

SITE INFORMATION

2RP-616

Report Type: CLOSURE

General Site Information:

Site:	Birch Keely Unit #196 Well Site			
Company:	COG Operating LLC			
Section, Township and Range	Sec 25	T17S	R29E	Unit P
Lease Number:	API-30-015-24976			
County:	Eddy County			
GPS:	32.80003° N		104.02646° W	
Surface Owner:	Federal			
Mineral Owner:				
Directions:	From the intersection of CR 217 and Hwy 82 travel west of Hwy 82 for 1.8 miles, turn left onto lease road and travel 1.3 miles, turn right and travel 0.3 miles to site.			

Release Data:

Date Released:	2/6/2011
Type Release:	Produced Water
Source of Contamination:	Steel Flowline
Fluid Released:	20 bbls
Fluids Recovered:	18 bbls

Official Communication:

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

Ranking Criteria

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

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



TETRA TECH

January 10, 2012

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., Birch Keely Unit #196 Well Site, Unit P, Section 25, Township 17 South, Range 29 East, Eddy County, New Mexico.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill from the Birch Keely Unit #196 well site located in Unit P, Section 25, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.80003°, W 104.02646°. The site location is shown on Figures 1 and 2.

Background

According to the New Mexico Oil Conservation Division (NMOCD) initial C-141 report, the leak was discovered on February 6, 2011, and released approximately twenty (20) barrels of produced fluid from a steel flow line. To alleviate the problem, COG personnel replaced the flow line. Eighteen (18) barrels of standing fluids were recovered. The spill initiated west of the pad affecting an area of approximately 35' X 135' in the pasture. 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 approximately 175' below surface. The average depth to groundwater map is show in Appendix B.

Tetra Tech

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com



Regulatory

A risk-based evaluation was performed for the Site in accordance with the 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, ethyl-benzene 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, ethyl-benzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

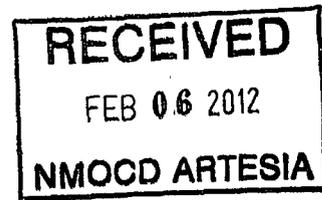
Soil Assessment and Analytical Results

On March 2, 2011, Tetra Tech personnel inspected and sampled the spill area. Three (3) auger holes (AH-1, AH-2 and AH-3) were installed using a stainless steel hand auger to assess the impacted soils. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples exceeded the RRAL for BTEX and TPH. The chloride concentrations were not vertically defined in all of the three auger hole locations.

In order to delineate the chloride impact, soil borings were installed utilizing an air rotary drilling rig. On May 6, 2011, Tetra Tech personnel supervised the installation of three (3) soil bores (SB-1, SB-2 and SB-3). Soil samples were collected to a depth of 50.0' below surface. Referring to Table 1, chloride concentrations declined with depth in SB-1 and SB-2. However, the samples in SB-3 chlorides declined with depth, but spiked at 50.0' below surface, with a chloride of 2,190 mg/kg. Deeper samples could not be collected due to the upper sands sloughing, which would not allow the bottom to remain open. The soil boring locations are shown on Figure 3.

On September 22, 2011, Tetra Tech installed an additional soil boring in the area of SB-3 to attempt to define the extents of the deeper chloride impact. The soil boring was installed to a total depth of 90.0' below surface. Samples were collected at 10.0' intervals from 40.0' to 90.0' below surface.



Referring to Table 1, the chloride concentrations declined with depth to 465 mg/kg at 70.0' and <200 at 90.0' below surface.

Closure Activities

Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final excavation depths of the soil remediation were met or exceeded as stated in the approved work plan. The spill area will be excavated to approximately 5.0' to 7.0' below surface. Once the areas are excavated to the appropriate depths, the areas of AH-1 (SB-1) and AH-3 (SB-3) were capped with a 40 mil liner at 4.0' below surface and backfilled with clean soil. A total of 1,560 cubic yards of soil were excavated and hauled to proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4.

As requested by the BLM, confirmation samples were collected from the excavation bottom holes and sidewalls. During the excavation, the area of AH-3 (SB-3) was not sampled due to a plastic liner noted on the north wall of the excavation, which appeared to be the edge of a closed reserve pit. The confirmation samples results are shown in Table 1. Once excavated to the appropriate depths, the excavations were backfilled with clean soil to grade.

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

Respectfully submitted,
TETRA TECH

A handwritten signature in black ink, appearing to read 'Ike Tavarez', written over the typed name.

