 0-1'	1				X		X	X											X				
381						AH-1 1-1.5'																							
382						AH-1 2-2.5'																							
383						AH-1 3-3.5'																							
384						AH-1 4-4.5'																							
385						AH-1 5-5.5'																							
386						AH-1 6-6.5'																							
387	↓		↓		↓	AH-1 7-7.5'	↓				↓														↓				

RELINQUISHED BY: (Signature) Date: 4-21-11 Time: 12:00

RECEIVED BY: (Signature) Date: 4/21/11 Time: 1:30

SAMPLED BY: (Print & Initial) TF KD Date: 4-19-11 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: Trace

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 9, 4° C intact

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