

# SITE INFORMATION

**Report Type: Closure Report**

2RP-453

## General Site Information:

Site:	Beech Federal #2 Tank Battery		
Company:	COG Operating LLC		
Section, Township and Range	Unit J Sec. 25 T17S R27E		
Lease Number:	LC 058181		
County:	Eddy County		
GPS:	32.80212° N	104.22891° W	
Surface Owner:	Federal		
Mineral Owner:			
Directions:	From US-82 and CR-204 (Hill Top Road), travel south on CR-204 0.7 mi, left on lease road 350', stay right 0.2 mi to location.		

## Release Data:

<b>Date Released:</b>	7/4/2010
<b>Type Release:</b>	Produced Water
<b>Source of Contamination:</b>	Heater Treater fire tube gasket failure
<b>Fluid Released:</b>	20 bbls
<b>Fluids Recovered:</b>	23 bbls

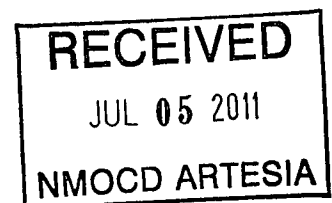
## Official Communication:

<b>Name:</b>	Pat Ellis		Kim Dorey
<b>Company:</b>	COG Operating, LLC		Tetra Tech
<b>Address:</b>	550 W. Texas Ave. Ste. 1300		1910 N. Big Spring
<b>P.O. Box</b>			
<b>City:</b>	Midland Texas, 79701		Midland, Texas
<b>Phone number:</b>	(432) 686-3023		(432) 631-0348
<b>Fax:</b>	(432) 684-7137		
<b>Email:</b>	pellis@conchoresources.com		kim.dorey@tetrattech.com

## Ranking Criteria

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

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





**TETRA TECH**

May 13, 2011

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

**Re: Closure Report for the COG Operating LLC., Beech Federal #2 Tank Battery, Unit J, Section 25, Township 17 South, Range 27 East, Eddy County, New Mexico.**

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill at the Beech Federal #2 Tank Battery, Unit J, Section 25, Township 17 South, Range 27 East, Eddy County, New Mexico. (Site). The spill site coordinates are N 32.80212°, W 104.22891°. 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 July 4, 2010, and released approximately twenty (20) barrels of produced water from a failed fire tube gasket at the heater treater. To alleviate the problem, COG personnel replaced the fire tube gasket. Due to recent rain, twenty-three (23) barrels of standing fluids were recovered. The impacted area measured approximately 30' x 110', east of the heater treater. The entire spill was contained within the facility's firewalls. The initial C-141 form is enclosed in Appendix A.

### **Groundwater**

No water wells were listed within Section 25. According to the NMOCD groundwater map, the average depth to groundwater in this area is 125' below surface. The average depth to groundwater map is shown in Appendix B.

**Tetra Tech**

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

[www.tetrattech.com](http://www.tetrattech.com)



## **Regulatory**

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

## **Soil Assessment and Analytical Results**

On August 10, 2010, Tetra Tech personnel inspected and sampled the spill area. Using a stainless steel hand auger to assess the soils a total of three (3) auger holes (AH-1 through AH-3) were installed in the spill area and one (1) auger hole (background) was installed outside the facility. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all of the submitted samples were below the RRAL for TPH and BTEX. A shallow chloride impact was detected in AH-2 and AH-3 to a depth of 1.5' to 2.0' below surface. Auger hole (AH-1) did show a deeper impact that declined with depth to 1,300 mg/kg at 3-3.5' below surface. The background auger hole showed a chloride high of 508 mg/kg at 2-2.5' below surface.

## **Remedial Work and Closure Request**

On November 10, 2010, Tetra Tech personnel supervised the excavation of the site. The soil remediation was performed according to the approved work plan. As proposed, the areas of AH-2 and AH-3 were excavated to 1'-2' bgs. A test trench (T-1) was installed near AH-1 and samples were collected for laboratory analysis. Based on the analytical results of T-1, the area near the trench was excavated to a depth of approximately 8'-10' bgs. The results of T-1 and excavation depths are shown on Table 1. The excavation areas are shown on Figure 4.



**TETRA TECH**

On November 10, 2010, Terry Gregston with the Bureau of Land Management, inspected the site and witnessed the collection of confirmation samples (CS-1, CS-2, and CS-3). The CS samples were submitted for laboratory analysis. All CS samples had chloride concentrations less than 368 mg/kg. The results of the CS samples are summarized on Table 1.

The excavated areas were backfilled with clean material and brought up to surface grade. Approximately 500 yards<sup>3</sup> were removed and hauled to CRI Inc. for proper disposal.

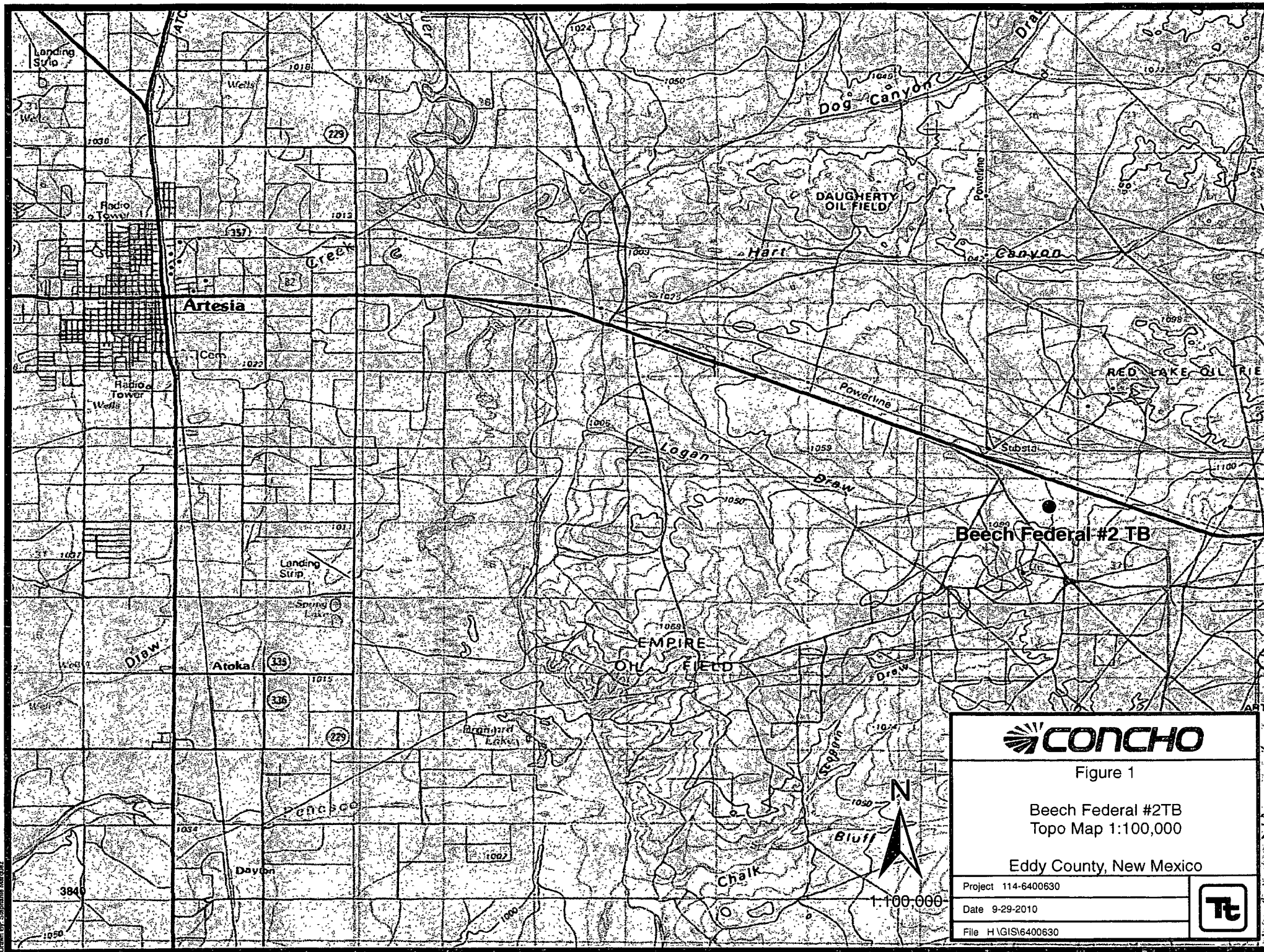
Based on the remedial activities performed at this site, COG request closure of this site. A copy of the C-141 (Final) is included in Appendix A. If you require any additional information or have any questions or comments concerning this report, please call at (432) 682-4559.