Ike Tavarez
Senior Project Manager

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

Figures

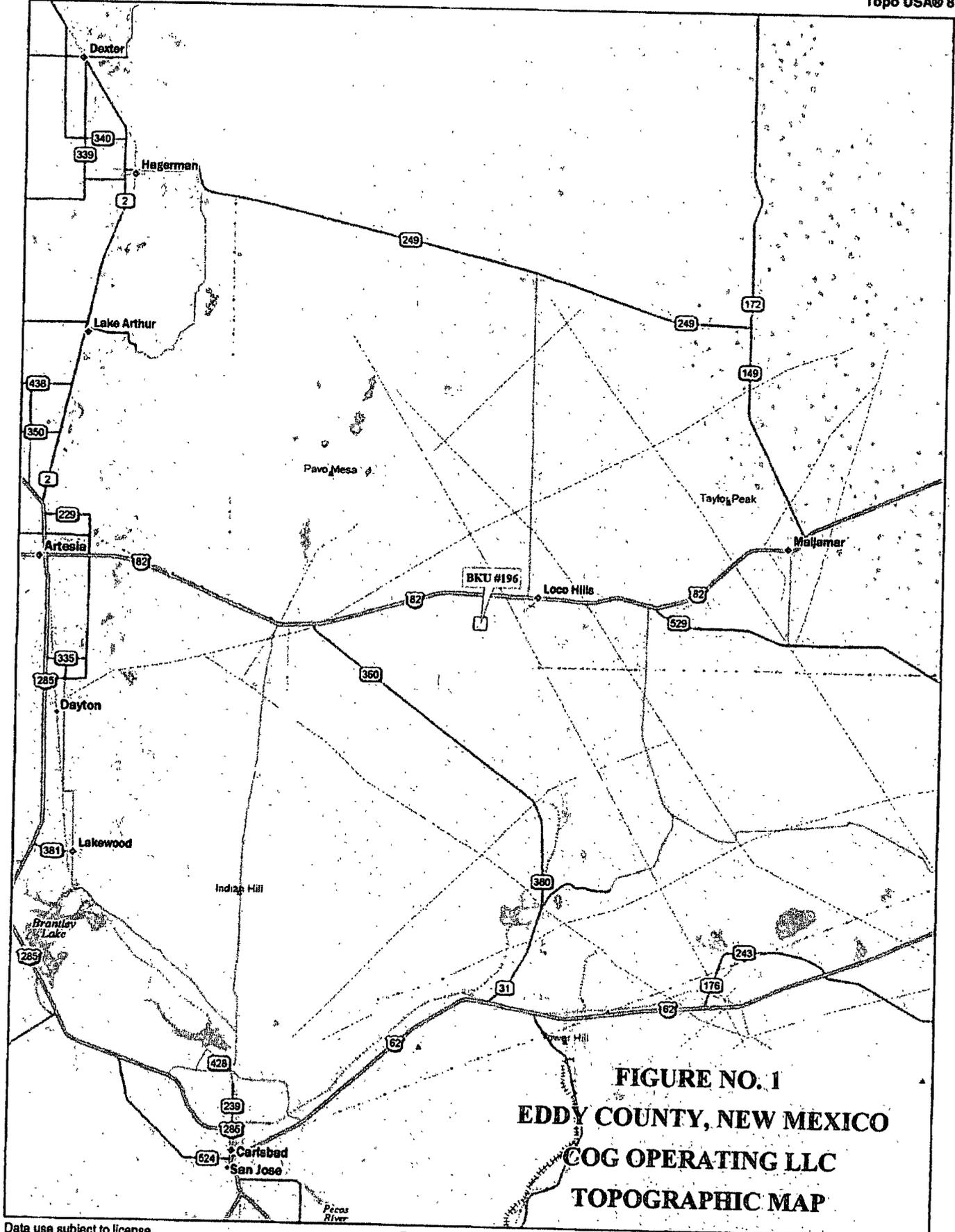
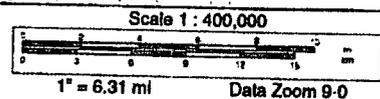


FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
TOPOGRAPHIC MAP

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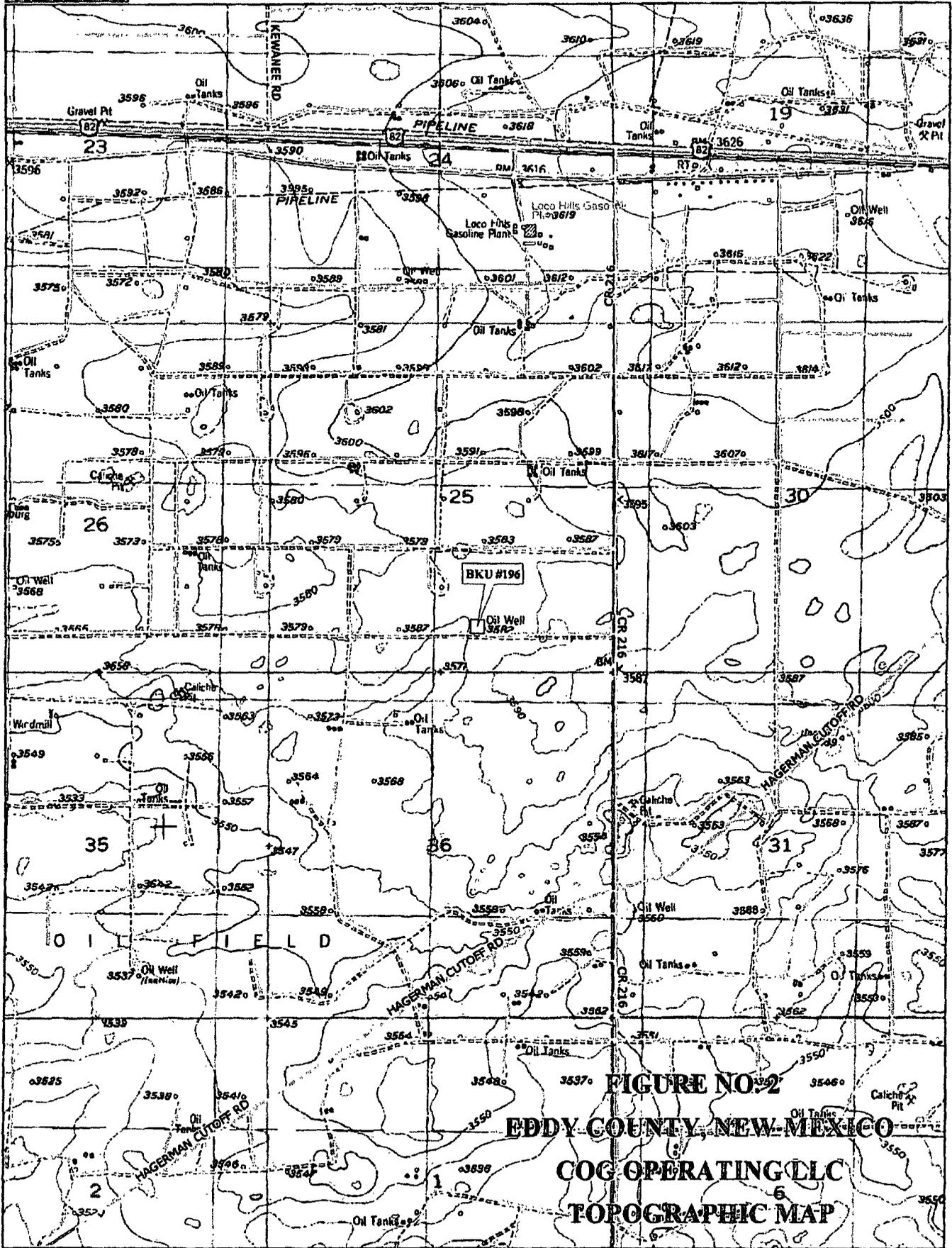
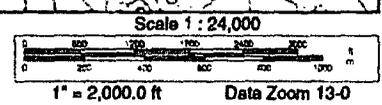
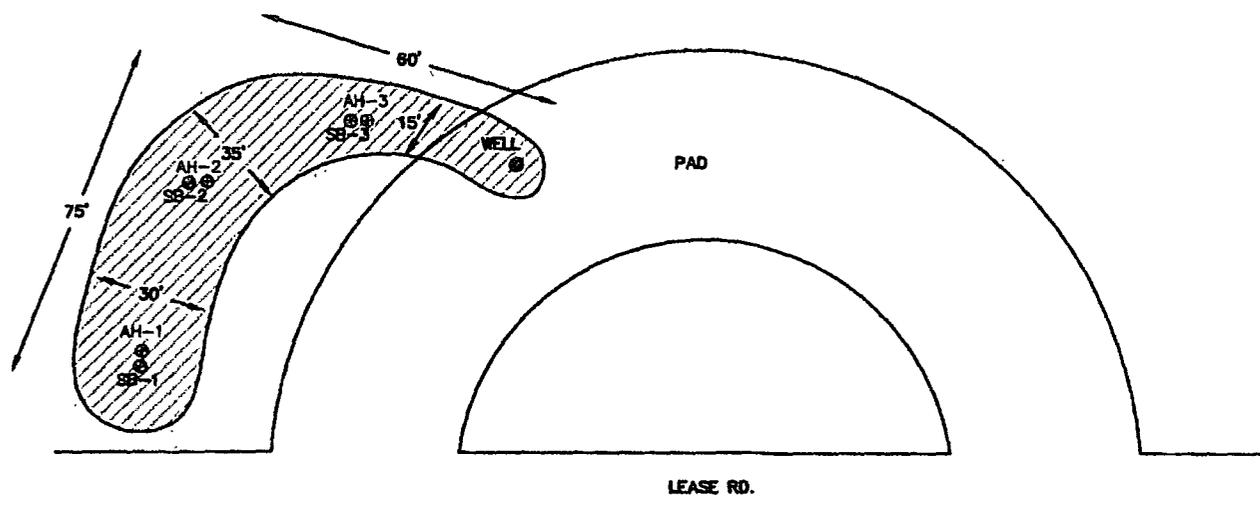


FIGURE NO. 2
EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
TOPOGRAPHIC MAP

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- SPILL AREA
- AUGER HOLE LOCATIONS
- SOIL BORE LOCATIONS

NOT TO SCALE

DATE:
2/9/11
DRAWN BY:
JJ
FILE:
201002_0400007
001.dwg

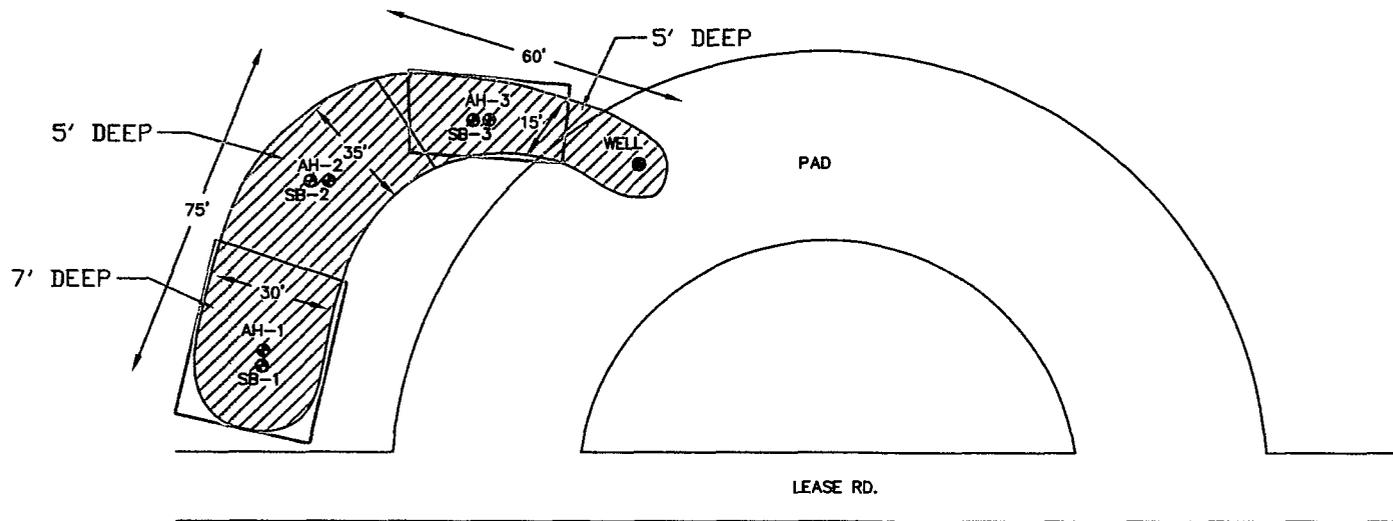
FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

