

SITE INFORMATION

Report Type: Work Plan

General Site Information

Site:	Choctaw State #1 Tank Battery					
Company:	COG Operating LLC					
Section, Township and Range	Unit A	Sec. 16	T-17-S	R-31-E		
Lease Number:	API 30-015-24011					
County:	Eddy County					
GPS:	32.83896° N			103.86962° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	Intersection of 529 and Hwy 82, travel east on Hwy 82 1.0 mi (CR-233), left 0.8 mi, right at Y 0.4 mi, pass building on right 0.1 mi, turn left 0.5 mi to location					

Release Data

Date Released:	2/21/2012		RECEIVED MAY 21 2012 NMOCD ARTESIA
Type Release:	Produced Fluids		
Source of Contamination:	Gasket on vic clamp failed		
Fluid Released:	17 bbls		
Fluids Recovered:	15 bbls		

Official Communication

Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300	1910 N. Big Spring
P.O. Box		
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavaréz@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	0

Wellhead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0

Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0

Total Ranking Score:	0
-----------------------------	---

Acceptable Soil RRAL (mg/kg)

Benzene	Total BTEX	TPH
10	50	5,000



TETRA TECH

April 24, 2012

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

Re: Work Plan for the COG Operating LLC., Choctaw State #1 Tank Battery, Unit A, Section 16, Township 17 South, Range 31 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill located at the Choctaw State #1 Tank Battery, Unit A, Section 16, Township 17 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.83896°, W 103.86962°. 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 February 21, 2012, and released approximately seventeen (17) barrels of produced water due to a ruptured gasket on a vic clamp. To alleviate the problem, COG replaced the gasket. Approximately 15 barrels of produced fluids were recovered. The entire spill remained within the firewalls of the facility and impacted area measuring approximately 10' x 120' and 15' x 55'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were listed within Section 16. One well was listed in Section 34 with a recorded depth of 271' bgs by the *Geology and Groundwater Resources of Eddy County, New Mexico (Report 3)*.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com



According to the NMOCD groundwater map, the average depth to groundwater in this area is 300' below surface. The groundwater well report data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (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 7, 2012, Tetra Tech personnel inspected and sampled the spill area. Five (5) auger holes (AH-1 through AH-5) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The spill area and auger hole locations are shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for TPH and BTEX. A shallow chloride impact was detected at the site ranging from 1,360 mg/kg to 14,400 mg/kg at depths from 0-1' to 1-1.5' below surface. The deeper samples showed a significant chloride decline with depth.

Work Plan

COG proposes to remove the chloride impacted soils as highlighted (green) in Table 1. The site will be excavated to a depth of 1.0' - 1.5' below surface to remove the elevated chloride soil. The excavated soil will be transported to proper disposal.



TETRA TECH

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable.

Upon completion, a final report will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH



Mike Tavaraz, PG
Sr. Project Manager

cc: Pat Ellis – COG

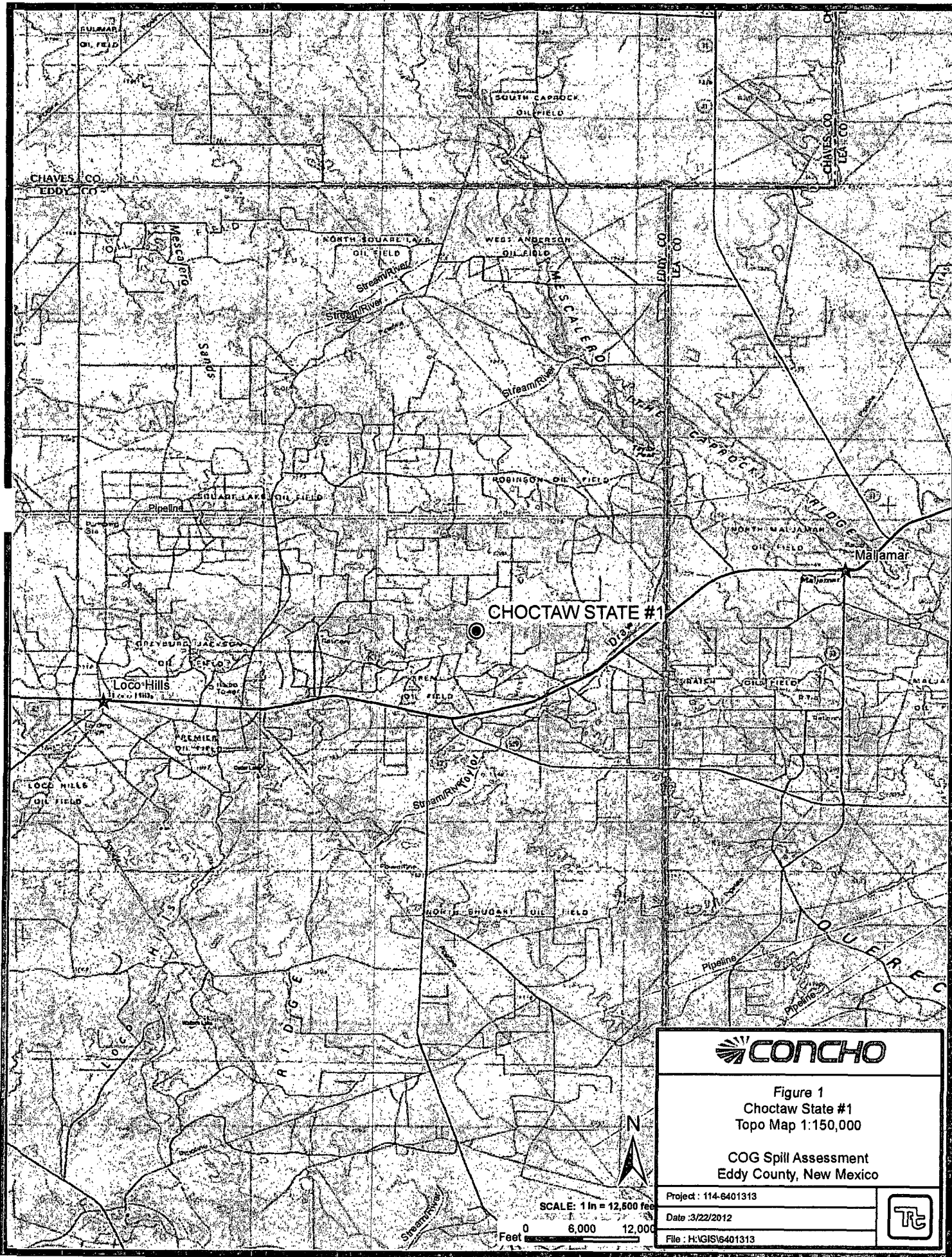


Figure 1
Choctaw State #1
Topo Map 1:150,000

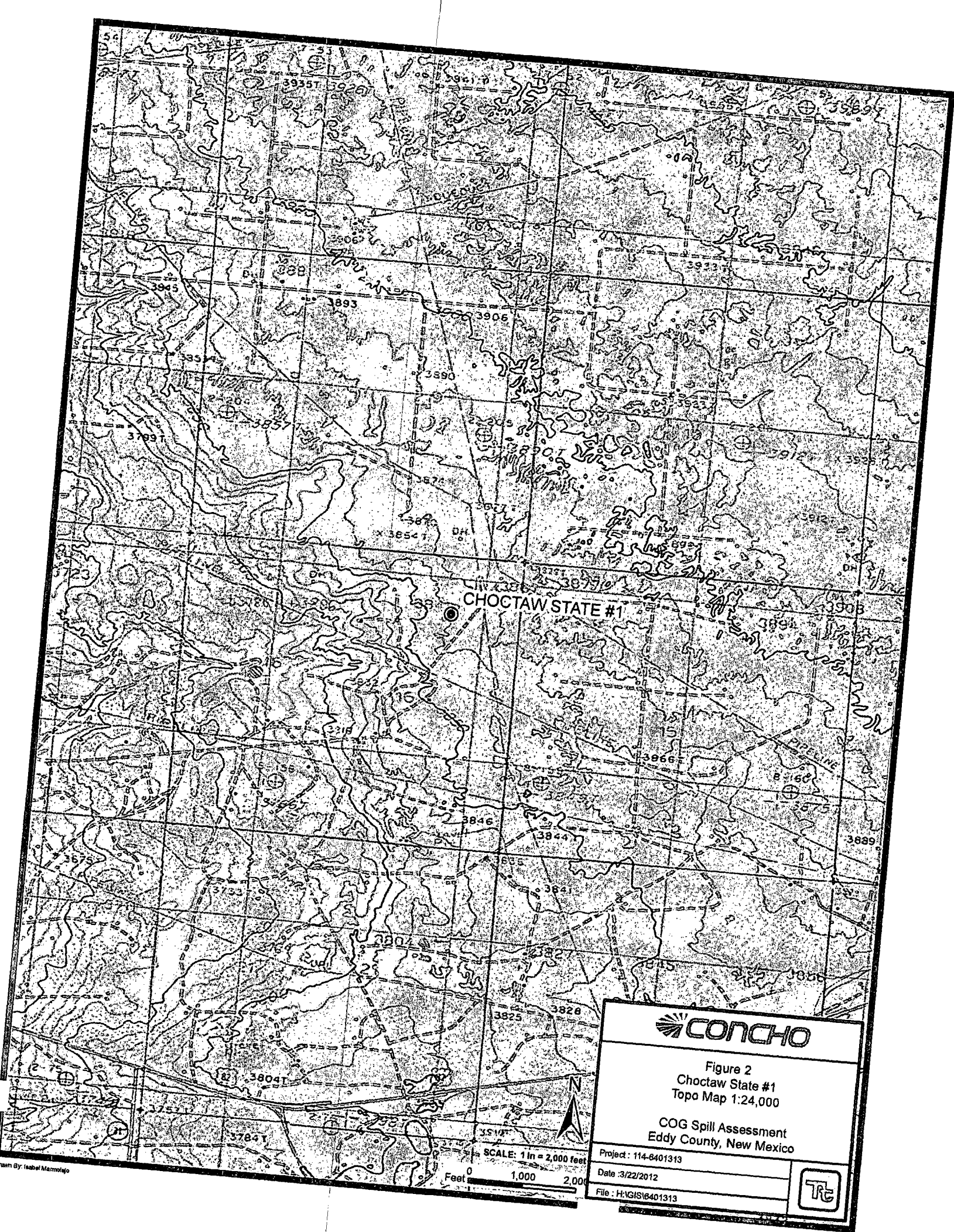
COG Spill Assessment
Eddy County, New Mexico

Project : 114-6401313

Date : 3/22/2012

File : H:\GIS\6401313

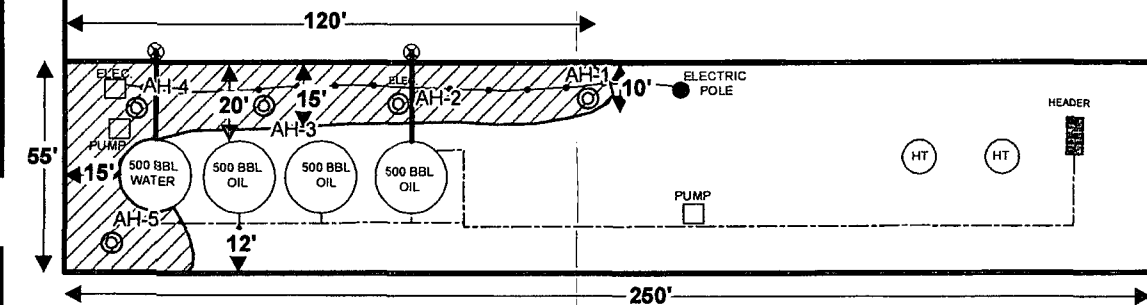




PAD

LEASE ROAD

PASTURE



EXPLANATION

- ⊙ AUGER HOLE SAMPLE LOCATIONS
- ELECTRIC POLE
- ELECTRIC LINE
- HEADER
- ▨ SPILL AREA



SCALE: 1 IN = 50 FEET
Feet 0 20 40



Figure 3

Choctaw State #1

Spill Assessment Map

Ector County, Texas

Project : 114-6401313

Date : 3/7/2012

File : H:\GIS\6401313



Tables

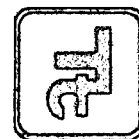
Table 1
COG Operating LLC.
Choctaw State #1
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
AH-1	3/7/2012	0-1	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,830
	"	1-1.5	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5	X		-	-	-	-	-	-	-	-	654
AH-2	3/7/2012	0-1	X		31.2	2,260	2,291	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,670
	"	1-1.5	X		-	-	-	-	-	-	-	-	1,610
	"	2-2.5	X		-	-	-	-	-	-	-	-	459
	"	3-3.5	X		-	-	-	-	-	-	-	-	235
AH-3	3/7/2012	0-1	X		14.0	645	659	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,530
	"	1-1.5	X		-	-	-	-	-	-	-	-	<200
	"	2-2.5	X		-	-	-	-	-	-	-	-	285
	"	3-3.5	X		-	-	-	-	-	-	-	-	230
AH-4	3/7/2012	0-1	X		36.4	506	542	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1,360
	"	1-1.5	X		-	-	-	-	-	-	-	-	420
	"	2-2.5	X		-	-	-	-	-	-	-	-	440
	"	3-3.5	X		-	-	-	-	-	-	-	-	330
AH-5	3/7/2012	0-1	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	14,400
	"	1-1.5	X		-	-	-	-	-	-	-	-	5,990
	"	2-2.5	X		-	-	-	-	-	-	-	-	<200
	"	3-3.5	X		-	-	-	-	-	-	-	-	<200