Respectfully submitted,  
TETRA TECH

Kim Dorey  
Staff II Geologist

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

## FIGURES



 **CONCHO**

Figure 1

Beech Federal #2TB  
Topo Map 1:100,000

Eddy County, New Mexico

Project 114-6400630

Date 9-29-2010

File H\GIS\6400630



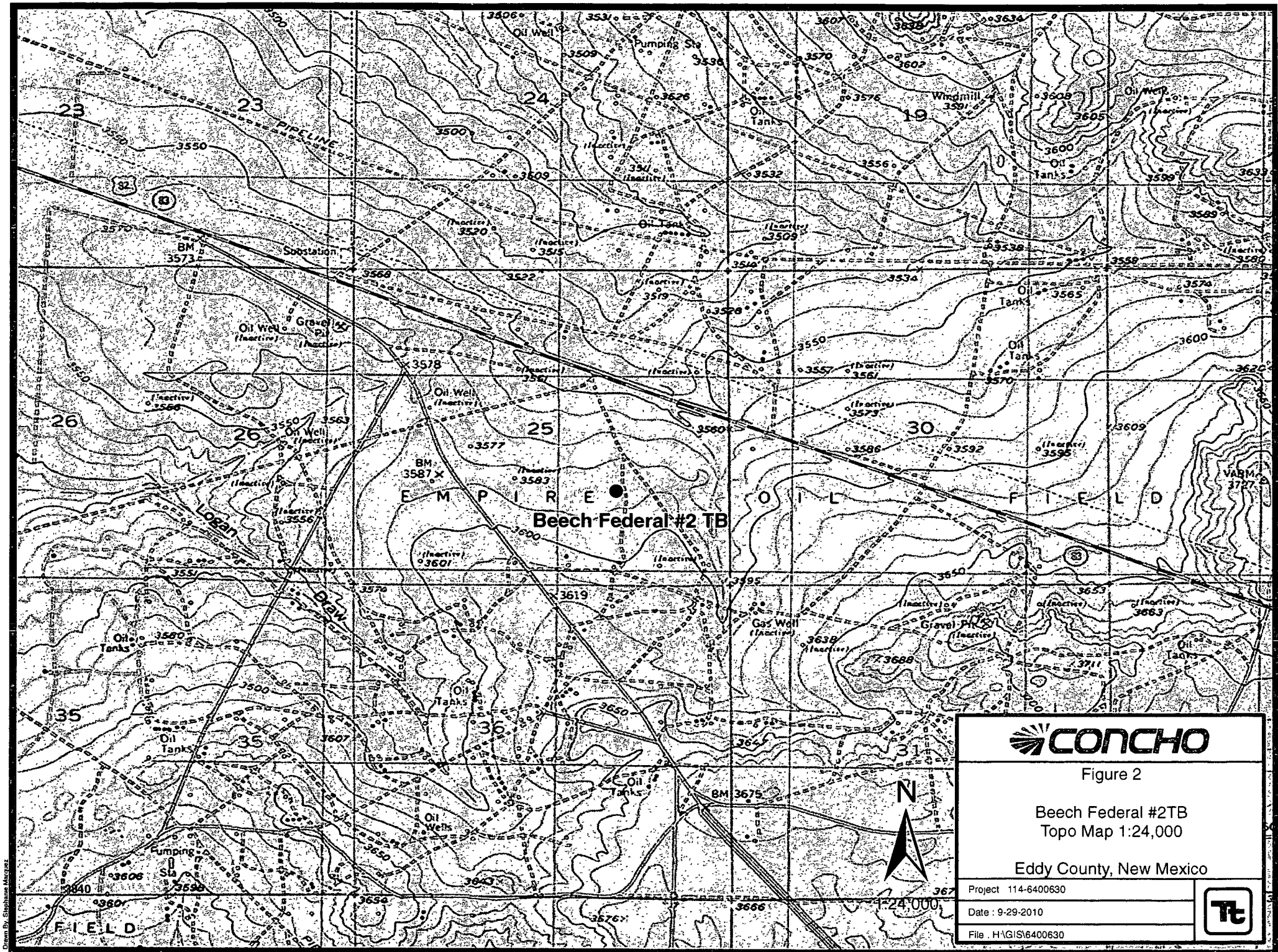


Figure 2

Beech Federal #2TB  
Topo Map 1:24,000

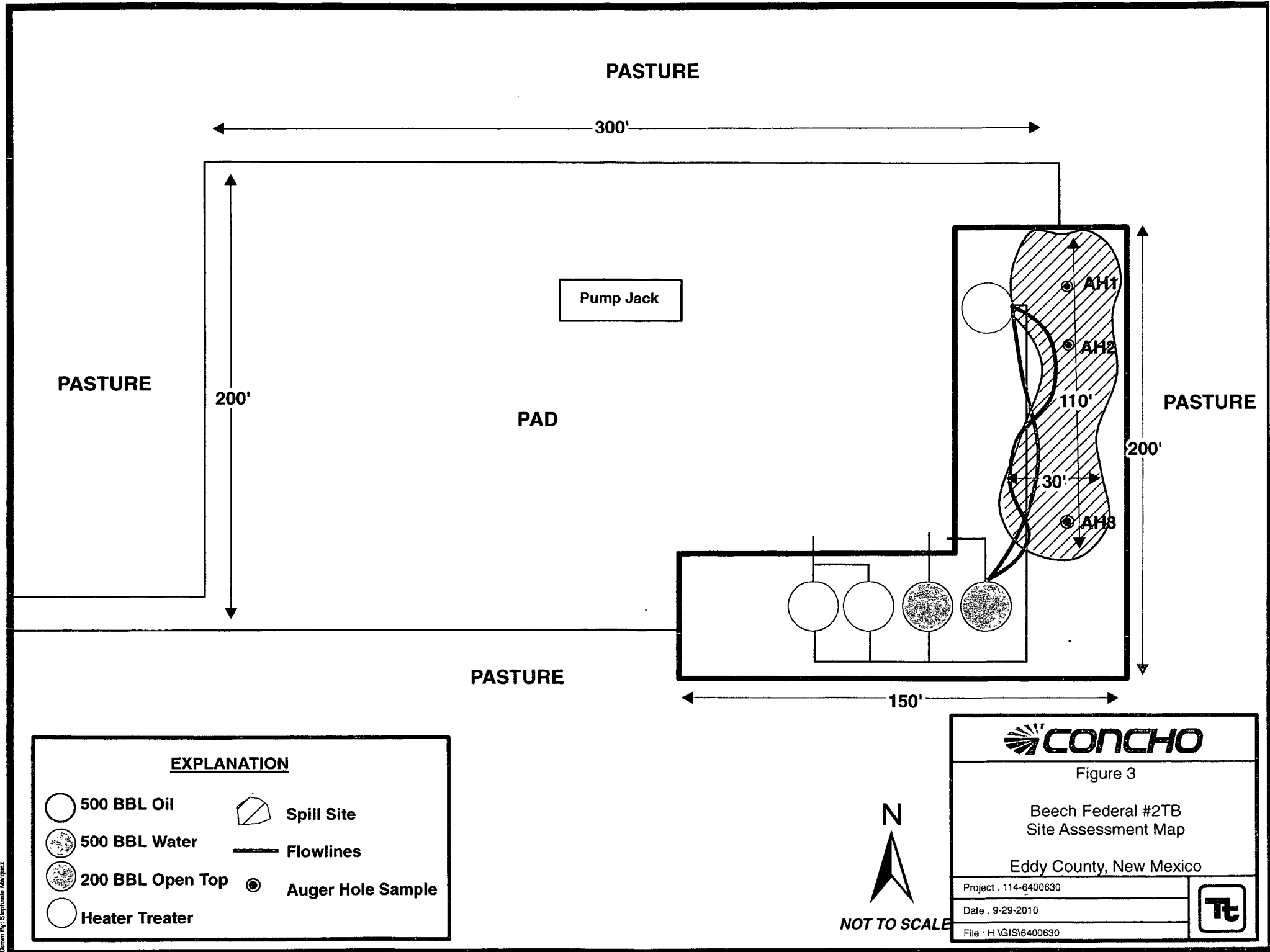
Eddy County, New Mexico

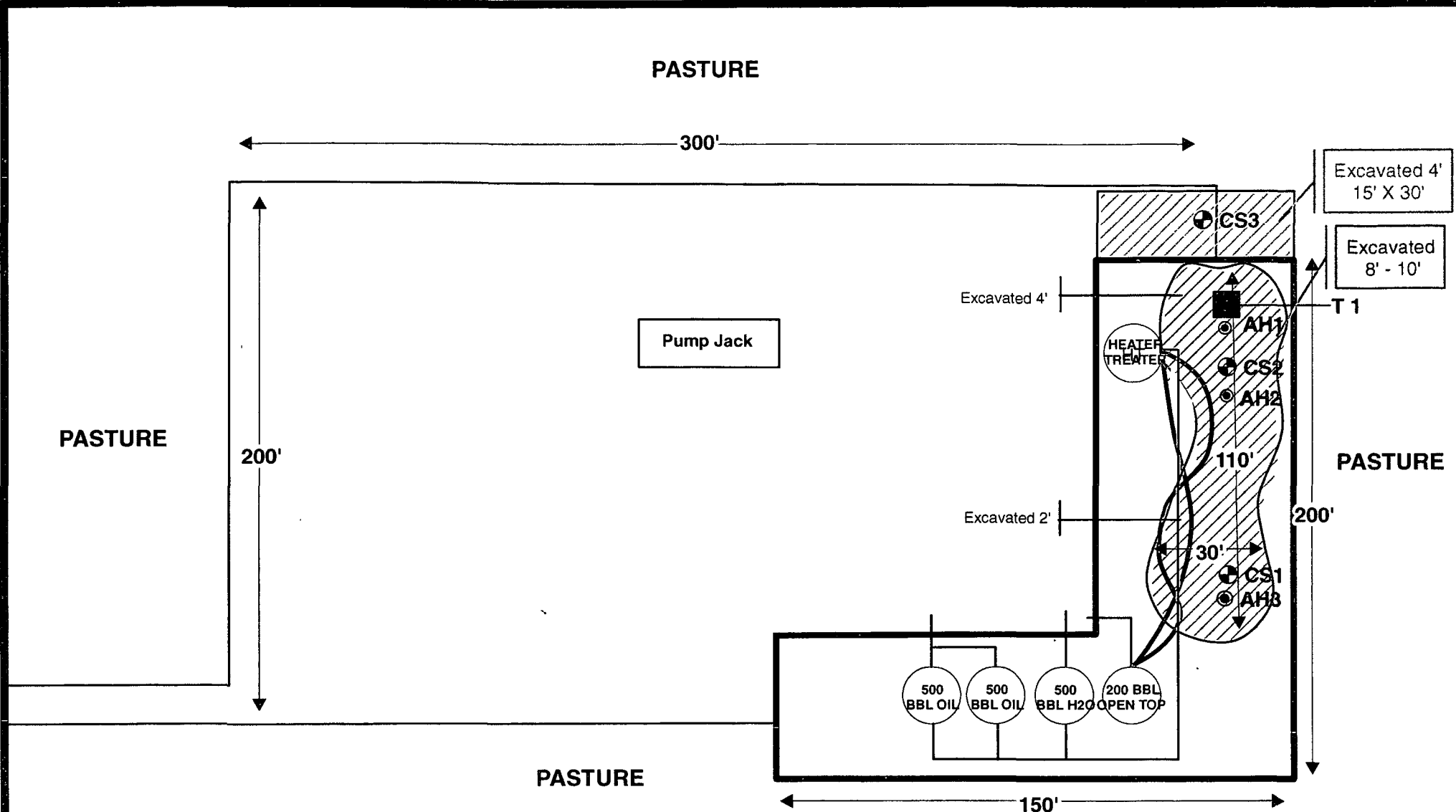
Project 114-6400630

Date : 9-29-2010





File : H:\GIS\6400630








**EXPLANATION**

-  Spill Site
-  Flowlines
-  Auger Hole Samples
-  Confirmation Samples

N




NOT TO SCALE

**CONCHO**

Figure 4

Beech Federal #2 TB  
Excavation Depth Map

Eddy County, New Mexico

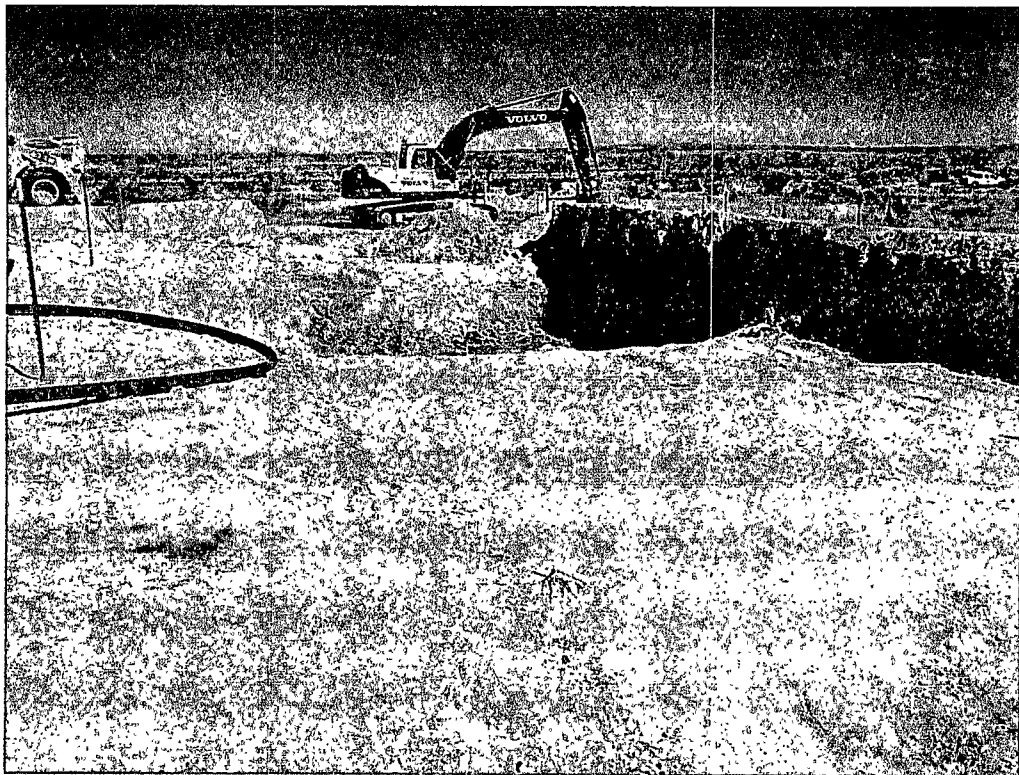
Project : 114-6400630	
Date : 9-29-2010	
File : H\GIS\6400630	

Drawn By: Stephanie Marquez

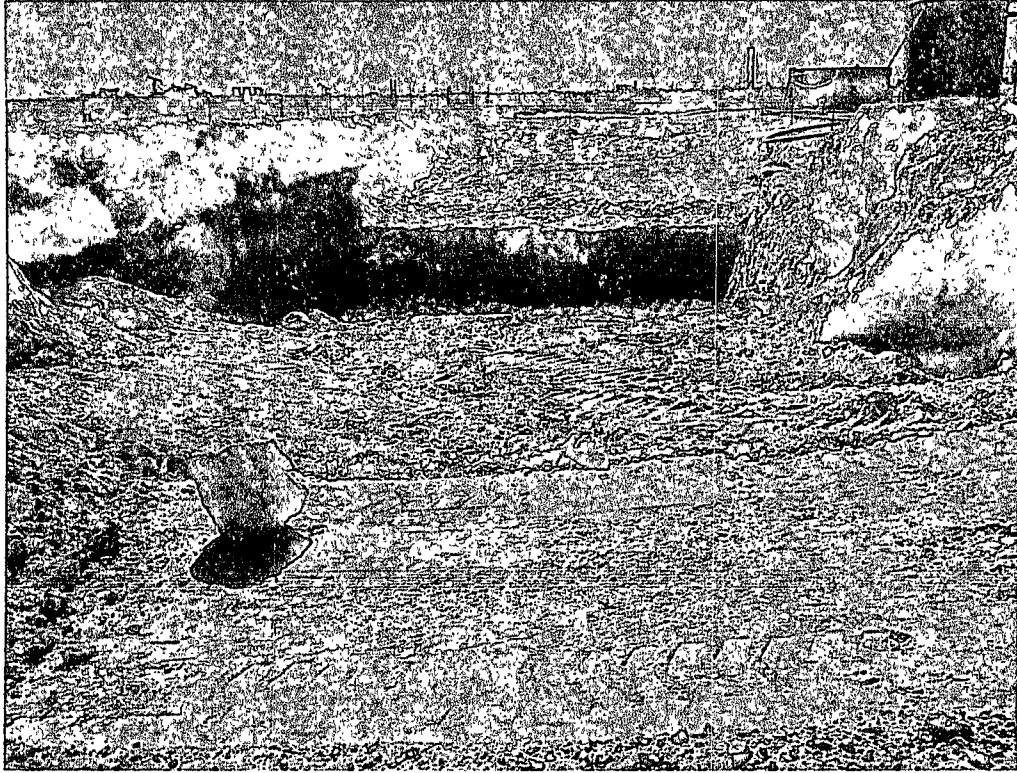
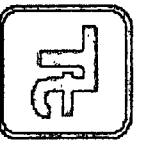
## **PHOTOGRAPHS**



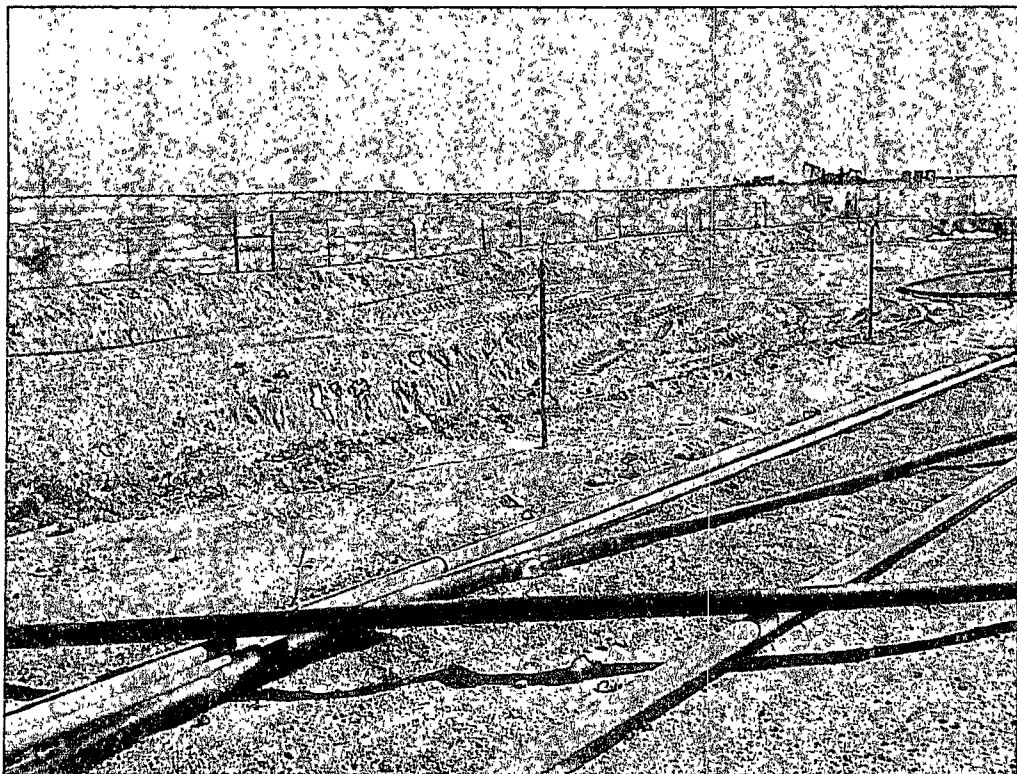
Area near AH-1 and AH-2 (8/10/10)



Excavation near T-1 (11/10/10)



Final depth approximately 8'-10' bgs



Backfilling area with clean material


## **TABLES**

**Table 1**  
**COG Operating LLC.**  
**BEECH FEDERAL #2 TANK BATTERY**  
**EDDY COUNTY, NEW MEXICO**

[illegible]

**Table 1**  
**COG Operating LLC.**  
**BEECH FEDERAL #2 TANK BATTERY**  
**EDDY COUNTY, NEW MEXICO**

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
<b>AH-3</b>	8/10/2010	0-1'			X	<2.00	<50.0	<50.0	-	-	-	-	7,520
	"	1-1.5'			X								4,010
	"	2-2.5'		X		-	-	-	-	-	-	-	407
<b>CS-1</b>	11/10/2010	0-1'	2' bottom	X		-	-	-	-	-	-	-	368
<b>CS-3</b>	11/10/2010	0-1'	3' bottom	X		-	-	-	-	-	-	-	<200
<b>BG</b>	8/10/2010	0-1'		X		<2.00	<50.0	<50.0	-	-	-	-	212
	"	1-1.5'		X		-	-	-	-	-	-	-	317
	"	2-2.5'		X		-	-	-	-	-	-	-	508
	"	3-3.5'		X		-	-	-	-	-	-	-	328

	Excavation Depths	AH	Auger Hole Sample
(--)	Not Analyzed	BG	Background Sample
BEB	Below Excavation Bottom	CS	Confirmation Samples
		T-1	Backhoe Test Trench

## **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  
side of

**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	Beech Federal #2 Tank Battery	Facility Type	Tank Battery
Surface Owner	Federal	Mineral Owner	
Lease No	NMLC-058181		

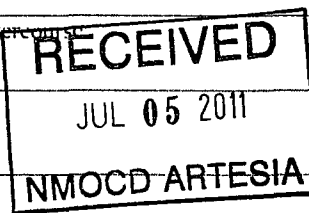
**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	25	17S	27E					Eddy

Latitude 32 48.140 Longitude 104 13.725

**NATURE OF RELEASE**

Type of Release	Produced Water	Volume of Release	20bbls	Volume Recovered	23bbls
Source of Release	Heater Treater	Date and Hour of Occurrence	07/04/2010	Date and Hour of Discovery	07/04/2010 9:00 a.m.
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?	Date and Hour				
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse?			



If a Watercourse was Impacted, Describe Fully \*

Describe Cause of Problem and Remedial Action Taken \*

Heater treater fire tube gasket failed. The heater treater fire tube gasket has been replaced and the heater treater has been put back into service.

Describe Area Affected and Cleanup Action Taken \*

Initially 20bbls of produced water was released from the heater treater. Due to rainwater, we were able to recover 23bbls of free fluid from a low area where the fluid pooled behind the heater treater. All free fluids were recovered. The dimensions of the pooling area was 20' x 40'. All fluid was contained inside the firewall of the facility. (The closest well location to the release is the Beech Federal #2, API# 30-015-31790, Unit J, Sec 25-T17S-R27E, 1650' FSL 1650' F.L. 32 8023065 - 104,229053). 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			
Printed Name	Josh Russo		
Title	HSE Coordinator		
E-mail Address	jrusso@conchoresources.com		
Date	07/16/2010	Phone	432-212-2399
OIL CONSERVATION DIVISION		Approved by District Supervisor	
Approval Date		Expiration Date	
Conditions of Approval		Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary

## **APPENDIX B**

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - Beech Federal #2 Tank Battery**  
**Eddy County, New Mexico**

16 South 26 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 27 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 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

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

18 South 26 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 27 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	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



# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
RA 01493	IRR	ED		2	1	27	17S	27E		568468	3630529*	876		
RA 01716 S	COM	ED		4	4	3	16	17S	27E	566953	3632420*	1200		
RA 02966	DOM	ED		4	4	4	05	17S	27E	566117	3635707*	80	30	50
RA 03279	DOM	ED		3	2	07	17S	27E		564020	3635011*	250	14	236
RA 03661	PRO	ED		3	2	3	32	17S	27E	565186	3628038*	330	140	190
RA 03664	DOM	CH		3	2	3	32	17S	27E	565186	3628038*	400	100	300
RA 03694	DOM	ED		4		17	17S	27E		565854	3632721*	300	90	210
RA 03816	DOM	CH		4		17	17S	27E		565854	3632721*	945	931	14
RA 04114	DOM	LE		4	4	3	16	17S	27E	566953	3632420*	1042	260	782
RA 04153	DOM	CH		4	4	3	16	17S	27E	566953	3632420*	1220	175	1045
RA 04320	DOM	ED		3		17	17S	27E		565053	3632719*	120	50	70
RA 04554	PRO	ED		1		23	17S	27E		569859	3631947*	220	40	180
RA 04561	PRO	ED		4	2	26	17S	27E		570871	3630142*	250		
RA 04786	DOM	ED		4	3	2	18	17S	27E	564133	3633277*	138	111	27
RA 06531	DOM	ED		4	1	4	17	17S	27E	565747	3632821*	200		
RA 06560	DOM	CH		2	1	2	20	17S	27E	565757	3632217*	133	80	53
RA 06635	DOM	ED		2	2	2	18	17S	27E	564531	3633852*	325	60	265
RA 07774	STK	ED		3	2	1	11	17S	27E	569933	3635251*	100	50	50
RA 07844	EXP	ED		3	4	3	16	17S	27E	566753	3632420*	1300	180	1120
RA 07844 EXPL	EXP	ED		4	3	16	17S	27E		566854	3632521*	1300	180	1120
RA 08823	DOM	ED		1	1	3	17	17S	27E	564745	3633019*	348	60	288
Average Depth to Water												150 feet		
Minimum Depth												14 feet		
Maximum Depth												931 feet		

**Record Count:** 21**PLSS Search:****Section(s):** 1-36**Township:** 17S**Range:** 27E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data

9/30/10 9:22 AM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER

## **APPENDIX C**

## Summary Report

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

Report Date: August 23, 2010

Work Order: 10081609



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
241062	AH-1 0-1'	soil	2010-08-10	00:00	2010-08-13
241063	AH-1 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241064	AH-1 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241065	AH-1 3-3.5'	soil	2010-08-10	00:00	2010-08-13
241066	AH-2 0-1'	soil	2010-08-10	00:00	2010-08-13
241067	AH-2 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241068	AH-2 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241069	AH-2 3-3.5'	soil	2010-08-10	00:00	2010-08-13
241070	AH-2 4-4.5'	soil	2010-08-10	00:00	2010-08-13
241071	AH-2 5-5.5'	soil	2010-08-10	00:00	2010-08-13
241072	AH-3 0-1'	soil	2010-08-10	00:00	2010-08-13
241073	AH-3 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241074	AH-3 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241075	BG-Background 0-1'	soil	2010-08-10	00:00	2010-08-13
241076	BG-Background 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241077	BG-Background 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241078	BG-Background 3-3.5'	soil	2010-08-10	00:00	2010-08-13

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)
241062 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
241066 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
241072 - AH-3 0-1'					<50.0	<2.00
241075 - BG-Background 0-1'					<50.0	<2.00

Sample: 241062 - AH-1 0-1'

---

Param	Flag	Result	Units	RL
Chloride		10100	mg/Kg	4.00

---

**Sample: 241063 - AH-1 1-1.5'**

---

Param	Flag	Result	Units	RL
Chloride		10500	mg/Kg	4.00

---

**Sample: 241064 - AH-1 2-2.5'**

---

Param	Flag	Result	Units	RL
Chloride		9380	mg/Kg	4.00

---

**Sample: 241065 - AH-1 3-3.5'**

---

Param	Flag	Result	Units	RL
Chloride		1300	mg/Kg	4.00

---

**Sample: 241066 - AH-2 0-1'**

---

Param	Flag	Result	Units	RL
Chloride		9970	mg/Kg	4.00

---

**Sample: 241067 - AH-2 1-1.5'**

---

Param	Flag	Result	Units	RL
Chloride		4350	mg/Kg	4.00

---

**Sample: 241068 - AH-2 2-2.5'**

---

Param	Flag	Result	Units	RL
Chloride		368	mg/Kg	4.00

---

**Sample: 241069 - AH-2 3-3.5'**

---

Param	Flag	Result	Units	RL
Chloride		259	mg/Kg	4.00

---

**Sample: 241070 - AH-2 4-4.5'**

Param	Flag	Result	Units	RL
Chloride		353	mg/Kg	4.00

**Sample: 241071 - AH-2 5-5.5'**

Param	Flag	Result	Units	RL
Chloride		244	mg/Kg	4.00

**Sample: 241072 - AH-3 0-1'**

Param	Flag	Result	Units	RL
Chloride		7520	mg/Kg	4.00

**Sample: 241073 - AH-3 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		4010	mg/Kg	4.00

**Sample: 241074 - AH-3 2-2.5'**

Param	Flag	Result	Units	RL
Chloride		407	mg/Kg	4.00

**Sample: 241075 - BG-Background 0-1'**

Param	Flag	Result	Units	RL
Chloride		212	mg/Kg	4.00

**Sample: 241076 - BG-Background 1-1.5'**

Param	Flag	Result	Units	RL
Chloride		317	mg/Kg	4.00

**Sample: 241077 - BG-Background 2-2.5'**

Param	Flag	Result	Units	RL
Chloride		508	mg/Kg	4.00

**Sample: 241078 - BG-Background 3-3.5'**

Param	Flag	Result	Units	RL
Chloride		<b>328</b>	mg/Kg	4.00

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## Certifications

**WBENC:** 237019

**HUB:** 1752439743100-86536  
**NCTRCA** WFWB38444Y0909

**DBE:** VN 20657

## NELAP Certifications

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

**El Paso:** T104704221-08-TX  
LELAP-02002

**Midland:** T104704392-08-TX

## Analytical and Quality Control Report

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

Report Date: August 23, 2010

Work Order: 10081609



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

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
241062	AH-1 0-1'	soil	2010-08-10	00:00	2010-08-13
241063	AH-1 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241064	AH-1 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241065	AH-1 3-3.5'	soil	2010-08-10	00:00	2010-08-13
241066	AH-2 0-1'	soil	2010-08-10	00:00	2010-08-13
241067	AH-2 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241068	AH-2 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241069	AH-2 3-3.5'	soil	2010-08-10	00:00	2010-08-13
241070	AH-2 4-4.5'	soil	2010-08-10	00:00	2010-08-13
241071	AH-2 5-5.5'	soil	2010-08-10	00:00	2010-08-13

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
241072	AH-3 0-1'	soil	2010-08-10	00:00	2010-08-13
241073	AH-3 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241074	AH-3 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241075	BG-Background 0-1'	soil	2010-08-10	00:00	2010-08-13
241076	BG-Background 1-1.5'	soil	2010-08-10	00:00	2010-08-13
241077	BG-Background 2-2.5'	soil	2010-08-10	00:00	2010-08-13
241078	BG-Background 3-3.5'	soil	2010-08-10	00:00	2010-08-13

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




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

#### Standard Flags

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

## Case Narrative

Samples for project COG/Beech Fed. #2 TB were received by TraceAnalysis, Inc. on 2010-08-13 and assigned to work order 10081609. Samples for work order 10081609 were received intact at a temperature of 18.0 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	62330	2010-08-18 at 09:15	72769	2010-08-18 at 11:58
Chloride (Titration)	SM 4500-Cl B	62279	2010-08-16 at 10:08	72661	2010-08-16 at 16:26
Chloride (Titration)	SM 4500-Cl B	62280	2010-08-16 at 10:09	72662	2010-08-16 at 16:27
Chloride (Titration)	SM 4500-Cl B	62281	2010-08-16 at 10:09	72663	2010-08-16 at 16:28
TPH DRO - NEW	S 8015 D	62397	2010-08-19 at 10:46	72774	2010-08-19 at 10:46
TPH GRO	S 8015 D	62330	2010-08-18 at 09:15	72770	2010-08-18 at 12:25

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 10081609 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.

Samples received on ice.

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

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## Analytical Report

**Sample: 241062 - AH-1 0-1'**

Laboratory: Midland  
Analysis: BTEX  
QC Batch: 72769  
Prep Batch: 62330

Analytical Method: S 8021B  
Date Analyzed: 2010-08-18  
Sample Preparation: 2010-08-18

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

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.51	mg/Kg	1	2.00	76	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.41	mg/Kg	1	2.00	70	38.4 - 157

**Sample: 241062 - AH-1 0-1'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 72661  
Prep Batch: 62279

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2010-08-16  
Sample Preparation: 2010-08-16

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		10100	mg/Kg	100	4.00

**Sample: 241062 - AH-1 0-1'**

Laboratory: Midland  
Analysis: TPH DRO - NEW  
QC Batch: 72774  
Prep Batch: 62397

Analytical Method: S 8015 D  
Date Analyzed: 2010-08-19  
Sample Preparation: 2010-08-19

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

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

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		102	mg/Kg	1	100	102	70 - 130

**Sample: 241062 - AH-1 0-1'**

Laboratory: Midland  
Analysis: TPH GRO  
QC Batch: 72770  
Prep Batch: 62330

Analytical Method: S 8015 D  
Date Analyzed: 2010-08-18  
Sample Preparation: 2010-08-18

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

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.72	mg/Kg	1	2.00	86	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.54	mg/Kg	1	2.00	77	42 - 159

**Sample: 241063 - AH-1 1-1.5'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 72662  
Prep Batch: 62280

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2010-08-16  
Sample Preparation: 2010-08-16

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		10500	mg/Kg	100	4.00

**Sample: 241064 - AH-1 2-2.5'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 72662  
Prep Batch: 62280

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2010-08-16  
Sample Preparation: 2010-08-16

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9380	mg/Kg	100	4.00

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**Sample: 241065 - AH-1 3-3.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1300	mg/Kg	100	4.00

**Sample: 241066 - AH-2 0-1'**

Laboratory:	Midland	Analytical Method:	S 8021B	Prep Method:	S 5035
Analysis:	BTEX	Date Analyzed:	2010-08-18	Analyzed By:	AG
QC Batch:	72769	Sample Preparation:	2010-08-18	Prepared By:	AG
Prep Batch:	62330				

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.41	mg/Kg	1	2.00	70	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.31	mg/Kg	1	2.00	66	38.4 - 157

**Sample: 241066 - AH-2 0-1'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9970	mg/Kg	100	4.00

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**Sample: 241066 - AH-2 0-1'**

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2010-08-19	Analyzed By:	kg
QC Batch:	72774	Sample Preparation:	2010-08-19	Prepared By:	kg
Prep Batch:	62397				

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

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

**Sample: 241066 - AH-2 0-1'**

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2010-08-18	Analyzed By:	AG
QC Batch:	72770	Sample Preparation:	2010-08-18	Prepared By:	AG
Prep Batch:	62330				

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.58	mg/Kg	1	2.00	79	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.40	mg/Kg	1	2.00	70	42 - 159

**Sample: 241067 - AH-2 1-1.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4350	mg/Kg	100	4.00

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**Sample: 241068 - AH-2 2-2.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		368	mg/Kg	50	4.00

**Sample: 241069 - AH-2 3-3.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		259	mg/Kg	50	4.00

**Sample: 241070 - AH-2 4-4.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		353	mg/Kg	50	4.00

**Sample: 241071 - AH-2 5-5.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		244	mg/Kg	50	4.00

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**Sample: 241072 - AH-3 0-1'**

Laboratory	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72662	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62280				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7520	mg/Kg	100	4.00

**Sample: 241072 - AH-3 0-1'**

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2010-08-19	Analyzed By:	kg
QC Batch:	72774	Sample Preparation:	2010-08-19	Prepared By:	kg
Prep Batch:	62397				

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

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

**Sample: 241072 - AH-3 0-1'**

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	S 5035
Analysis:	TPH GRO	Date Analyzed:	2010-08-18	Analyzed By:	AG
QC Batch:	72770	Sample Preparation:	2010-08-18	Prepared By:	AG
Prep Batch:	62330				

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.29	mg/Kg	1	2.00	64	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.17	mg/Kg	1	2.00	58	42 - 159

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**Sample: 241073 - AH-3 1-1.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72663	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62281				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4010	mg/Kg	100	4.00

**Sample: 241074 - AH-3 2-2.5'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72663	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62281				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		407	mg/Kg	50	4.00

**Sample: 241075 - BG-Background 0-1'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-08-16	Analyzed By:	AR
QC Batch:	72663	Sample Preparation:	2010-08-16	Prepared By:	AR
Prep Batch:	62281				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		212	mg/Kg	50	4.00

**Sample: 241075 - BG-Background 0-1'**

Laboratory:	Midland	Analytical Method:	S 8015 D	Prep Method:	N/A
Analysis:	TPH DRO - NEW	Date Analyzed:	2010-08-19	Analyzed By:	kg
QC Batch:	72774	Sample Preparation:	2010-08-19	Prepared By:	kg
Prep Batch:	62397				

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

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		79.9	mg/Kg	1	100	80	70 - 130

**Sample: 241075 - BG-Background 0-1'**

Laboratory: Midland  
Analysis: TPH GRO  
QC Batch: 72770  
Prep Batch: 62330

Analytical Method: S 8015 D  
Date Analyzed: 2010-08-18  
Sample Preparation: 2010-08-18

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

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.49	mg/Kg	1	2.00	74	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.33	mg/Kg	1	2.00	66	42 - 159

**Sample: 241076 - BG-Background 1-1.5'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 72663  
Prep Batch: 62281

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2010-08-16  
Sample Preparation: 2010-08-16

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		317	mg/Kg	50	4.00

**Sample: 241077 - BG-Background 2-2.5'**

Laboratory: Midland  
Analysis: Chloride (Titration)  
QC Batch: 72663  
Prep Batch: 62281

Analytical Method: SM 4500-Cl B  
Date Analyzed: 2010-08-16  
Sample Preparation: 2010-08-16

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		508	mg/Kg	50	4.00

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**Sample: 241078 - BG-Background 3-3.5'**

Laboratory:	Midland		
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B
QC Batch:	72663	Date Analyzed:	2010-08-16
Prep Batch:	62281	Sample Preparation:	2010-08-16
		Prep Method:	N/A
		Analyzed By:	AR
		Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		328	mg/Kg	50	4.00

**Method Blank (1)**      QC Batch: 72661

QC Batch:	72661	Date Analyzed:	2010-08-16	Analyzed By:	AR
Prep Batch:	62279	QC Preparation:	2010-08-16	Prepared By:	AR

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

**Method Blank (1)**      QC Batch: 72662

QC Batch:	72662	Date Analyzed:	2010-08-16	Analyzed By:	AR
Prep Batch:	62280	QC Preparation:	2010-08-16	Prepared By:	AR

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

**Method Blank (1)**      QC Batch: 72663

QC Batch:	72663	Date Analyzed:	2010-08-16	Analyzed By:	AR
Prep Batch:	62281	QC Preparation:	2010-08-16	Prepared By:	AR

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

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**Method Blank (1)**      QC Batch: 72769

QC Batch: 72769  
Prep Batch. 62330

Date Analyzed: 2010-08-18  
QC Preparation: 2010-08-18

Analyzed By: AG  
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.0150	mg/Kg	0.02
Toluene		<0.00950	mg/Kg	0.02
Ethylbenzene		<0.0106	mg/Kg	0.02
Xylene		<0.00930	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.78	mg/Kg	1	2.00	89	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.48	mg/Kg	1	2.00	74	55.4 - 132

**Method Blank (1)**      QC Batch: 72770

QC Batch: 72770  
Prep Batch: 62330

Date Analyzed: 2010-08-18  
QC Preparation: 2010-08-18

Analyzed By: AG  
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<1.65	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.99	mg/Kg	1	2.00	100	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.60	mg/Kg	1	2.00	80	52.4 - 130

**Method Blank (1)**      QC Batch: 72774

QC Batch: 72774  
Prep Batch: 62397

Date Analyzed: 2010-08-19  
QC Preparation: 2010-08-19

Analyzed By: kg  
Prepared By: kg

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		91.6	mg/Kg	1	100	92	70 - 130

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#### Laboratory Control Spike (LCS-1)

QC Batch: 72661  
Prep Batch: 62279

Date Analyzed: 2010-08-16  
QC Preparation: 2010-08-16

Analyzed By: AR  
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec. Limit
Chloride	97.6	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	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: 72662  
Prep Batch: 62280

Date Analyzed: 2010-08-16  
QC Preparation: 2010-08-16

Analyzed By: AR  
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.1	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<2.18	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: 72663  
Prep Batch: 62281

Date Analyzed: 2010-08-16  
QC Preparation: 2010-08-16

Analyzed By: AR  
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.0	mg/Kg	1	100	<2.18	97	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	104	mg/Kg	1	100	<2.18	104	85 - 115	7	20

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

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#### Laboratory Control Spike (LCS-1)

QC Batch 72769  
Prep Batch: 62330

Date Analyzed 2010-08-18  
QC Preparation. 2010-08-18

Analyzed By: AG  
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.96	mg/Kg	1	2.00	<0.0150	98	81.9 - 108
Toluene	1.89	mg/Kg	1	2.00	<0.00950	94	81.9 - 107
Ethylbenzene	1.76	mg/Kg	1	2.00	<0.0106	88	78.4 - 107
Xylene	5.34	mg/Kg	1	6.00	<0.00930	89	79.1 - 107

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.97	mg/Kg	1	2.00	<0.0150	98	81.9 - 108	0	20
Toluene	1.91	mg/Kg	1	2.00	<0.00950	96	81.9 - 107	1	20
Ethylbenzene	1.77	mg/Kg	1	2.00	<0.0106	88	78.4 - 107	1	20
Xylene	5.38	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.76	1.73	mg/Kg	1	2.00	88	86	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.65	1.64	mg/Kg	1	2.00	82	82	69.8 - 121

#### Laboratory Control Spike (LCS-1)

QC Batch: 72770  
Prep Batch: 62330

Date Analyzed: 2010-08-18  
QC Preparation: 2010-08-18

Analyzed By: AG  
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec. Limit
GRO	15.2	mg/Kg	1	20.0	<1.65	76	69.9 - 95.4

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

Param	LCSD Result	Units	Dil	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	14.4	mg/Kg	1	20.0	<1.65	72	69.9 - 95.4	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.00	1.64	mg/Kg	1	2.00	100	82	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.78	1.59	mg/Kg	1	2.00	89	80	68.2 - 132

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### Laboratory Control Spike (LCS-1)

QC Batch: 72774  
Prep Batch: 62397

Date Analyzed: 2010-08-19  
QC Preparation: 2010-08-19

Analyzed By: kg  
Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	204	mg/Kg	1	250	<14.5	82	57.4 - 133.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	215	mg/Kg	1	250	<14.5	86	57.4 - 133.4	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	116	103	mg/Kg	1	100	116	103	70 - 130

### Matrix Spike (MS-1) Spiked Sample. 241062

QC Batch: 72661  
Prep Batch: 62279

Date Analyzed: 2010-08-16  
QC Preparation: 2010-08-16

Analyzed By: AR  
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	19500	mg/Kg	100	10000	10100	94	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	20200	mg/Kg	100	10000	10100	101	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: 241072

QC Batch: 72662  
Prep Batch: 62280

Date Analyzed: 2010-08-16  
QC Preparation: 2010-08-16

Analyzed By: AR  
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	18200	mg/Kg	100	10000	7520	107	85 - 115

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

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Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	18800	mg/Kg	100	10000	7520	113	85 - 115	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: 241120

QC Batch: 72663 Date Analyzed: 2010-08-16 Analyzed By: AR  
Prep Batch: 62281 QC Preparation: 2010-08-16 Prepared By: AR

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

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10500	mg/Kg	100	10000	<218	103	85 - 115	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: 241219

QC Batch: 72769 Date Analyzed: 2010-08-18 Analyzed By: AG  
Prep Batch: 62330 QC Preparation: 2010-08-18 Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.15	mg/Kg	1	2.00	<0.0150	108	80.5 - 112
Toluene	2.13	mg/Kg	1	2.00	<0.00950	106	82.4 - 113
Ethylbenzene	2.15	mg/Kg	1	2.00	<0.0106	108	83.9 - 114
Xylene	6.47	mg/Kg	1	6.00	<0.00930	108	84 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	<sup>1</sup> 1.52	mg/Kg	1	2.00	<0.0150	76	80.5 - 112	34	20
Toluene	<sup>2</sup> 1.50	mg/Kg	1	2.00	<0.00950	75	82.4 - 113	35	20
Ethylbenzene	<sup>3</sup> 1.51	mg/Kg	1	2.00	<0.0106	76	83.9 - 114	35	20
Xylene	<sup>4</sup> 4.57	mg/Kg	1	6.00	<0.00930	76	84 - 114	34	20

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

<sup>1</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>2</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>3</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>4</sup> Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.74	1.18	mg/Kg	1	2	87	59	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1.67	1.14	mg/Kg	1	2	84	57	35.5 - 129

**Matrix Spike (MS-1)** Spiked Sample: 241299

QC Batch: 72770 Date Analyzed: 2010-08-18 Analyzed By: AG  
Prep Batch: 62330 QC Preparation: 2010-08-18 Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.6	mg/Kg	1	20.0	<1.65	73	61.8 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.7	mg/Kg	1	20.0	<1.65	78	61.8 - 114	7	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)	1.12	1.23	mg/Kg	1	2	56	62	50 - 162
4-Bromofluorobenzene (4-BFB)	1.16	1.27	mg/Kg	1	2	58	64	50 - 162

**Matrix Spike (MS-1)** Spiked Sample: 241291

QC Batch: 72774 Date Analyzed: 2010-08-19 Analyzed By: kg  
Prep Batch: 62397 QC Preparation: 2010-08-19 Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	220	mg/Kg	1	250	<14.5	88	35.2 - 167.1

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	228	mg/Kg	1	250	<14.5	91	35.2 - 167.1	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	107	106	mg/Kg	1	100	107	106	70 - 130

Report Date: August 23, 2010  
114-6400630

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**Standard (ICV-1)**

QC Batch: 72661

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-08-16

**Standard (CCV-1)**

QC Batch: 72661

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.8	99	85 - 115	2010-08-16

**Standard (ICV-1)**

QC Batch: 72662

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2010-08-16

**Standard (CCV-1)**

QC Batch: 72662

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2010-08-16

**Standard (ICV-1)**

QC Batch: 72663

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-08-16

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114-6400630

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**Standard (CCV-1)**

QC Batch: 72663

Date Analyzed: 2010-08-16

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.0	98	85 - 115	2010-08-16

**Standard (CCV-1)**

QC Batch: 72769

Date Analyzed: 2010-08-18

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0958	96	80 - 120	2010-08-18
Toluene		mg/Kg	0.100	0.0921	92	80 - 120	2010-08-18
Ethylbenzene		mg/Kg	0.100	0.0853	85	80 - 120	2010-08-18
Xylene		mg/Kg	0.300	0.260	87	80 - 120	2010-08-18

**Standard (CCV-2)**

QC Batch: 72769

Date Analyzed: 2010-08-18

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0980	98	80 - 120	2010-08-18
Toluene		mg/Kg	0.100	0.0947	95	80 - 120	2010-08-18
Ethylbenzene		mg/Kg	0.100	0.0888	89	80 - 120	2010-08-18
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-08-18

**Standard (CCV-1)**

QC Batch: 72770

Date Analyzed: 2010-08-18

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.972	97	80 - 120	2010-08-18

**Standard (CCV-2)**

QC Batch: 72770

Date Analyzed: 2010-08-18

Analyzed By: AG

Report Date: August 23, 2010  
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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.07	107	80 - 120	2010-08-18

**Standard (CCV-1)**

QC Batch: 72774

Date Analyzed: 2010-08-19

Analyzed By: kg

Param	Flag	Units	CCVs True Conc	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	215	86	80 - 120	2010-08-19

**Standard (CCV-2)**

QC Batch: 72774

Date Analyzed: 2010-08-19

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	233	93	80 - 120	2010-08-19

WO#: 16081609

## Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

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

 ANALYSIS REQUEST  
 (Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PROJECT NO.:

PROJECT NAME:

LAB I.D.  
NUMBER

DATE

TIME

MATRIX

COMP.

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

PRESERVATIVE  
METHOD

HCL

HNO3

ICE

NONE

BTX 8021B

TPH 8015 MOD. TX1005 (Ext. to C35)

PAH 8270

PCRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

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

241062

8/10

S

X

AH-1

0-1'

1

X

X

X

X

063

AH-1

1-1.5'

064

AH-1

2-2.5'

065

AH-1

3-3.5'

066

AH-2

0-1'

067

AH-2

1-1.5'

068

AH-2

2-2.5'

069

AH-2

3-3.5'

070

AH-2

4-4.5'

071

AH-2

5-5.5'

WO #: 10081609

# Analysis Request of Chain of Custody Record



**TETRA TECH**

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

PAGE: 2 OF: 2

ANALYSIS REQUEST  
(Circle or Specify Method No.)

CLIENT NAME:

SITE MANAGER:

PROJECT NO.:

PROJECT NAME:

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

ECRA Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/608

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

241072

8/10

S

X

AH-3

0-1'

1

073

AH-3

1'-1.5'

074

AH-3

2'-2.5'

075

BG

076

BG

077

BG

## Summary Report

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

Report Date: November 23, 2010

Work Order: 10111929



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
251022	CS-1 0-1 (2' BEB)	soil	2010-11-10	00:00	2010-11-19
251023	CS-2 0-1 (2' BEB)	soil	2010-11-10	00:00	2010-11-19
251024	CS-3 0-1 (3' BEB)	soil	2010-11-10	00:00	2010-11-19
251025	T-1 4' bottom hole	soil	2010-11-10	00:00	2010-11-19
251026	T-1 6'	soil	2010-11-10	00:00	2010-11-19
251027	T-1 8'	soil	2010-11-10	00:00	2010-11-19
251028	T-1 10'	soil	2010-11-10	00:00	2010-11-19

**Sample: 251022 - CS-1 0-1 (2' BEB)**

Param	Flag	Result	Units	RL
Chloride		368	mg/Kg	4.00

**Sample: 251023 - CS-2 0-1 (2' BEB)**

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

**Sample: 251024 - CS-3 0-1 (3' BEB)**

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

**Sample: 251025 - T-1 4' bottom hole**

Param	Flag	Result	Units	RL
Chloride		<b>1700</b>	mg/Kg	4.00

**Sample: 251026 - T-1 6'**

Param	Flag	Result	Units	RL
Chloride		<b>1070</b>	mg/Kg	4.00

**Sample: 251027 - T-1 8'**

Param	Flag	Result	Units	RL
Chloride		<b>3660</b>	mg/Kg	4.00

**Sample: 251028 - T-1 10'**

Param	Flag	Result	Units	RL
Chloride		<b>730</b>	mg/Kg	4.00



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944  
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
6015 Harris Parkway Suite 110 Ft Worth, Texas 76132 817•201•5260  
E-Mail: lab@traceanalysis.com

## Certifications

**WBENC:** 237019

**HUB:** 1752439743100-86536  
**NCTRCA** WFWB38444Y0909

**DBE:** VN 20657

## NELAP Certifications

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

**El Paso:** T104704221-08-TX  
LELAP-02002

**Midland:** T104704392-08-TX

## Analytical and Quality Control Report

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

Report Date: November 23, 2010

Work Order: 10111929



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

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
251022	CS-1 0-1 (2' BEB)	soil	2010-11-10	00:00	2010-11-19
251023	CS-2 0-1 (2' BEB)	soil	2010-11-10	00:00	2010-11-19
251024	CS-3 0-1 (3' BEB)	soil	2010-11-10	00:00	2010-11-19
251025	T-1 4' bottom hole	soil	2010-11-10	00:00	2010-11-19
251026	T-1 6'	soil	2010-11-10	00:00	2010-11-19
251027	T-1 8'	soil	2010-11-10	00:00	2010-11-19
251028	T-1 10'	soil	2010-11-10	00:00	2010-11-19

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

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

---

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

**Standard Flags**

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

## Case Narrative

Samples for project COG/Beech Fed. #2 TB were received by TraceAnalysis, Inc. on 2010-11-19 and assigned to work order 10111929. Samples for work order 10111929 were received intact at a temperature of 3 2 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	64825	2010-11-22 at 09:23	75586	2010-11-23 at 09:16
Chloride (Titration)	SM 4500-Cl B	64825	2010-11-22 at 09:23	75587	2010-11-23 at 09:17

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 10111929 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: 251022 - CS-1 0-1 (2' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-23	Analyzed By:	AR
QC Batch:	75586	Sample Preparation:	2010-11-22	Prepared By:	AR
Prep Batch:	64825				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		368	mg/Kg	50	4.00

### Sample: 251023 - CS-2 0-1 (2' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-23	Analyzed By:	AR
QC Batch:	75587	Sample Preparation:	2010-11-22	Prepared By:	AR
Prep Batch:	64825				

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

### Sample: 251024 - CS-3 0-1 (3' BEB)

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-23	Analyzed By:	AR
QC Batch:	75587	Sample Preparation:	2010-11-22	Prepared By:	AR
Prep Batch:	64825				

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

### Sample: 251025 - T-1 4' bottom hole

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-23	Analyzed By:	AR
QC Batch:	75587	Sample Preparation:	2010-11-22	Prepared By:	AR
Prep Batch:	64825				

Report Date: November 23, 2010  
114-6400630

Work Order 10111929  
COG/Beech Fed. #2 TB

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Eddy County, NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1700	mg/Kg	100	4.00

**Sample: 251026 - T-1 6'**

Laboratory. Midland  
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A  
QC Batch: 75587 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 Sample Preparation: 2010-11-22 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1070	mg/Kg	100	4.00

**Sample: 251027 - T-1 8'**

Laboratory. Midland  
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A  
QC Batch: 75587 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 Sample Preparation: 2010-11-22 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3660	mg/Kg	100	4.00

**Sample: 251028 - T-1 10'**

Laboratory. Midland  
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A  
QC Batch: 75587 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 Sample Preparation: 2010-11-22 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		730	mg/Kg	50	4.00

**Method Blank (1)** QC Batch: 75586

QC Batch: 75586 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 QC Preparation: 2010-11-22 Prepared By: AR

Report Date: November 23, 2010  
114-6400630

Work Order: 10111929  
COG/Beech Fed. #2 TB

Page Number. 6 of 8  
Eddy County, NM

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

**Method Blank (1)**      QC Batch: 75587

QC Batch: 75587      Date Analyzed: 2010-11-23      Analyzed By: AR  
Prep Batch: 64825      QC Preparation: 2010-11-22      Prepared By: AR

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

**Laboratory Control Spike (LCS-1)**

QC Batch: 75586      Date Analyzed: 2010-11-23      Analyzed By: AR  
Prep Batch: 64825      QC Preparation: 2010-11-22      Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.6	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	5	20

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

**Laboratory Control Spike (LCS-1)**

QC Batch: 75587      Date Analyzed: 2010-11-23      Analyzed By: AR  
Prep Batch: 64825      QC Preparation: 2010-11-22      Prepared By: AR

Param	LCS Result	Units	Dil	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.4	mg/Kg	1	100	<2.18	96	85 - 115

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

Param	LCSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	7	20

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

Report Date: November 23, 2010  
114-6400630

Work Order: 10111929  
COG/Beech Fed. #2 TB

Page Number: 7 of 8  
Eddy County, NM

**Matrix Spike (MS-1)** Spiked Sample: 251022

QC Batch: 75586 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 QC Preparation: 2010-11-22 Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10400	mg/Kg	100	10000	368	100	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10700	mg/Kg	100	10000	368	103	85 - 115	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: 251028

QC Batch: 75587 Date Analyzed: 2010-11-23 Analyzed By: AR  
Prep Batch: 64825 QC Preparation: 2010-11-22 Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10500	mg/Kg	100	10000	730	98	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10800	mg/Kg	100	10000	730	101	85 - 115	3	20

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

**Standard (ICV-1)**

QC Batch: 75586 Date Analyzed: 2010-11-23 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-11-23

**Standard (CCV-1)**

QC Batch: 75586 Date Analyzed: 2010-11-23 Analyzed By: AR

Report Date: November 23, 2010  
114-6400630

Work Order: 10111929  
COG/Beech Fed. #2 TB

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Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.9	98	85 - 115	2010-11-23

**Standard (ICV-1)**

QC Batch: 75587

Date Analyzed: 2010-11-23

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.2	99	85 - 115	2010-11-23

**Standard (CCV-1)**

QC Batch: 75587

Date Analyzed: 2010-11-23

Analyzed By: AR

Param	Flag	Units	CCVs True Conc	CCVs Found Conc	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-11-23

XWO #: 10111928

## 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: OF:

 ANALYSIS REQUEST  
 (Circle or Specify Method No.)

CLIENT NAME:		SITE MANAGER:		PROJECT NO.:	PROJECT NAME:	NUMBER OF CONTAINERS	PRESERVATIVE METHOD				ANALYSIS REQUEST (Circle or Specify Method No.)																			
106		Ike Tavares					114-6400L30	COG / Birch Fed #2	1	Filtered (Y/N)	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 Vt 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)
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	1																							
023	11/10		S	X		C5-1 0-1 (2' BEB)				X															X					
024						C5-2 0-1 (2' BEB)																			X					
025						C5-3 0-1 (3' BEB)																			X					
026						T-1 4' bottom hole																			X					
027						T-1 6'																			X					
028						T-1 8'																			X					
029						T-1 10'																			X					
						T-1 12'																			X					

RELINQUISHED BY: (Signature)	Date: 11-19-10	RECEIVED BY: (Signature)	Date: 11/10/10	SAMPLED BY: (Print & Initial)	ST
RELINQUISHED BY: (Signature)	Date: 11-19-10	RECEIVED BY: (Signature)	Date: 11/10/10	SAMPLE SHIPPED BY: (Circle)	FEDEX
RELINQUISHED BY: (Signature)	Date: 11-19-10	RECEIVED BY: (Signature)	Date: 11/10/10	SAMPLE SHIPPED BY: (Circle)	BUS
RECEIVING LABORATORY: True	ADDRESS: Midland	STATE: TX	ZIP: 79705	OTHER: HAND DELIVERED	UPS
CONTACT: 3.2.c intact	PHONE: 432-682-4559	DATE: 11-19-10	TIME: 11:50	TETRA TECH CONTACT PERSON	Ike Tavares
REMARKS: All tests Midland			RUSH Charges Authorized: Yes No		

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

## Summary Report

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

Report Date: December 2, 2010

Work Order: 10111929



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
251029	T-1 12'	soil	2010-11-10	00:00	2010-11-19

**Sample: 251029 - T-1 12'**

Param	Flag	Result	Units	RL
Chloride		445	mg/Kg	4.00



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944  
5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
6015 Harris Parkway Suite 110 Ft Worth, Texas 76132 817•201•5260  
E-Mail lab@traceanalysis.com

## Certifications

**WBENC:** 237019

**HUB:** 1752439743100-86536  
**NCTRCA** WFWB38444Y0909

**DBE:** VN 20657

## NELAP Certifications

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

**El Paso:** T104704221-08-TX  
LELAP-02002

**Midland:** T104704392-08-TX

## Analytical and Quality Control Report

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

Report Date: December 2, 2010

Work Order: 10111929



Project Location: Eddy County, NM  
Project Name: COG/Beech Fed. #2 TB  
Project Number: 114-6400630

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
251029	T-1 12'	soil	2010-11-10	00.00	2010-11-19

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



---

Dr Blair Leftwich, Director  
Dr Michael Abel, Project Manager

**Standard Flags**

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

## Case Narrative

Samples for project COG/Beech Fed #2 TB were received by TraceAnalysis, Inc. on 2010-11-19 and assigned to work order 10111929. Samples for work order 10111929 were received intact at a temperature of 3.2 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	64930	2010-11-29 at 12:55	75719	2010-11-30 at 13:15

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 10111929 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: 251029 - T-1 12'**

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-30	Analyzed By:	AR
QC Batch:	75719	Sample Preparation:	2010-11-29	Prepared By:	AR
Prep Batch:	64930				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		445	mg/Kg	50	4 00

**Method Blank (1)**      QC Batch: 75719

QC Batch:	75719	Date Analyzed:	2010-11-30	Analyzed By:	AR
Prep Batch:	64930	QC Preparation:	2010-11-29	Prepared By:	AR

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

**Laboratory Control Spike (LCS-1)**

QC Batch:	75719	Date Analyzed:	2010-11-30	Analyzed By:	AR
Prep Batch:	64930	QC Preparation:	2010-11-29	Prepared By:	AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.6	mg/Kg	1	100	<2.18	98	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<2.18	103	85 - 115	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: 251213

QC Batch:	75719	Date Analyzed:	2010-11-30	Analyzed By:	AR
Prep Batch:	64930	QC Preparation:	2010-11-29	Prepared By:	AR

Report Date. December 2, 2010  
114-6400630

Work Order: 10111929  
COG/Beech Fed. #2 TB

Page Number 5 of 5  
Eddy County, NM

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

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10300	mg/Kg	100	10000	<218	101	85 - 115	1	20

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

#### Standard (ICV-1)

QC Batch: 75719

Date Analyzed. 2010-11-30

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.9	99	85 - 115	2010-11-30

#### Standard (CCV-1)

QC Batch. 75719

Date Analyzed. 2010-11-30

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2010-11-30

Woo #: 10111928

# 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:

C06

SITE MANAGER:

Ike Tavaraz

PROJECT NO.:

114-6460630

PROJECT NAME:

C06/ Birch Frd #2

Eddy Co, NM

LAB I.D.  
NUMBER

DATE

TIME

MATRIX

COMP

GRAB

SAMPLE IDENTIFICATION

NUMBER OF CONTAINERS

FILTERED (Y/N)

HCL

HNO3

ICE

NONE

PRESERVATIVE  
METHOD

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 Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/824

GC/MS Semi. Vol. 8270/825

PCB's 8080/808

Pest. 808/608

Chloride

Gamma Spec.

Alpha Beta (Air)

PLM (Asbestos)

Major Anions/Cations, pH, TDS

02022

11/0

6

X

023

024

025

026

027

028

029