COG OPERATING LLC

BKU #198

TETRA TECH, INC.
MIDLAND, TEXAS



- EXCAVATED DEPTHS
- LINER INSTALLATION
- AUGER HOLE LOCATIONS
- SOIL BORE LOCATIONS

NOT TO SCALE

DATE:
10/13/2011
DWN. BY:
IM
FILE:
H:\COG\64-00827
BKU #198

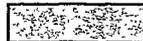
FIGURE NO. 4
EDDY COUNTY, NEW MEXICO
COG OPERATING LLC
BKU #198 EXCAVATION AREA & DEPTHS
TETRA TECH, INC. MIDLAND, TEXAS

Tables

Table 1
COG Operating LLC.
BIRCH KEELY UNIT #196
EDDY COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total					
AH-3	3/2/2011	0-1'		X	<2.00	<50.0'	<50.0'	<0.0200	<0.0200	<0.0200	<0.0200	1,590
	"	1-1.5'		X								<200
	"	2-2.5'		X								<200
	"	3-3.5'		X								1,230
SB-3	5/6/2011	0-1'		X								1,730
	"	3'		X								6,240
	"	5'		X								1,490
	"	7'	X		-	-	-	-	-	-	-	3,000
	"	10'	X		-	-	-	-	-	-	-	3,180
	"	15'	X		-	-	-	-	-	-	-	3,010
	"	20'	X		-	-	-	-	-	-	-	3,280
	"	25'	X		-	-	-	-	-	-	-	2,160
	"	30'	X		-	-	-	-	-	-	-	1,540
	"	40'	X		-	-	-	-	-	-	-	1,750
"	50'	X		-	-	-	-	-	-	-	2,190	
SB-3	9/22/2011	40'	X		-	-	-	-	-	-	-	1,890
		50'	X		-	-	-	-	-	-	-	2,510
		60'	X		-	-	-	-	-	-	-	1,190
		70'	X		-	-	-	-	-	-	-	465
		80'	X		-	-	-	-	-	-	-	201
		90'	X		-	-	-	-	-	-	-	<200