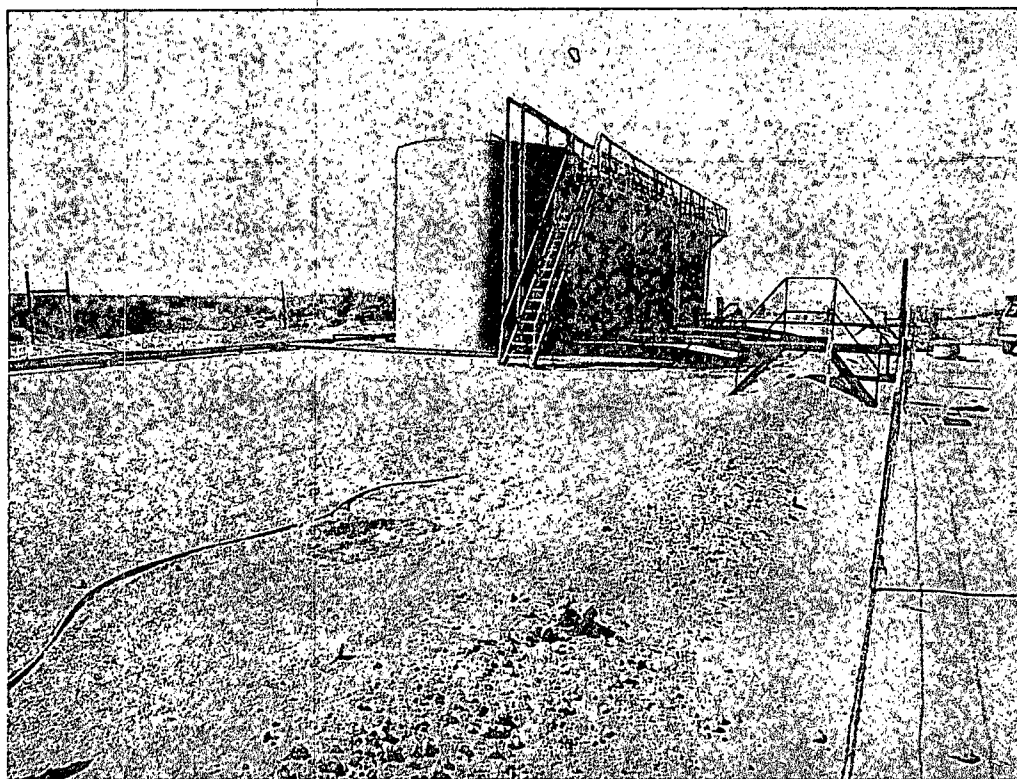
(-) Not Analyzed
 Proposed Excavation Depths

Photos

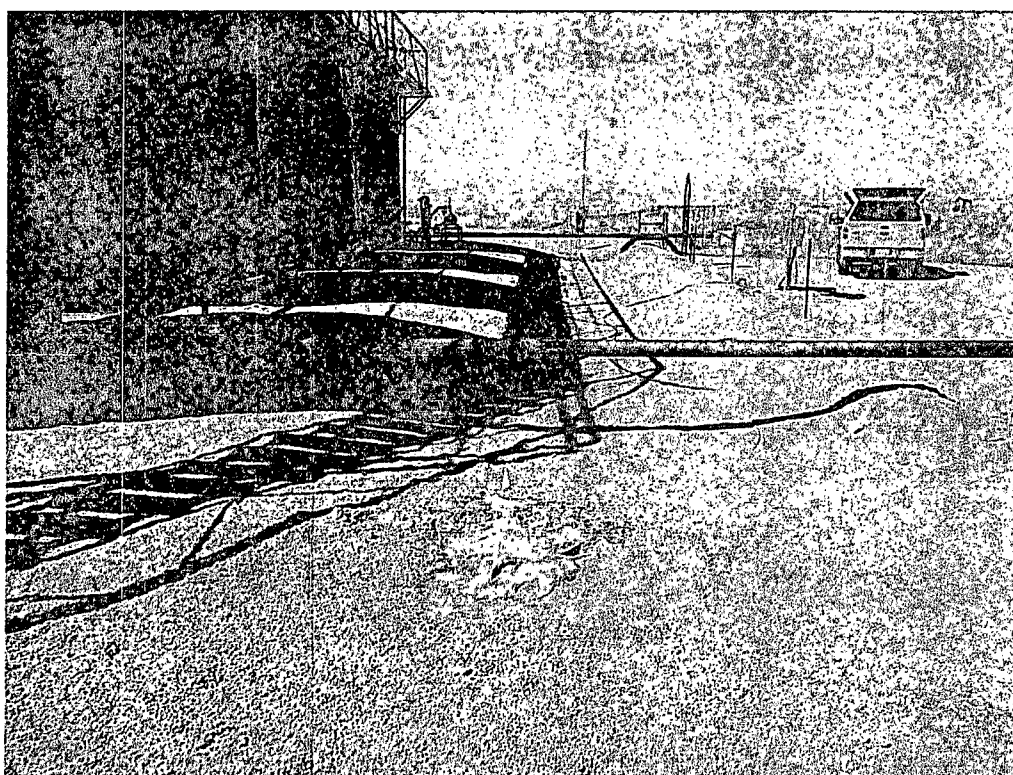
COG Operating LLC
Choctaw State #1
Eddy County, New Mexico