(--) Not Analyzed

 Excavated Depths

 Liner Installed

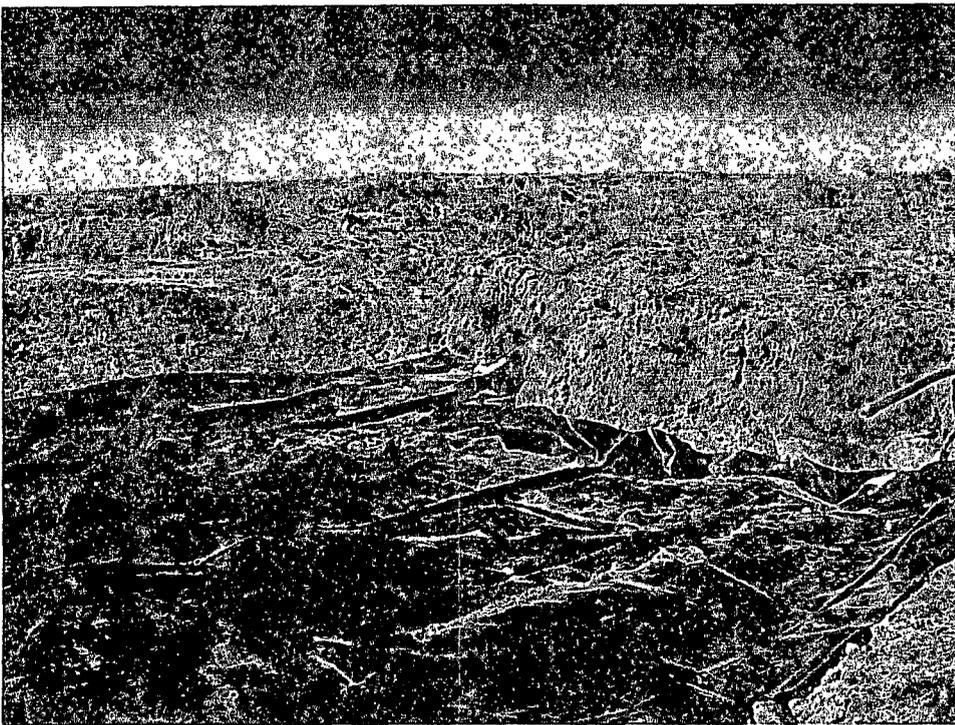
Photos

COG - Birch Keely #196

Eddy County, NM



1. View of Excavation and liner Installation



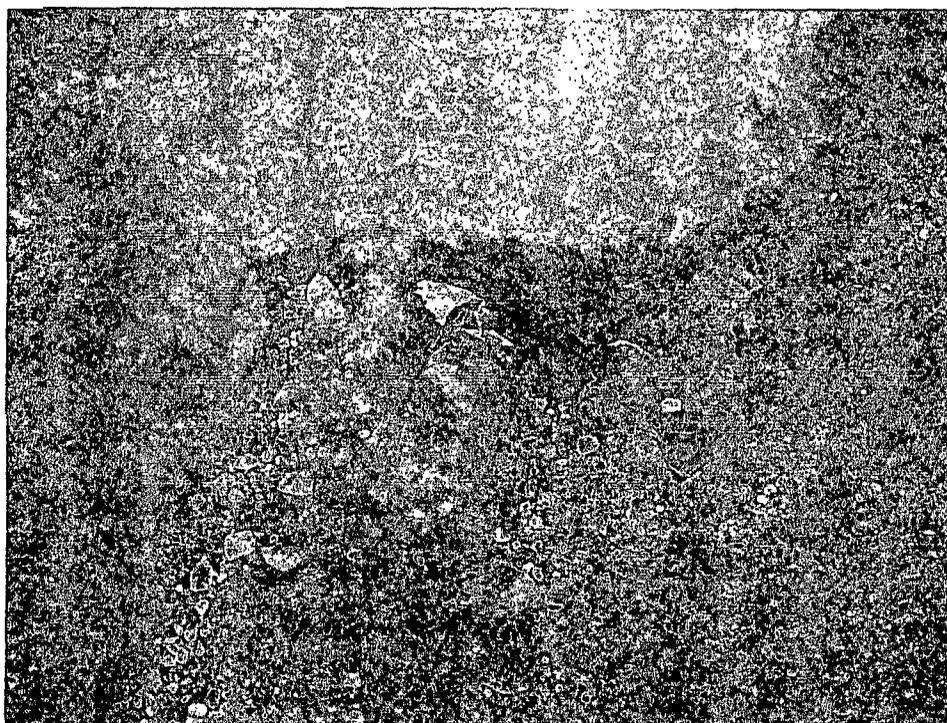
2. View of Excavation and Liner installation

COG - Birch Keely #196

Eddy County, NM



3. Area of AH-3 - bottom hole and liner



4. Area of AH-3 - bottom hole and liner

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	Birch Keely Unit #196	Facility Type	Well

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-015-24976
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	25	17S	29E					Eddy

Latitude 32 47.987 Longitude 104 01.569

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	20bbls	Volume Recovered	18bbls
Source of Release	Steel flowline	Date and Hour of Occurrence	02/06/2011	Date and Hour of Discovery	02/06/2011 6:00 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.*

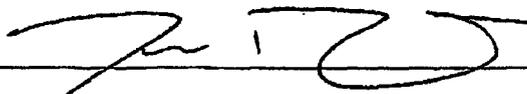
Describe Cause of Problem and Remedial Action Taken.*

The steel flowline developed a hole due to corrosion. The pipe has been replaced and returned into service.

Describe Area Affected and Cleanup Action Taken.*

Initially 20bbls of produced water was released from the steel flowline and we were able to recover 18bbls with a vacuum truck. From the source of the release, the water traveled 3' x 35' to a collecting area measuring 15' x 15' in the pasture. All standing fluid has been recovered. Tetra Tech will sample the spill site area to delineate any contamination from the release and we will present a remediation work plan to the NMOCD/BLM for approval prior to any significant remediation work.

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

Signature: 		OIL CONSERVATION DIVISION	
Printed Name: Josh Russo		Approved by District Supervisor:	
Title: HSE Coordinator		Approval Date:	Expiration Date:
E-mail Address: jrusso@conchoresources.com		Conditions of Approval:	
Date: 02/15/2011	Phone: 432-212-2399	Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
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Energy Minerals and Natural Resources

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1220 South St. Francis Dr.
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Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

Initial Report Final Report

Name of Company COG Operating LLC	Contact Pat Ellis
Address 550 W. Texas, Suite 1300 Midland, Texas 79701	Telephone No. (432) 230-0077
Facility Name Birch Keely #196	Facility Type Well

Surface Owner: Federal	Mineral Owner	Lease No. API 30-015-24976
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	25	17S	29E					Eddy

Latitude N 32 47.987 Longitude W 104 01.569

NATURE OF RELEASE

Type of Release: Produced water	Volume of Release 20 bbls	Volume Recovered 18 bbls
Source of Release: Steel Flow line	Date and Hour of Occurrence 2/6/11	Date and Hour of Discovery 2/6/11 6:00 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.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The steel flow line developed a hole due to corrosion. The pipe has been replaced and returned into service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected and assessed the spill area for extents. A work plan was prepared and submitted to NMOCD for approval. Soils exceeding the RRAL were removed and transported to proper disposal. Two areas (AH-1 and AH-3) were capped with 40 mil liner. Once excavated to the appropriate depths, the excavation was backfilled with clean soil. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: ike.tavarez@tetrattech.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 1-10-12 Phone: (432) 682-4559		

Attach Additional Sheets If Necessary

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Birch Keely Unit #196
Eddy County, New Mexico

16 South 28 East

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

16 South 29 East

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

16 South 30 East

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

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

17 South 29 East

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

17 South 30 East

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

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

18 South 29 East

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

18 South 30 East

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

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

Appendix C

Summary Report

Tom Franklin
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: March 17, 2011

Work Order: 11030238

Project Location: Eddy County, NM
Project Name: Birch Keely Unit #196

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
259350	AH-1 0-1'	soil	2011-03-02	00:00	2011-03-02
259351	AH-1 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259352	AH-1 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259353	AH-2 0-1'	soil	2011-03-02	00:00	2011-03-02
259354	AH-2 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259355	AH-3 0-1'	soil	2011-03-02	00:00	2011-03-02
259356	AH-3 1-1.5'	soil	2011-03-02	00:00	2011-03-02
259357	AH-3 2-2.5'	soil	2011-03-02	00:00	2011-03-02
259358	AH-3 3-3.5'	soil	2011-03-02	00:00	2011-03-02

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)
259350 - AH-1 0-1'	<0.0200	0.222	0.204	0.438	97.0	<2.00
259353 - AH-2 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
259355 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00

Sample: 259350 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		3900	mg/Kg	4.00

Sample: 259351 - AH-1 1-1.5'

Param	Flag	Result	Units	RL
Chloride		10500	mg/Kg	4.00

Sample: 259352 - AH-1 2-2.5'

Param	Flag	Result	Units	RL
Chloride		15600	mg/Kg	4.00

Sample: 259353 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		3110	mg/Kg	4.00

Sample: 259354 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		861	mg/Kg	4.00

Sample: 259355 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		1590	mg/Kg	4.00

Sample: 259356 - AH-3 1-1.5'

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

Sample: 259357 - AH-3 2-2.5'

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

Sample: 259358 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		1230	mg/Kg	4.00

Summary Report

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

Report Date: May 19, 2011

Work Order: 11051002



Project Location: Eddy Co., NM
Project Name: COG/Burch Keely Unit #197

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
265956	SB-1 0-1'	soil	2011-05-06	00:00	2011-05-09
265957	SB-1 3'	soil	2011-05-06	00:00	2011-05-09
265958	SB-1 5'	soil	2011-05-06	00:00	2011-05-09
265959	SB-1 7'	soil	2011-05-06	00:00	2011-05-09
265960	SB-1 10'	soil	2011-05-06	00:00	2011-05-09
265961	SB-1 15'	soil	2011-05-06	00:00	2011-05-09
265962	SB-1 20'	soil	2011-05-06	00:00	2011-05-09
265963	SB-1 25'	soil	2011-05-06	00:00	2011-05-09
265964	SB-1 30'	soil	2011-05-06	00:00	2011-05-09
265965	SB-1 40'	soil	2011-05-06	00:00	2011-05-09
265966	SB-1 50'	soil	2011-05-06	00:00	2011-05-09
265967	SB-2 0-1'	soil	2011-05-06	00:00	2011-05-09
265968	SB-2 3'	soil	2011-05-06	00:00	2011-05-09
265969	SB-2 5'	soil	2011-05-06	00:00	2011-05-09
265970	SB-2 7'	soil	2011-05-06	00:00	2011-05-09
265971	SB-2 10'	soil	2011-05-06	00:00	2011-05-09
265972	SB-2 15'	soil	2011-05-06	00:00	2011-05-09
265973	SB-2 20'	soil	2011-05-06	00:00	2011-05-09
265974	SB-2 25'	soil	2011-05-06	00:00	2011-05-09
265975	SB-2 30'	soil	2011-05-06	00:00	2011-05-09
265976	SB-2 40'	soil	2011-05-06	00:00	2011-05-09
265977	SB-2 50'	soil	2011-05-06	00:00	2011-05-09
265978	SB-2 60'	soil	2011-05-06	00:00	2011-05-09
265979	SB-3 0-1'	soil	2011-05-06	00:00	2011-05-09
265980	SB-3 3'	soil	2011-05-06	00:00	2011-05-09
265981	SB-3 5'	soil	2011-05-06	00:00	2011-05-09
265982	SB-3 7'	soil	2011-05-06	00:00	2011-05-09
265983	SB-3 10'	soil	2011-05-06	00:00	2011-05-09
265984	SB-3 15'	soil	2011-05-06	00:00	2011-05-09
265985	SB-3 20'	soil	2011-05-06	00:00	2011-05-09
265986	SB-3 25'	soil	2011-05-06	00:00	2011-05-09

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

This is only a summary. Please, refer to the complete report package for quality control data.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
265987	SB-3 30'	soil	2011-05-06	00:00	2011-05-09
265988	SB-3 40'	soil	2011-05-06	00:00	2011-05-09
265989	SB-3 50'	soil	2011-05-06	00:00	2011-05-09

Sample: 265956 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		4180	mg/Kg	4

Sample: 265957 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		12600	mg/Kg	4

Sample: 265958 - SB-1 5'

Param	Flag	Result	Units	RL
Chloride		8730	mg/Kg	4

Sample: 265959 - SB-1 7'

Param	Flag	Result	Units	RL
Chloride		2470	mg/Kg	4

Sample: 265960 - SB-1 10'

Param	Flag	Result	Units	RL
Chloride		1360	mg/Kg	4

Sample: 265961 - SB-1 15'

Param	Flag	Result	Units	RL
Chloride		1160	mg/Kg	4

Sample: 265962 - SB-1 20'

Param	Flag	Result	Units	RL
Chloride		1750	mg/Kg	4

Sample: 265963 - SB-1 25'

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	4

Sample: 265964 - SB-1 30'