TETRA TECH

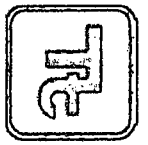


View south west – Near AH-1

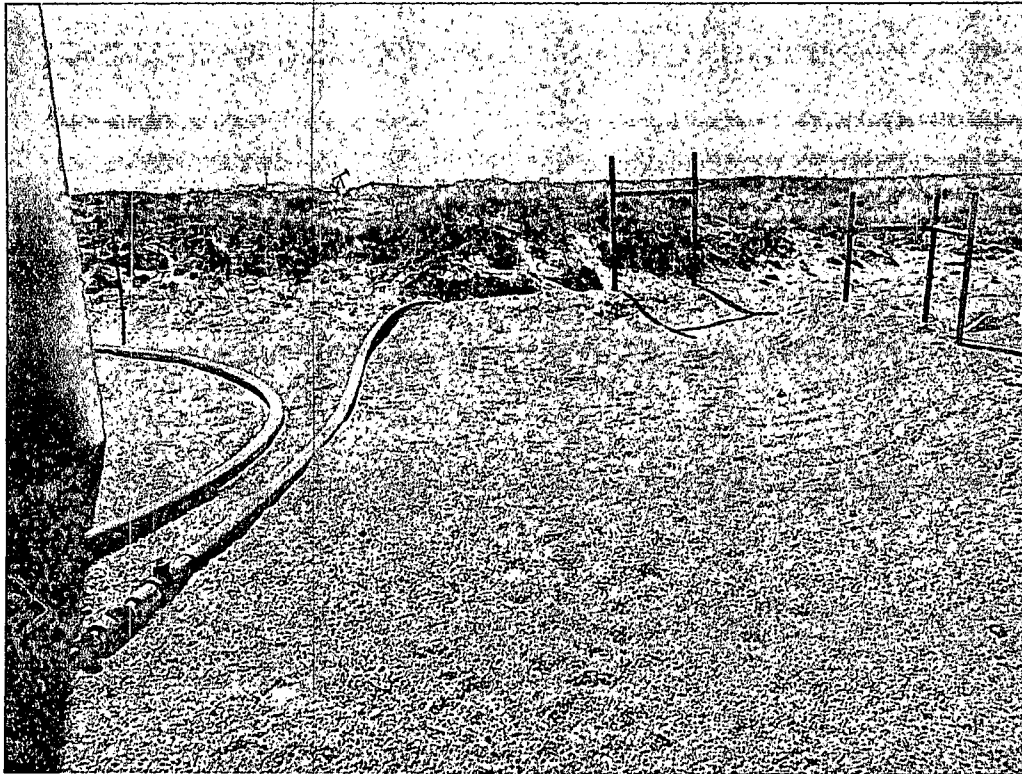


View west – Near AH-2 and AH-3

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



TETRA TECH

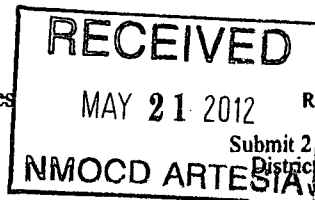


View south – Backside of Tank Battery near AH-5

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	Choctaw State #1	Facility Type	Tank Battery

Surface Owner	State	Mineral Owner	Lease No. (API#) 30-015-24011
---------------	-------	---------------	-------------------------------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	16	17S	31E					Eddy

Latitude 32 50.335 Longitude 103 52.183

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	17bbls	Volume Recovered	15bbls
Source of Release	vic clamp ruptured	Date and Hour of Occurrence	02/21/2012	Date and Hour of Discovery	02/21/2012 7:00 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.*

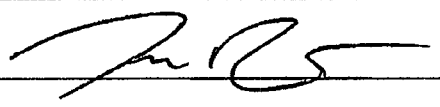
Describe Cause of Problem and Remedial Action Taken.*

The gasket on vic clamp ruptured causing the release of fluid. A new gasket has been installed.

Describe Area Affected and Cleanup Action Taken.*

Initially 17bbls of produced water were released from the vic clamp and we were able to recover 15bbls with a vacuum truck. The spill area was contained inside the facility walls and measured roughly 120' long. 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:	03/05/2012	Phone:	432-212-2399

* Attach Additional Sheets If Necessary

Appendix B

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

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

16 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
290					

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

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

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

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

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

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

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

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

Appendix C

Summary Report

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

Report Date: March 23, 2012

Work Order: 12031201

Project Location: Eddy Co., NM
Project Name: COG/Choctaw State #1
Project Number: 114-6401313

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
291027	AH-1 0-1'	soil	2012-03-07	00:00	2012-03-09
291028	AH-1 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291029	AH-1 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291030	AH-1 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291037	AH-2 0-1'	soil	2012-03-07	00:00	2012-03-09
291038	AH-2 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291039	AH-2 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291040	AH-2 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291047	AH-3 0-1'	soil	2012-03-07	00:00	2012-03-09
291048	AH-3 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291049	AH-3 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291050	AH-3 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291057	AH-4 0-1'	soil	2012-03-07	00:00	2012-03-09
291058	AH-4 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291059	AH-4 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291060	AH-4 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291067	AH-5 0-1'	soil	2012-03-07	00:00	2012-03-09
291068	AH-5 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291069	AH-5 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291070	AH-5 3-3.5'	soil	2012-03-07	00:00	2012-03-09

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
291027 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
291037 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	2260	31.2
291047 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	645	14.0
291057 - AH-4 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	506	36.4
291067 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 291027 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		2830	mg/Kg	4

Sample: 291028 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 291029 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 291030 - AH-1 3-3.5'

Param	Flag	Result	Units	RL
Chloride		654	mg/Kg	4

Sample: 291037 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		2670	mg/Kg	4

Sample: 291038 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		1610	mg/Kg	4

Sample: 291039 - AH-2 2-2.5'

Param	Flag	Result	Units	RL
Chloride		459	mg/Kg	4

Sample: 291040 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		235	mg/Kg	4

Sample: 291047 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		2530	mg/Kg	4

Sample: 291048 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 291049 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		285	mg/Kg	4

Sample: 291050 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		230	mg/Kg	4

Sample: 291057 - AH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		1360	mg/Kg	4

Sample: 291058 - AH-4 1-1.5'

Param	Flag	Result	Units	RL
Chloride		420	mg/Kg	4

Sample: 291059 - AH-4 2-2.5'

Param	Flag	Result	Units	RL
Chloride		440	mg/Kg	4

Sample: 291060 - AH-4 3-3.5'

Param	Flag	Result	Units	RL
Chloride		330	mg/Kg	4

Report Date: March 23, 2012

Work Order: 12031201

Page Number: 4 of 4

Sample: 291067 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		14400	mg/Kg	4

Sample: 291068 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		5990	mg/Kg	4

Sample: 291069 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4

Sample: 291070 - AH-5 3-3.5'

Param	Flag	Result	Units	RL
Chloride		<200	mg/Kg	4



6701 Aberdeen Avenue, Suite 9

200 East Sunset Road, Suite E

5002 Basin Street, Suite A1

(BioAquatic) 2501 Mayes Rd., Suite 100

Lubbock, Texas 79424

El Paso, Texas 79922

Midland, Texas 79703

Carrollton, Texas 75006

800-378-1298

806-794-1298

915-585-3443

432-689-6301

972-242-7750

FAX 806-794-1298

FAX 915-585-4944

FAX 432-689-6313

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: March 23, 2012

Work Order: 12031201

Project Location: Eddy Co., NM
Project Name: COG/Choctaw State #1
Project Number: 114-6401313

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
291027	AH-1 0-1'	soil	2012-03-07	00:00	2012-03-09
291028	AH-1 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291029	AH-1 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291030	AH-1 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291037	AH-2 0-1'	soil	2012-03-07	00:00	2012-03-09
291038	AH-2 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291039	AH-2 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291040	AH-2 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291047	AH-3 0-1'	soil	2012-03-07	00:00	2012-03-09
291048	AH-3 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291049	AH-3 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291050	AH-3 3-3.5'	soil	2012-03-07	00:00	2012-03-09
291057	AH-4 0-1'	soil	2012-03-07	00:00	2012-03-09
291058	AH-4 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291059	AH-4 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291060	AH-4 3-3.5'	soil	2012-03-07	00:00	2012-03-09

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
291067	AH-5 0-1'	soil	2012-03-07	00:00	2012-03-09
291068	AH-5 1-1.5'	soil	2012-03-07	00:00	2012-03-09
291069	AH-5 2-2.5'	soil	2012-03-07	00:00	2012-03-09
291070	AH-5 3-3.5'	soil	2012-03-07	00:00	2012-03-09

Report Corrections (Work Order 12031201)

- Re-ran sample 291030 for Cl. 3-23-12

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

This report consists of a total of 32 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



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

Report Contents

Case Narrative	5
Analytical Report	6
Sample 291027 (AH-1 0-1')	6
Sample 291028 (AH-1 1-1.5')	7
Sample 291029 (AH-1 2-2.5')	7
Sample 291030 (AH-1 3-3.5')	8
Sample 291037 (AH-2 0-1')	8
Sample 291038 (AH-2 1-1.5')	9
Sample 291039 (AH-2 2-2.5')	10
Sample 291040 (AH-2 3-3.5')	10
Sample 291047 (AH-3 0-1')	10
Sample 291048 (AH-3 1-1.5')	12
Sample 291049 (AH-3 2-2.5')	12
Sample 291050 (AH-3 3-3.5')	12
Sample 291057 (AH-4 0-1')	13
Sample 291058 (AH-4 1-1.5')	14
Sample 291059 (AH-4 2-2.5')	14
Sample 291060 (AH-4 3-3.5')	15
Sample 291067 (AH-5 0-1')	15
Sample 291068 (AH-5 1-1.5')	16
Sample 291069 (AH-5 2-2.5')	17
Sample 291070 (AH-5 3-3.5')	17
Method Blanks	18
QC Batch 89298 - Method Blank (1)	18
QC Batch 89329 - Method Blank (1)	18
QC Batch 89384 - Method Blank (1)	18
QC Batch 89385 - Method Blank (1)	19
QC Batch 89562 - Method Blank (1)	19
QC Batch 89563 - Method Blank (1)	19
QC Batch 89635 - Method Blank (1)	20
Laboratory Control Spikes	21
QC Batch 89298 - LCS (1)	21
QC Batch 89329 - LCS (1)	21
QC Batch 89384 - LCS (1)	21
QC Batch 89385 - LCS (1)	22
QC Batch 89562 - LCS (1)	23
QC Batch 89563 - LCS (1)	23
QC Batch 89635 - LCS (1)	23
QC Batch 89298 - MS (1)	24
QC Batch 89329 - MS (1)	24
QC Batch 89384 - MS (1)	25
QC Batch 89385 - MS (1)	25
QC Batch 89562 - MS (1)	26

QC Batch 89563 - MS (1)	26
QC Batch 89635 - MS (1)	27
Calibration Standards	28
QC Batch 89298 - CCV (3)	28
QC Batch 89298 - CCV (4)	28
QC Batch 89329 - CCV (3)	28
QC Batch 89329 - CCV (4)	28
QC Batch 89384 - CCV (2)	28
QC Batch 89384 - CCV (3)	29
QC Batch 89385 - CCV (2)	29
QC Batch 89385 - CCV (3)	29
QC Batch 89562 - ICV (1)	30
QC Batch 89562 - CCV (1)	30
QC Batch 89563 - ICV (1)	30
QC Batch 89563 - CCV (1)	30
QC Batch 89635 - ICV (1)	30
QC Batch 89635 - CCV (1)	31
Appendix	32
Report Definitions	32
Laboratory Certifications	32
Standard Flags	32
Attachments	32

Case Narrative

Samples for project COG/Choctaw State #1 were received by TraceAnalysis, Inc. on 2012-03-09 and assigned to work order 12031201. Samples for work order 12031201 were received intact at a temperature of 0.8 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	75875	2012-03-14 at 11:37	89384	2012-03-14 at 12:29
Chloride (Titration)	SM 4500-Cl B	75918	2012-03-16 at 08:55	89562	2012-03-21 at 14:47
Chloride (Titration)	SM 4500-Cl B	75918	2012-03-16 at 08:55	89563	2012-03-21 at 14:48
Chloride (Titration)	SM 4500-Cl B	76090	2012-03-22 at 10:11	89635	2012-03-22 at 14:11
TPH DRO - NEW	S 8015 D	75807	2012-03-12 at 12:24	89298	2012-03-12 at 12:29
TPH DRO - NEW	S 8015 D	75832	2012-03-13 at 11:00	89329	2012-03-13 at 11:03
TPH GRO	S 8015 D	75875	2012-03-14 at 11:37	89385	2012-03-14 at 12:56

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 12031201 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 6 of 32
Eddy Co., NM

Analytical Report

Sample: 291027 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89384

Prep Batch: 75875

Analytical Method: S 8021B

Date Analyzed: 2012-03-14

Sample Preparation: 2012-03-14

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Qsr	Qsr	3.13	mg/Kg	1	2.00	156	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1	2.00	105	63.6 - 158.9

Sample: 291027 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89562

Prep Batch: 75918

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-21

Sample Preparation: 2012-03-16

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2830	mg/Kg	100	4.00

Sample: 291027 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89298

Prep Batch: 75807

Analytical Method: S 8015 D

Date Analyzed: 2012-03-12

Sample Preparation: 2012-03-12

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 7 of 32
Eddy Co., NM

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			103	mg/Kg	1	100	103	49.3 - 157.5

Sample: 291027 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89385
Prep Batch: 75875

Analytical Method: S 8015 D
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

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)			2.96	mg/Kg	1	2.00	148	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	45.1 - 162.2

Sample: 291028 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

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

Sample: 291029 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

continued ...

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 8 of 32
Eddy Co., NM

sample 291029 continued ...

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

Sample: 291030 - AH-1 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89635
Prep Batch: 76090

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-22
Sample Preparation: 2012-03-22

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			654	mg/Kg	50	4.00

Sample: 291037 - AH-2 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89384
Prep Batch: 75875

Analytical Method: S 8021B
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.55	mg/Kg	1	2.00	128	75 - 135.4
4-Bromofluorobenzene (4-BFB)			1.94	mg/Kg	1	2.00	97	63.6 - 158.9

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 9 of 32
Eddy Co., NM

Sample: 291037 - AH-2 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2670	mg/Kg	100	4.00

Sample: 291037 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 89298
Prep Batch: 75807

Analytical Method: S 8015 D
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-12

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	2260	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr}	Q _{sr}	514	mg/Kg	5	100	514	49.3 - 157.5

Sample: 291037 - AH-2 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89385
Prep Batch: 75875

Analytical Method: S 8015 D
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	31.2	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.44	mg/Kg	1	2.00	122	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.82	mg/Kg	1	2.00	91	45.1 - 162.2

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 10 of 32
Eddy Co., NM

Sample: 291038 - AH-2 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1610	mg/Kg	50	4.00

Sample: 291039 - AH-2 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			459	mg/Kg	50	4.00

Sample: 291040 - AH-2 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			235	mg/Kg	50	4.00

Sample: 291047 - AH-3 0-1'

Laboratory: Midland
Analysis: BTEX
QC Batch: 89384
Prep Batch: 75875

Analytical Method: S 8021B
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 11 of 32
Eddy Co., NM

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Q _{sr} Q _{sr}		3.04	mg/Kg	1	2.00	152	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.21	mg/Kg	1	2.00	110	63.6 - 158.9

Sample: 291047 - AH-3 0-1'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

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

Sample: 291047 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 89298
Prep Batch: 75807

Analytical Method: S 8015 D
Date Analyzed: 2012-03-12
Sample Preparation: 2012-03-12

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	645	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{sr} Q _{sr}		184	mg/Kg	1	100	184	49.3 - 157.5

Sample: 291047 - AH-3 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89385
Prep Batch: 75875

Analytical Method: S 8015 D
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 12 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	14.0	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.91	mg/Kg	1	2.00	146	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1	2.00	105	45.1 - 162.2

Sample: 291048 - AH-3 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89562
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

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

Sample: 291049 - AH-3 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			285	mg/Kg	50	4.00

Sample: 291050 - AH-3 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 13 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			230	mg/Kg	50	4.00

Sample: 291057 - AH-4 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89384

Prep Batch: 75875

Analytical Method: S 8021B

Date Analyzed: 2012-03-14

Sample Preparation: 2012-03-14

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.57	mg/Kg	1	2.00	128	75 - 135.4
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1	2.00	101	63.6 - 158.9

Sample: 291057 - AH-4 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89563

Prep Batch: 75918

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-21

Sample Preparation: 2012-03-16

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1360	mg/Kg	100	4.00

Sample: 291057 - AH-4 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 89329

Prep Batch: 75832

Analytical Method: S 8015 D

Date Analyzed: 2012-03-13

Sample Preparation: 2012-03-13

Prep Method: N/A

Analyzed By: DA

Prepared By: DA

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 14 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO			506	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			139	mg/Kg	5	100	139	49.3 - 157.5

Sample: 291057 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89385
Prep Batch: 75875

Analytical Method: S 8015 D
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO			36.4	mg/Kg	1	2.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.47	mg/Kg	1	2.00	124	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.90	mg/Kg	1	2.00	95	45.1 - 162.2

Sample: 291058 - AH-4 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			420	mg/Kg	50	4.00

Sample: 291059 - AH-4 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 15 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			440	mg/Kg	50	4.00

Sample: 291060 - AH-4 3-3.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89563

Prep Batch: 75918

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-21

Sample Preparation: 2012-03-16

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			330	mg/Kg	50	4.00

Sample: 291067 - AH-5 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 89384

Prep Batch: 75875

Analytical Method: S 8021B

Date Analyzed: 2012-03-14

Sample Preparation: 2012-03-14

Prep Method: S 5035

Analyzed By: tc

Prepared By: tc

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.62	mg/Kg	1	2.00	131	75 - 135.4
4-Bromofluorobenzene (4-BFB)			1.74	mg/Kg	1	2.00	87	63.6 - 158.9

Sample: 291067 - AH-5 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 89563

Prep Batch: 75918

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-03-21

Sample Preparation: 2012-03-16

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 16 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			14400	mg/Kg	100	4.00

Sample: 291067 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 89329
Prep Batch: 75832

Analytical Method: S 8015 D
Date Analyzed: 2012-03-13
Sample Preparation: 2012-03-13

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.2	mg/Kg	1	100	94	49.3 - 157.5

Sample: 291067 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 89385
Prep Batch: 75875

Analytical Method: S 8015 D
Date Analyzed: 2012-03-14
Sample Preparation: 2012-03-14

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

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.54	mg/Kg	1	2.00	127	58.5 - 155.1
4-Bromofluorobenzene (4-BFB)			1.67	mg/Kg	1	2.00	84	45.1 - 162.2

Sample: 291068 - AH-5 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 17 of 32
Eddy Co., NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			5990	mg/Kg	100	4.00

Sample: 291069 - AH-5 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

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

Sample: 291070 - AH-5 3-3.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 89563
Prep Batch: 75918

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-03-21
Sample Preparation: 2012-03-16

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

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 18 of 32
Eddy Co., NM

Method Blanks

Method Blank (1) QC Batch: 89298

QC Batch: 89298
Prep Batch: 75807

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-12

Analyzed By: DA
Prepared By: DA

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<14.5	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.1	mg/Kg	1	100	93	52 - 140.8

Method Blank (1) QC Batch: 89329

QC Batch: 89329
Prep Batch: 75832

Date Analyzed: 2012-03-13
QC Preparation: 2012-03-13

Analyzed By: DA
Prepared By: DA

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	33.1	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			108	mg/Kg	1	100	108	52 - 140.8

Method Blank (1) QC Batch: 89384

QC Batch: 89384
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00470	mg/Kg	0.02
Toluene		1	<0.00980	mg/Kg	0.02
Ethylbenzene		1	<0.00500	mg/Kg	0.02

continued ...

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 19 of 32
Eddy Co., NM

method blank continued . . .

Parameter	Flag	Cert	MDL Result	Units	RL
Xylene		1	<0.0170	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.73	mg/Kg	1	2.00	86	78 - 123.6
4-Bromofluorobenzene (4-BFB)			1.39	mg/Kg	1	2.00	70	55.9 - 112.4

Method Blank (1) QC Batch: 89385

QC Batch: 89385
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<1.22	mg/Kg	2

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	1	2.00	82	78.6 - 111
4-Bromofluorobenzene (4-BFB)			1.32	mg/Kg	1	2.00	66	55 - 100

Method Blank (1) QC Batch: 89562

QC Batch: 89562
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 89563

QC Batch: 89563
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 20 of 32
Eddy Co., NM

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

Method Blank (1) QC Batch: 89635

QC Batch: 89635
Prep Batch: 76090

Date Analyzed: 2012-03-22
QC Preparation: 2012-03-22

Analyzed By: AR
Prepared By: AR

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 21 of 32
Eddy Co., NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 89298
Prep Batch: 75807

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-12

Analyzed By: DA
Prepared By: DA

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	240	mg/Kg	1	250	<14.5	96	62 - 128.3

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	245	mg/Kg	1	250	<14.5	98	62 - 128.3	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	95.5	97.4	mg/Kg	1	100	96	97	58.6 - 149.6

Laboratory Control Spike (LCS-1)

QC Batch: 89329
Prep Batch: 75832

Date Analyzed: 2012-03-13
QC Preparation: 2012-03-13

Analyzed By: DA
Prepared By: DA

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	250	mg/Kg	1	250	<14.5	100	62 - 128.3

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	252	mg/Kg	1	250	<14.5	101	62 - 128.3	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	93.3	93.0	mg/Kg	1	100	93	93	58.6 - 149.6

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 22 of 32
Eddy Co., NM

Laboratory Control Spike (LCS-1)

QC Batch: 89384
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.02	mg/Kg	1	2.00	<0.00470	101	86.5 - 124.9
Toluene		1	2.04	mg/Kg	1	2.00	<0.00980	102	84.7 - 122.5
Ethylbenzene		1	2.00	mg/Kg	1	2.00	<0.00500	100	79.4 - 118.9
Xylene		1	6.07	mg/Kg	1	6.00	<0.0170	101	79.5 - 118.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.05	mg/Kg	1	2.00	<0.00470	102	86.5 - 124.9	2	20
Toluene		1	2.07	mg/Kg	1	2.00	<0.00980	104	84.7 - 122.5	1	20
Ethylbenzene		1	2.05	mg/Kg	1	2.00	<0.00500	102	79.4 - 118.9	2	20
Xylene		1	6.16	mg/Kg	1	6.00	<0.0170	103	79.5 - 118.9	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.28	2.08	mg/Kg	1	2.00	114	104	73.9 - 127
4-Bromofluorobenzene (4-BFB)	2.38	2.15	mg/Kg	1	2.00	119	108	70.4 - 119.9

Laboratory Control Spike (LCS-1)

QC Batch: 89385
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.6	mg/Kg	1	20.0	<1.22	88	68.3 - 105.7

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	19.7	mg/Kg	1	20.0	<1.22	98	68.3 - 105.7	11	20

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

continued ...

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 23 of 32
Eddy Co., NM

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.92	2.18	mg/Kg	1	2.00	96	109	80 - 111.2
4-Bromofluorobenzene (4-BFB)	1.70	2.02	mg/Kg	1	2.00	85	101	66.4 - 106.6

Laboratory Control Spike (LCS-1)

QC Batch: 89562
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.5	mg/Kg	1	100	<3.85	96	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			104	mg/Kg	1	100	<3.85	104	85 - 115	8	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 89563
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			96.8	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	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			105	mg/Kg	1	100	<3.85	105	85 - 115	8	20

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 24 of 32
Eddy Co., NM

Laboratory Control Spike (LCS-1)

QC Batch: 89635
Prep Batch: 76090

Date Analyzed: 2012-03-22
QC Preparation: 2012-03-22

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			97.1	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	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			105	mg/Kg	1	100	<3.85	105	85 - 115	8	20

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

Matrix Spike (MS-1) Spiked Sample: 290978

QC Batch: 89298
Prep Batch: 75807

Date Analyzed: 2012-03-12
QC Preparation: 2012-03-12

Analyzed By: DA
Prepared By: DA

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			256	mg/Kg	1	250	<14.5	102	45.5 - 127

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			259	mg/Kg	1	250	<14.5	104	45.5 - 127	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
n-Tricosane	91.0	94.2	mg/Kg	1	100	91	94	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 291067

QC Batch: 89329
Prep Batch: 75832

Date Analyzed: 2012-03-13
QC Preparation: 2012-03-13

Analyzed By: DA
Prepared By: DA

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 25 of 32
Eddy Co., NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO			254	mg/Kg	1	250	<14.5	102	45.5 - 127

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	246	mg/Kg	1	250	<14.5	98	45.5 - 127	3	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	95.7	94.8	mg/Kg	1	100	96	95	45.4 - 145.8

Matrix Spike (MS-1) Spiked Sample: 290978

QC Batch: 89384
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.77	mg/Kg	1	2.00	<0.00470	138	69.3 - 159.2
Toluene		1	2.86	mg/Kg	1	2.00	<0.00980	143	68.7 - 157
Ethylbenzene		1	2.95	mg/Kg	1	2.00	<0.00500	148	71.6 - 158.2
Xylene		1	8.71	mg/Kg	1	6.00	<0.0170	145	70.8 - 159.8

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	2.40	mg/Kg	1	2.00	<0.00470	120	69.3 - 159.2	14	20
Toluene		1	2.50	mg/Kg	1	2.00	<0.00980	125	68.7 - 157	13	20
Ethylbenzene		1	2.56	mg/Kg	1	2.00	<0.00500	128	71.6 - 158.2	14	20
Xylene		1	7.52	mg/Kg	1	6.00	<0.0170	125	70.8 - 159.8	15	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)	2.61	3.07	mg/Kg	1	2	130	154	71.4 - 133.9
4-Bromofluorobenzene (4-BFB)	2.15	2.52	mg/Kg	1	2	108	126	72.6 - 144.1

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 26 of 32
Eddy Co., NM

Matrix Spike (MS-1) Spiked Sample: 290982

QC Batch: 89385
Prep Batch: 75875

Date Analyzed: 2012-03-14
QC Preparation: 2012-03-14

Analyzed By: tc
Prepared By: tc

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	21.1	mg/Kg	1	20.0	1.8991	96	28.2 - 157.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.0	mg/Kg	1	20.0	1.8991	100	28.2 - 157.2	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
Trifluorotoluene (TFT)	2.44	2.48	mg/Kg	1	2	122	124	75.5 - 122.3
4-Bromofluorobenzene (4-BFB)	1.93	1.97	mg/Kg	1	2	96	98	77.9 - 122.4

Matrix Spike (MS-1) Spiked Sample: 291048

QC Batch: 89562
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10500	mg/Kg	100	10000	<385	105	79.4 - 120.6

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			11000	mg/Kg	100	10000	<385	110	79.4 - 120.6	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: 291070

QC Batch: 89563
Prep Batch: 75918

Date Analyzed: 2012-03-21
QC Preparation: 2012-03-16

Analyzed By: AR
Prepared By: AR

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 27 of 32
Eddy Co., NM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10400	mg/Kg	100	10000	<385	104	79.4 - 120.6

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			11100	mg/Kg	100	10000	<385	111	79.4 - 120.6	6	20

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

Matrix Spike (MS-1) Spiked Sample: 291030

QC Batch: 89635
Prep Batch: 76090

Date Analyzed: 2012-03-22
QC Preparation: 2012-03-22

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10700	mg/Kg	100	10000	654	100	79.4 - 120.6

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			11000	mg/Kg	100	10000	654	103	79.4 - 120.6	3	20

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

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 28 of 32
Eddy Co., NM

Calibration Standards

Standard (CCV-3)

QC Batch: 89298

Date Analyzed: 2012-03-12

Analyzed By: DA

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	264	106	80 - 120	2012-03-12

Standard (CCV-4)

QC Batch: 89298

Date Analyzed: 2012-03-12

Analyzed By: DA

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	258	103	80 - 120	2012-03-12

Standard (CCV-3)

QC Batch: 89329

Date Analyzed: 2012-03-13

Analyzed By: DA

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	273	109	80 - 120	2012-03-13

Standard (CCV-4)

QC Batch: 89329

Date Analyzed: 2012-03-13

Analyzed By: DA

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	299	120	80 - 120	2012-03-13

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 29 of 32
Eddy Co., NM

Standard (CCV-2)

QC Batch: 89384

Date Analyzed: 2012-03-14

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0959	96	80 - 120	2012-03-14
Toluene		1	mg/kg	0.100	0.0966	97	80 - 120	2012-03-14
Ethylbenzene		1	mg/kg	0.100	0.0943	94	80 - 120	2012-03-14
Xylene		1	mg/kg	0.300	0.273	91	80 - 120	2012-03-14

Standard (CCV-3)

QC Batch: 89384

Date Analyzed: 2012-03-14

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0946	95	80 - 120	2012-03-14
Toluene		1	mg/kg	0.100	0.0932	93	80 - 120	2012-03-14
Ethylbenzene		1	mg/kg	0.100	0.0874	87	80 - 120	2012-03-14
Xylene		1	mg/kg	0.300	0.254	85	80 - 120	2012-03-14

Standard (CCV-2)

QC Batch: 89385

Date Analyzed: 2012-03-14

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.966	97	80 - 120	2012-03-14

Standard (CCV-3)

QC Batch: 89385

Date Analyzed: 2012-03-14

Analyzed By: tc

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.992	99	80 - 120	2012-03-14

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 30 of 32
Eddy Co., NM

Standard (ICV-1)

QC Batch: 89562

Date Analyzed: 2012-03-21

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	99.2	99	85 - 115	2012-03-21

Standard (CCV-1)

QC Batch: 89562

Date Analyzed: 2012-03-21

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	2012-03-21

Standard (ICV-1)

QC Batch: 89563

Date Analyzed: 2012-03-21

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	101	101	85 - 115	2012-03-21

Standard (CCV-1)

QC Batch: 89563

Date Analyzed: 2012-03-21

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	99.0	99	85 - 115	2012-03-21

Standard (ICV-1)

QC Batch: 89635

Date Analyzed: 2012-03-22

Analyzed By: AR

Report Date: March 23, 2012
114-6401313

Work Order: 12031201
COG/Choctaw State #1

Page Number: 31 of 32
Eddy Co., NM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2012-03-22

Standard (CCV-1)

QC Batch: 89635

Date Analyzed: 2012-03-22

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	99.0	99	85 - 115	2012-03-22

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
1	NELAP	T104704392-11-3	Midland

Standard Flags

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

Attachments

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

#13031201

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 5

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

CLIENT NAME:

C06

SITE MANAGER:

Ike Tovar

PROJECT NO.:

114-6401313

PROJECT NAME:

Choctaw State #1

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

Edly Co NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHODBTEX 8021B
TEX 8015 MOD. TX1005 (Ext. to C35)
PAH 8270

ROHA 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. 8240/8260/824

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

201027

3/7

S

K

AH-1

0-1'

1

X

XX

X

028

1-1.5'

X

029

2-2.5'

X

030

3-3.5'

X

031

4-4.5'

032

5-5.5'

033

6-6.5'

034

7-7.5'

035

8-8.5'

036

✓

9-9.5'

RELINQUISHED BY: (Signature)

Date: 3/8/12

Time: 3:07 P.M.

RECEIVED BY: (Signature)

Date: 3/8/12

Time: 15:07

SAMPLED BY: (Print & Initial)

TF

Date: 3-7-12

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

HAND DELIVERED

UPS

OTHER:

RECEIVING LABORATORY:

Tetra

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

TETRA TECH CONTACT PERSON:

Ike Tovar

Results by:

RUSH Charges

Authorized:

Yes

No

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Run deeper sample if TDIH exceed 5000 mg/kg.

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

Run deeper samples if benzene exceed 10 mg/kg total BTEX exceeds 50 mg/kg.
Run deeper samples if chloroform level exceed 1,000 mg/kg.

12031201

Analysis Request of Chain of Custody Record

PAGE: 3 OF: 5

**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 Tawarez

PROJECT NO.:

114-6401313

PROJECT NAME:

Morton State #1

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE
METHODBTEX 8024B
TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

ROA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

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

RELINQUISHED BY: (Signature)

Date:

3/8/12

Time:

3/9/12

RECEIVED BY: (Signature)

Date:

3/9/12

Time:

15:07

SAMPLED BY: (Print & Initial)

TE

Date:

3-9-12

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

FEDEX

BUS

AIRBILL #:

OTHER: HAND DELIVERED

OTHER:

RECEIVING LABORATORY:

True

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

10

TETRA TECH CONTACT PERSON:

Ike Tawarez

Results by:

RUSH Charges

Authorized:

Yes

No

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

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: 4

OF: 5

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME:

COG

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6401313

PROJECT NAME:

Chertaw State #1

LAB I.D.
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

Eddy Co NM
SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE
METHOD

HCL

HNO3

ICE

NONE

TEX 80275
TEX 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. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/608

Pest. 809/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLED BY: (Print & Initial)

Date:

Time:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

SAMPLE SHIPPED BY: (Circle)

AIRBILL #:

FEDEX
HAND DELIVERED
UPS

OTHER:

RELINQUISHED BY: (Signature)

Date:

Time:

RECEIVED BY: (Signature)

Date:

Time:

TETRA TECH CONTACT PERSON:

Results by:

RECEIVING LABORATORY:

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland

STATE: TX

ZIP:

CONTACT:

PHONE:

DATE:

TIME:

SAMPLE CONDITION WHEN RECEIVED:

REMARKS:

Ike Tavaraz

RUSH Charges
Authorized:

Yes

No

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