Param	Flag	Result	Units	RL
Chloride		862	mg/Kg	4

Sample: 265965 - SB-1 40'

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4

Sample: 265966 - SB-1 50'

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

Sample: 265967 - SB-2 0-1'

Param	Flag	Result	Units	RL
Chloride		1630	mg/Kg	4

Sample: 265968 - SB-2 3'

Param	Flag	Result	Units	RL
Chloride		5100	mg/Kg	4

Sample: 265969 - SB-2 5'

Param	Flag	Result	Units	RL
Chloride		736	mg/Kg	4

Sample: 265970 - SB-2 7'

Param	Flag	Result	Units	RL
Chloride		518	mg/Kg	4

Sample: 265971 - SB-2 10'

Param	Flag	Result	Units	RL
Chloride		670	mg/Kg	4

Sample: 265972 - SB-2 15'

Param	Flag	Result	Units	RL
Chloride		381	mg/Kg	4

Sample: 265973 - SB-2 20'

Param	Flag	Result	Units	RL
Chloride		599	mg/Kg	4

Sample: 265974 - SB-2 25'

Param	Flag	Result	Units	RL
Chloride		676	mg/Kg	4

Sample: 265975 - SB-2 30'

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

Sample: 265976 - SB-2 40'

Param	Flag	Result	Units	RL
Chloride		288	mg/Kg	4

Sample: 265977 - SB-2 50'

Param	Flag	Result	Units	RL
Chloride		516	mg/Kg	4

Sample: 265978 - SB-2 60'

Param	Flag	Result	Units	RL
Chloride		261	mg/Kg	4

Sample: 265979 - SB-3 0-1'

Param	Flag	Result	Units	RL
Chloride		1730	mg/Kg	4

Sample: 265980 - SB-3 3'

Param	Flag	Result	Units	RL
Chloride		6240	mg/Kg	4

Sample: 265981 - SB-3 5'

Param	Flag	Result	Units	RL
Chloride		1490	mg/Kg	4

Sample: 265982 - SB-3 7'

Param	Flag	Result	Units	RL
Chloride		3000	mg/Kg	4

Sample: 265983 - SB-3 10'

Param	Flag	Result	Units	RL
Chloride		3180	mg/Kg	4

Sample: 265984 - SB-3 15'

Param	Flag	Result	Units	RL
Chloride		3010	mg/Kg	4

Sample: 265985 - SB-3 20'

Param	Flag	Result	Units	RL
Chloride		3280	mg/Kg	4

Sample: 265986 - SB-3 25'

Param	Flag	Result	Units	RL
Chloride		2160	mg/Kg	4

Sample: 265987 - SB-3 30'

Param	Flag	Result	Units	RL
Chloride		1540	mg/Kg	4

Sample: 265988 - SB-3 40'

Param	Flag	Result	Units	RL
Chloride		1750	mg/Kg	4

Sample: 265989 - SB-3 50'

Param	Flag	Result	Units	RL
Chloride		2190	mg/Kg	4

Summary Report

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

Report Date: October 6, 2011

Work Order: 11092630



Project Location: Eddy Co., NM
Project Name: COG/Burch Keely Unit #197
Project Number: 114-6400827

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
278361	BH-3 40'	soil	2011-09-22	00:00	2011-09-26
278362	BH-3 50'	soil	2011-09-22	00:00	2011-09-26
278363	BH-3 60'	soil	2011-09-22	00:00	2011-09-26
278364	BH-3 70'	soil	2011-09-22	00:00	2011-09-26
278365	BH-3 80'	soil	2011-09-22	00:00	2011-09-26
278366	BH-3 90'	soil	2011-09-22	00:00	2011-09-26

Sample: 278361 - BH-3 40'

Param	Flag	Result	Units	RL
Chloride		1890	mg/Kg	4

Sample: 278362 - BH-3 50'

Param	Flag	Result	Units	RL
Chloride		2510	mg/Kg	4

Sample: 278363 - BH-3 60'

Param	Flag	Result	Units	RL
Chloride		1190	mg/Kg	4

Sample: 278364 - BH-3 70'

Param	Flag	Result	Units	RL
Chloride		465	mg/Kg	4

Sample: 278365 - BH-3 80'

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4

Sample: 278366 - BH-3 90'

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

Summary Report

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

Report Date: January 9, 2012

Work Order: 11122919



Project Location: Eddy Co. NM
Project Name: Birch Keely Unit #196
Project Number: 114-6400827

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
285510	CS-1 North (SB-1)	soil	2011-12-15	00:00	2011-12-29
285511	CS-1 South (SB-1)	soil	2011-12-15	00:00	2011-12-29
285512	CS-1 West (SB-1)	soil	2011-12-15	00:00	2011-12-29
285513	CS-1 BH 7'(SB-1)	soil	2011-12-15	00:00	2011-12-29
285514	CS-2 North (SB-2)	soil	2011-12-21	00:00	2011-12-29
285515	CS-2 South (SB-2)	soil	2011-12-21	00:00	2011-12-29
285516	CS-2 BH 5' (SB-2)	soil	2011-12-21	00:00	2011-12-29

Sample: 285510 - CS-1 North (SB-1)

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

Sample: 285511 - CS-1 South (SB-1)

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

Sample: 285512 - CS-1 West (SB-1)

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

Sample: 285513 - CS-1 BH 7'(SB-1)

Param	Flag	Result	Units	RL
Chloride		278	mg/Kg	4

Sample: 285514 - CS-2 North (SB-2)

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

Sample: 285515 - CS-2 South (SB-2)

Param	Flag	Result	Units	RL
Chloride		574	mg/Kg	4

Sample: 285516 - CS-2 BH 5' (SB-2)

Param	Flag	Result	Units	RL
Chloride		570	mg/Kg	4



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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report (Corrected Report)

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

Report Date: January 9, 2012

Work Order: 11122919



Project Location: Eddy Co. NM
 Project Name: Birch Keely Unit #196
 Project Number: 114-6400827

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
285510	CS-1 North (SB-1)	soil	2011-12-15	00:00	2011-12-29
285511	CS-1 South (SB-1)	soil	2011-12-15	00:00	2011-12-29
285512	CS-1 West (SB-1)	soil	2011-12-15	00:00	2011-12-29
285513	CS-1 BH 7'(SB-1)	soil	2011-12-15	00:00	2011-12-29
285514	CS-2 North (SB-2)	soil	2011-12-21	00:00	2011-12-29
285515	CS-2 South (SB-2)	soil	2011-12-21	00:00	2011-12-29
285516	CS-2 BH 5' (SB-2)	soil	2011-12-21	00:00	2011-12-29

Report Corrections (Work Order 11122919)

- Corrected project number and project name. 1-9-12

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 11 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

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Case Narrative

Samples for project Birch Keely Unit #196 were received by TraceAnalysis, Inc. on 2011-12-29 and assigned to work order 11122919. Samples for work order 11122919 were received intact at a temperature of 4.0 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	74350	2012-01-03 at 09:57	87599	2012-01-04 at 14:00

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 11122919 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: 285510 - CS-1 North (SB-1)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

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

Sample: 285511 - CS-1 South (SB-1)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

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

Sample: 285512 - CS-1 West (SB-1)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

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

Report Date: January 9, 2012
114-6400827

Work Order: 11122919
Birch Keely Unit #196

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Eddy Co. NM

Sample: 285513 - CS-1 BH 7'(SB-1)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			278	mg/Kg	50	4.00

Sample: 285514 - CS-2 North (SB-2)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

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

Sample: 285515 - CS-2 South (SB-2)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			574	mg/Kg	50	4.00

Sample: 285516 - CS-2 BH 5' (SB-2)

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 87599 Date Analyzed: 2012-01-04 Analyzed By: AR
Prep Batch: 74350 Sample Preparation: 2012-01-03 Prepared By: AR

Report Date: January 9, 2012
114-6400827

Work Order: 11122919
Birch Keely Unit #196

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Eddy Co. NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			570	mg/Kg	50	4.00

Report Date: January 9, 2012
114-6400827

Work Order: 11122919
Birch Keely Unit #196

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Eddy Co. NM

Method Blanks

Method Blank (1) QC Batch: 87599

QC Batch: 87599
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 87599
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			95.4	mg/Kg	1	100	<3.85	95	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			102	mg/Kg	1	100	<3.85	102	85 - 115	7	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: 285516

QC Batch: 87599
Prep Batch: 74350

Date Analyzed: 2012-01-04
QC Preparation: 2012-01-03

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			10600	mg/Kg	100	10000	570	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	570	104	79.4 - 120.6	4	20

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

Calibration Standards

Standard (ICV-1)

QC Batch: 87599

Date Analyzed: 2012-01-04

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	99.5	100	85 - 115	2012-01-04

Standard (CCV-1)

QC Batch: 87599

Date Analyzed: 2012-01-04

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	2012-01-04

Appendix

Report Definitions

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

Laboratory Certifications

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

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less 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.

111 229 19

Analysis Request of Chain of Custody Record

PAGE: OF:



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: PROJECT NO.: C06 SITE MANAGER: The Turner

PROJECT NAME: C06 / Beach Keady #197

114-6400877 Edelco Co, NM

LAB I.D. NUMBER DATE TIME MATRIX COMF GRAB SAMPLE IDENTIFICATION

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMF	GRAB	SAMPLE IDENTIFICATION
285510	12/15		S	X		CS-1 North (SB-1)
511						CS-1 South (SB-1)
512						CS-1 West (SB-1)
513						CS-1 BH-7 (Bottom Hole 7) (SB-1)
514	12/21					CS-2 North (SB-2)
515						CS-2 South (SB-2)
516						CS-2 BH-5' (Bottom Hole 5')

NUMBER OF CONTAINERS FILTERED (Y/N) 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 Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	PCI	GC:MS Vol. 8240/8260/824	GC:MS Semi. Vol. 8270/825	PCB's 8080/808	Pest. 808/808	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
------------	------------------------------------	----------	-------------------------------------	-------------------------------------	----------------	---------------------	-----	--------------------------	---------------------------	----------------	---------------	----------	-------------	------------------	----------------	-------------------------------

RELINQUISHED BY: (Signature) [Signature] Date: 12/23/11 Time: 1230

RECEIVED BY: (Signature) [Signature] Date: 12/29/11 Time: 1330

SAMPLED BY: (Print & Initial) [Signature] Date: 12/23/11 Time: 1230

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED OTHER: [Signature]

RECEIVING LABORATORY: Tetra Tech ADDRESS: Midland TX CITY: Midland STATE: TX ZIP: 79705 CONTACT: Phasia PHONE: [Number] DATE: 12/29/11 TIME: 1330

RECEIVED BY: (Signature) [Signature]

TETRA TECH CONTACT PERSON: The Turner Results by: [Signature]

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 4°C

REMARKS: