

73XK1535234309
4038Form C-141
Revised October 10, 2003Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of formDistrict 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 87505State of New Mexico
Energy Minerals and Natural ResourcesOil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

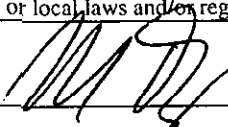
Name of Company	COG Operating LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100 Midland, Texas 79701	Telephone No.	(432) 230-0077
Facility Name		Facility Type	6" SWD Line
Surface Owner: Federal	Mineral Owner	Lease No. (API#) 30-025-22597	

LOCATION OF RELEASE

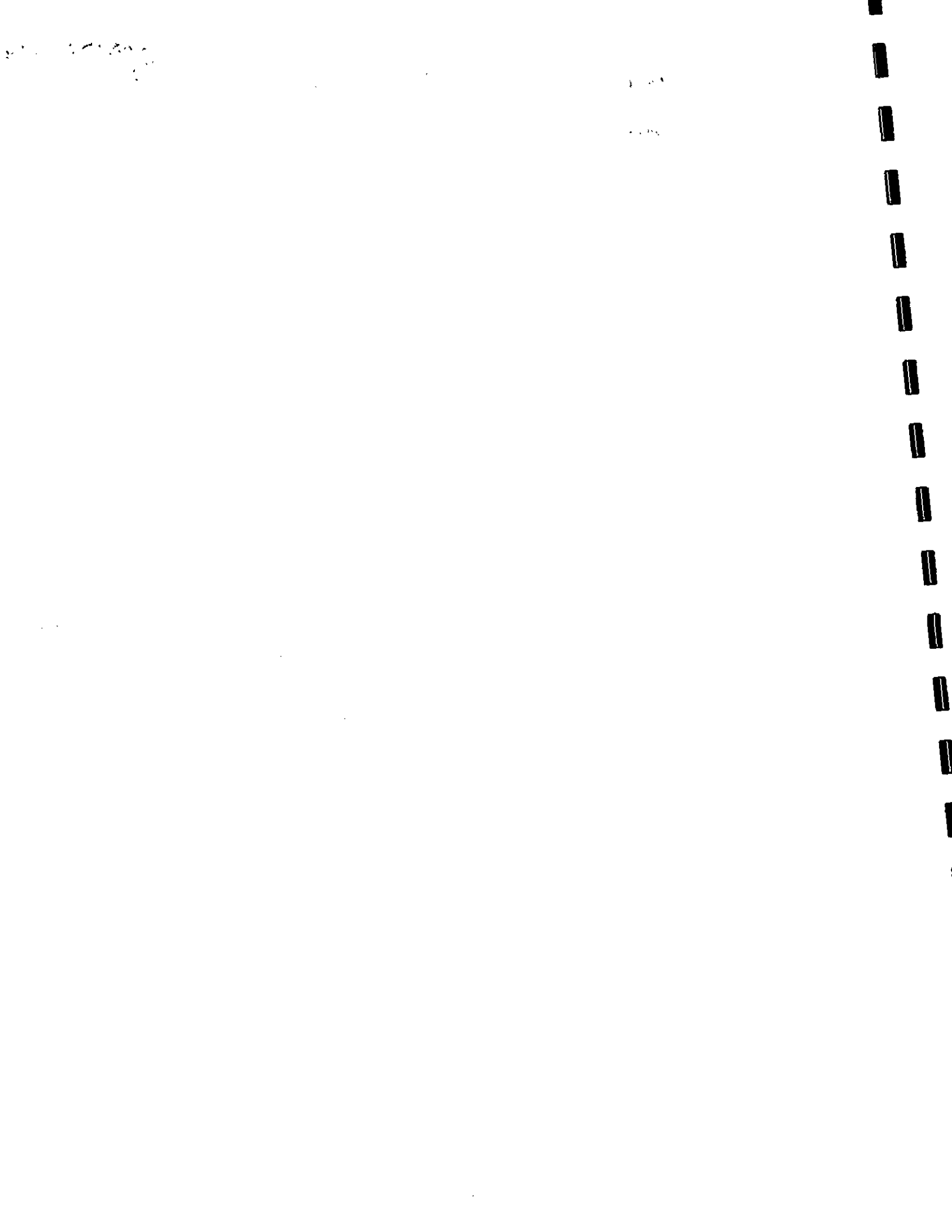
Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	24	19S	32E					Lea

Latitude N 32.65091° Longitude W 103.71333°

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release 120bbbls	Volume Recovered 70bbbls
Source of Release: 6" produced water line	Date and Hour of Occurrence 10/09/2010	Date and Hour of Discovery 10/09/2010 10:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Larry Johnson—OCD Geoffrey Leking—OCD Paul Evans—BLM Terry Gregston—BLM	
By Whom? Josh Russo	Date and Hour 10/11/2010 1:07 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* The 6" poly line had a bad weld which accounted for the release. The inoperable section of line was removed and replaced with new line; the line was put back into service.		
Describe Area Affected and Cleanup Action Taken.* Tetra Tech personnel inspected and collected samples to define the spill extents. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted it 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@tetratech.com	Conditions of Approval:	Attached ☐
Date: 11-27-12 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary



District I
1625 N. French Dr., Hobbs, NM 88240
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1301 W. Grand Avenue, Artesia, NM 88211
District III
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HOBBS OCD

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

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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	Bate Federal #3	Facility Type	6" SWD Line

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-025-22597
---------------	---------	---------------	--	------------------	--------------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	24	19S	32E					Lea

Latitude 32 39.062 Longitude 103 42.823

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	120bbbls	Volume Recovered	70bbbls
Source of Release	6" produced water line	Date and Hour of Occurrence	10/09/2010	Date and Hour of Discovery	10/09/2010 10:00 a.m.
Was Immediate Notice Given?	☒ Yes ☐ No ☐ Not Required	If YES, To Whom?	Larry Johnson—OCD Geoffrey Leking—OCD Paul Evans—BLM Terry Gregston—BLM		
By Whom?	Josh Russo	Date and Hour	10/11/2010 1:07 p.m.		
Was a Watercourse Reached?	☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The 6" poly line had a bad weld which accounted for the release. The inoperable section of line was removed and replaced with new line; the line was put back into service.

Describe Area Affected and Cleanup Action Taken.*

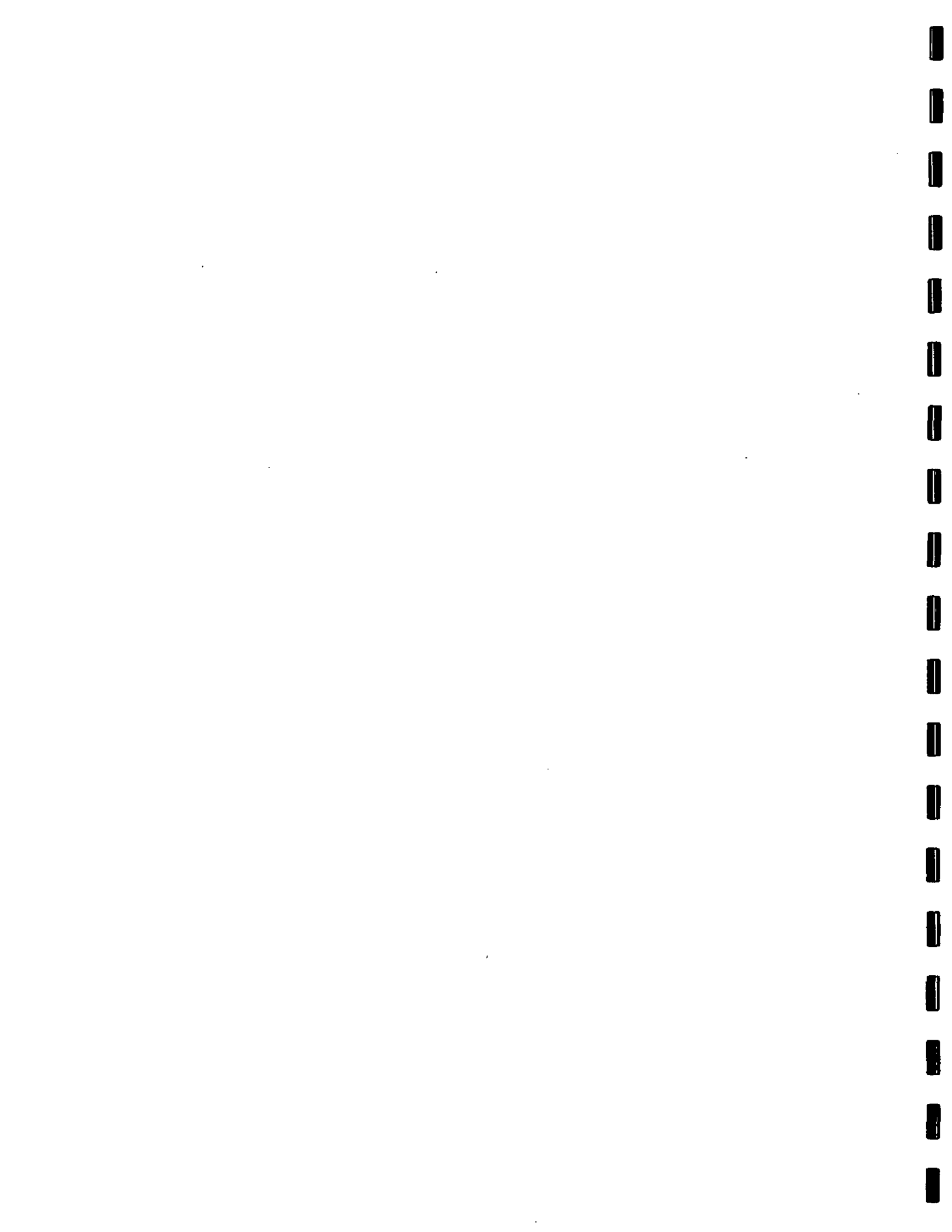
Initially 120bbbls of produced water was released from the 6" disposal line of the Bate SWD and we were able to recover 70bbbls with a vacuum truck. Most of the fluid remained on the COG ROW measuring an area of 30' x 120'. Some fluid flowed onto the road measuring an area of 15' x 60', and the remainder of the fluid traveled onto the pad location of Endurance Resources' Gun Smoke Federal #1 measuring and area of 3' x 45' (600 FNL 660 FEL, Sec. 24-T19S-R32E, Lea County, NM 86144). The chloride concentration of the produced water is roughly 135,000 mg/l. 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.

OIL CONSERVATION DIVISION

Signature:			
Printed Name:	Josh Russo	Approved by District Supervisor:	
Title:	HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address:	jrusso@conchoresources.com	Conditions of Approval:	Attached ☐
Date:	10/15/2010	Phone:	432-212-2399

* Attach Additional Sheets If Necessary



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State of New Mexico
Energy Minerals and Natural Resources **HOBBS OCD**

Form C-141
Revised October 10, 2003

Oil Conservation Division
1220 South St. Francis Dr. **SEP 06 2012**
Santa Fe, NM 87505

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Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Bate Federal #3	Facility Type	6" SWD Line

Surface Owner	Federal	Mineral Owner		Lease No. (API#)	30-025-22597
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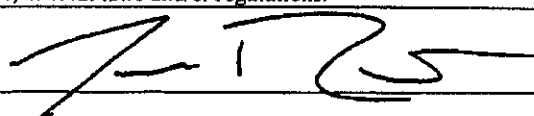
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Signature:			
Printed Name:	Josh Russo		
Title:	HSE Coordinator		
Approval Date:			Expiration Date:
Conditions of Approval:			Attached ☐
Date:	10/15/2010	Phone:	432-212-2399

* Attach Additional Sheets If Necessary

100-10000

100-10000

100-10000

SITE INFORMATION		AUG 03 2012
Report Type: Work Plan		
RECEIVED		
General Site Information:		
Site:	Bates Federal #3	
Company:	COG Operating LLC	
Section, Township and Range	Unit A Sec. 24 T-19S R-32E	
Lease Number:	30-025-22597	
County:	Lea County	
GPS:	32.65091° N	103.71333° W
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of CR-126 and CR-243, travel north on CR-126 5.9 miles, turn right (Speedbump Road) 4.9 miles, turn right 0.7 miles, turn right 0.3 miles to location. tersection.	
	GW(9) 300'	
Release Data:		
Date Released:	10/9/2010	
Type Release:	Produced Water	
Source of Contamination:	Flowline failure	
Fluid Released:	120 bbls	
Fluids Recovered:	70 bbls	
Official Communication:		
Name:	Pat Ellis	Ike Tavaréz
Company:	COG Operating, LLC	Tetra Tech
Address:	550 W. Texas Ave. Ste. 1300	1910 N. Big Spring
P.O. Box		
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	432-682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavaréz@tetrattech.com

Ranking Criteria		
Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	300'
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

ECOPY: approved
Steffe
 Env. Specialist, NMCCD-DIST 1
 8/6/12

1900

1901

1902

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Bates Federal #3
Company:	COG Operating LLC
Section, Township and Range	Unit A Sec. 24 T-19S R-32E
Lease Number:	30-025-22597
County:	Lea County
GPS:	32.65091° N 103.71333° W
Surface Owner:	Federal
Mineral Owner:	
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Address:	550 W. Texas Ave. Ste. 1300	1910 N. Big Spring
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Phone number:	(432) 686-3023	432-682-4559
Fax:	(432) 684-7137	
Email:	pellis@conchoresources.com	ike.tavarez@tetrattech.com

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<50 ft	20	
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>100 ft.	0	300'
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

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SEP 06 2012

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Q10-100

Q10-100

Q10-100



TETRA TECH

July 31, 2012

HOBBS OCD

SEP 06 2012

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

RECEIVED

Re: Work Plan for the COG Operating LLC, Bates Federal #3, Unit A, Section 24, Township 19 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC (COG) to assess a spill from the Bates Federal #3, Unit A, Section 24, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.65091°, W 103.71333°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Release Report, the leak was discovered on October 9, 2010, and released approximately 120 barrels of produced water from a buried flow line. To alleviate the problem, COG personnel removed and replaced the faulty section of polyline. Seventy (70) barrels were recovered. The spill occurred from the polyline and impacted an area approximately 50' x 125' in the pasture area. The spill migrated north onto the adjacent tank battery caliche pad operated by Endurance Resources, LLC., and impacting an area approximately 20' x 110'. A second finger migrated south along a COG SWD line right-of-way (two track road), impacting an area approximately 3' x 75'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were reported in Section 24. Tetra Tech had previously installed temporary monitor wells in Section 13. This well was drilled to a total depth of 135' and no groundwater was encountered (dry). According to the NMOCD map, the depth to groundwater in this area is approximately 300' below surface. The groundwater data 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

1950

1951

1952



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 October 27, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all submitted samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected at each auger hole, with the exception of AH-4. The chloride concentrations impact was vertically defined in the areas of AH-1 and AH-3. The remaining auger holes (AH-2, AH-5, AH-6, and AH-7) were not vertically defined.

In order to vertically define the chloride concentration impact, Tetra Tech personnel supervised the installation of soil borings. Utilizing an air rotary drilling rig, five (5) soil borings (SB-1 through SB-5) were installed to collect deeper samples. The soil borings were extended to a maximum depth of 50.0' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3.

Referring to Table 1, the chloride impact areas were vertically defined at depth ranging from 7.0' to 15.0' below surface. The area of SB-5 detected a bottom hole sample of 1,110 mg/kg at 50.0' below surface. Based on the results, the samples collected in the upper soils did not show a significant chloride impact and the bottom hole sample appears to be cross-contamination from the upper soils.



TETRA TECH

Work Plan

COG proposes to excavate the chloride impacted areas as shown and highlighted in green in Table 1 and shown on Figure 4. Based on depth to groundwater (approximately 300'), the proposed excavation depths would remove the elevated chlorides from the area. The areas of SB-2 and AH-1 will be excavated to a depth of approximately 1.0' below surface. In addition, the areas of AH-2, AH-3 and AH-7 will be excavated to a depth of 3.0' to 7.0' and approximately 10.0' in the areas of AH-5 and AH-6. All of the excavated soils will be transported to proper disposal and the excavations backfilled with clean soil to grade.

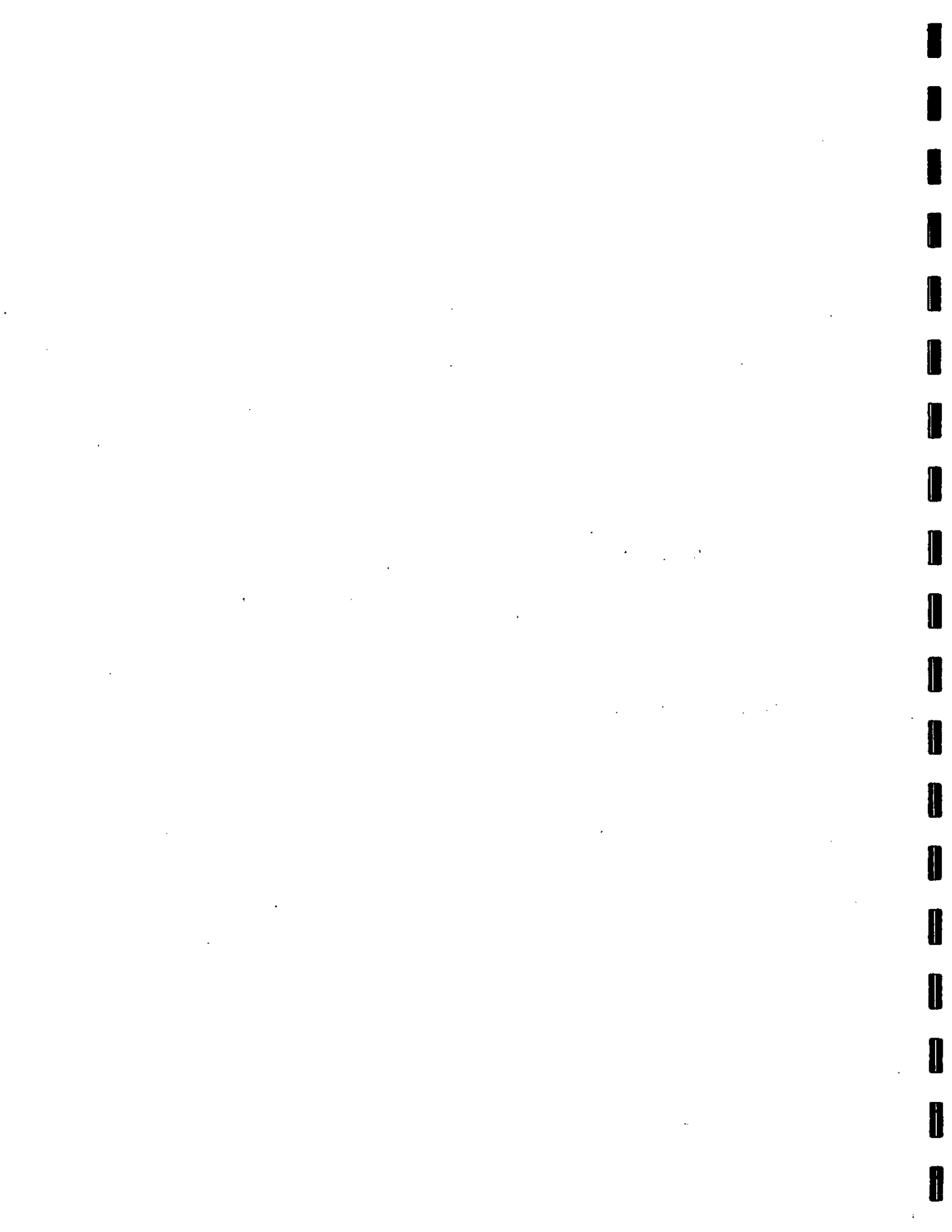
Due to the location of the spill, the proposed excavation depths and areas may not be achieved due to wall cave ins, oil and gas equipment, electrical, structures or lines, which may not be feasible or practicable to be excavated and removed due to safety concerns. As such, Tetra Tech will excavate the soils to the maximum extent practicable. If the impacted soil is not accessible, the soil will be deferred until the abandonment of the facility. If deeper impact is encountered and excavation cannot be achieved, the impacted soil will be capped with either a 40 mil liner or clay material at 3.0' to 4.0' below surface and backfilled with soil to grade.

Upon completion, a final report will be submitted to the NMOCD. If you have any questions or require any additional information regarding this work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, PG
Project Manager

cc: Pat Ellis - COG
Jim Amos - BLM



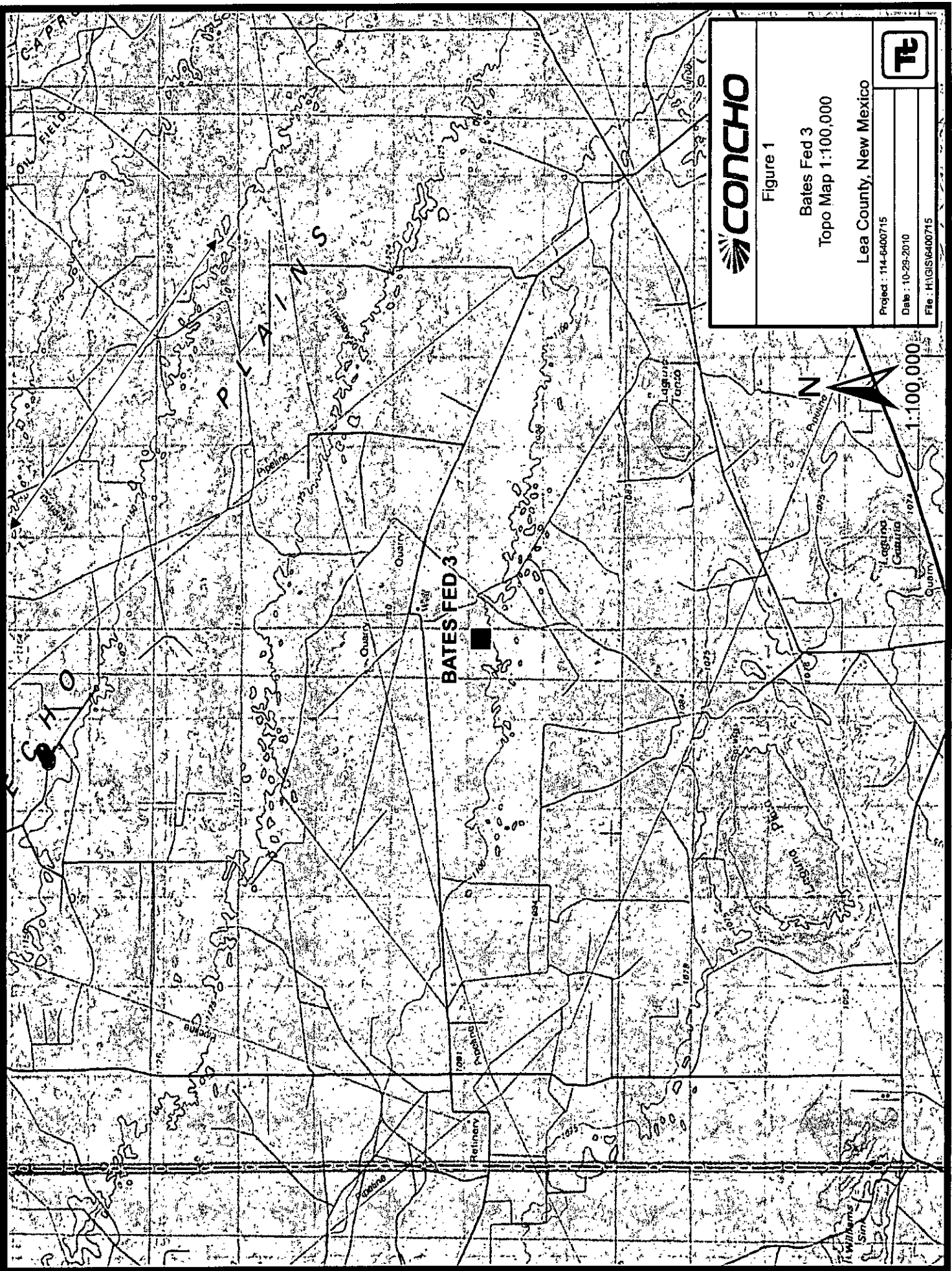


Figure 1

Bates Fed 3
Topo Map 1:100,000

Lea County, New Mexico

Project : 114-6400715

Date : 10-29-2010

File : H:\GIS\6400715



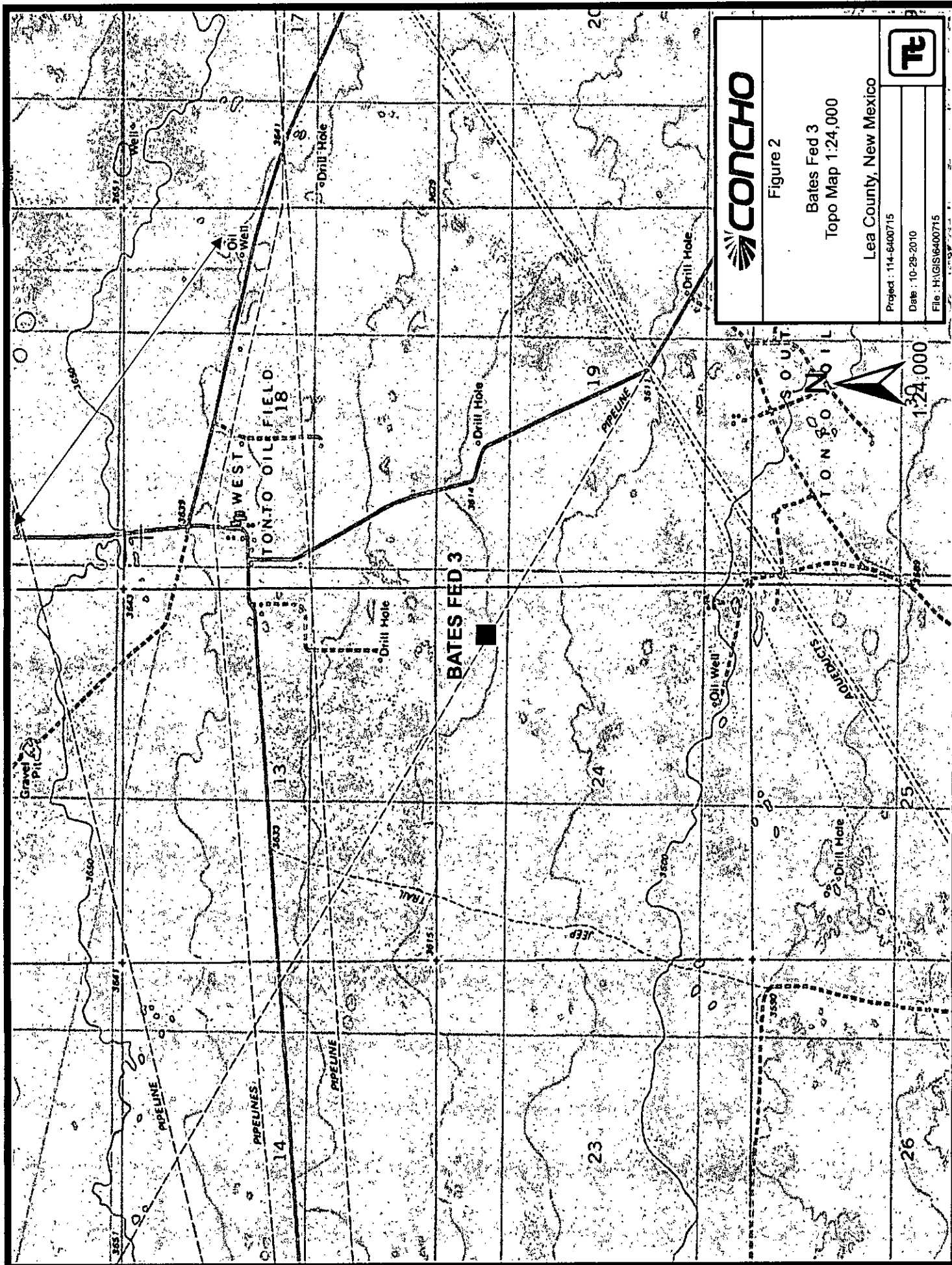






Figure 3

Bates Fed #3 SWD Line

Spill Assessment Map

Lea County, New Mexico

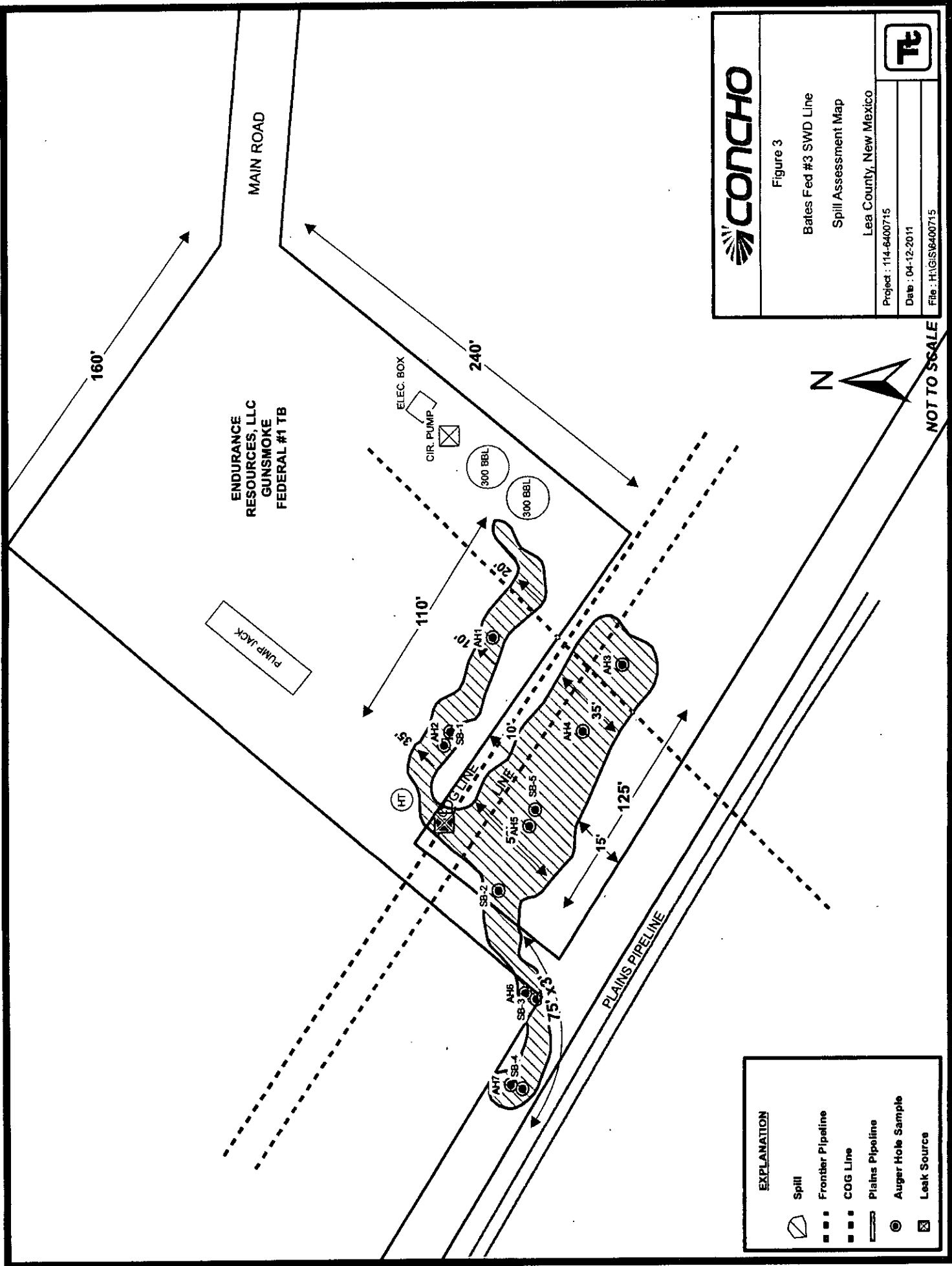
Project : 114-6400715

Date : 04-12-2011

File : H:\GIS\B400715



NOT TO SCALE



EXPLANATION

- Spill
- Frontier Pipeline
- COG Line
- Plains Pipeline
- Auger Hole Sample
- Leak Source





Figure 4

Bates Fed #3 SWD Line

Proposed Excavation Areas & Depths Map

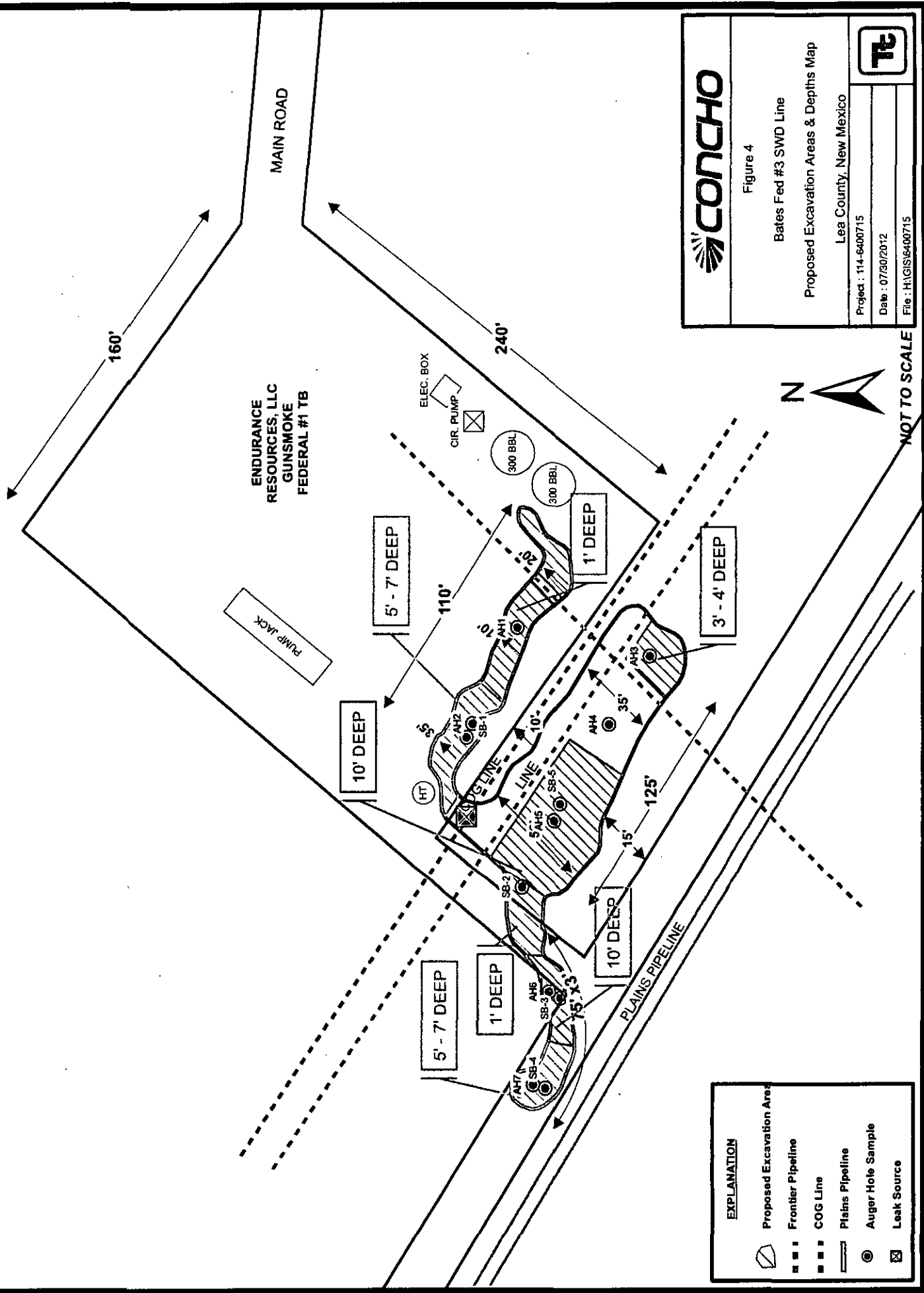
Lea County, New Mexico

Project : 114-6400715

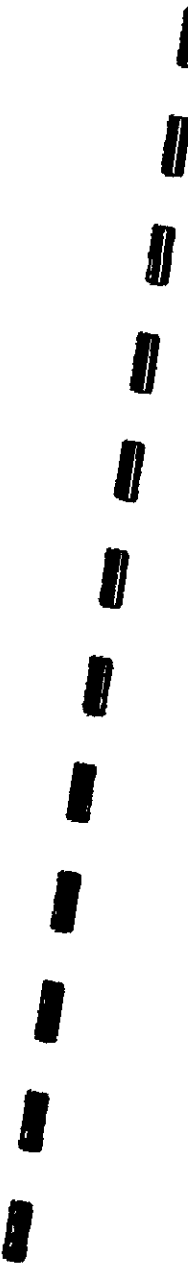
Date : 07/30/2012

File : H:\GIS\6400715









COG Operating LLC.

Lea County, New Mexico

[illegible]

Table 1

COG Operating LLC.

BATES FEDERAL #3

Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-2	3/10/2011	0-1'		X						-	-	-	2,560
	"	3'		X						-	-	-	328
	"	5'		X						-	-	-	<200
	"	7'		X						-	-	-	<200
	"	10'		X						-	-	-	<200
	"	15'		X						-	-	-	<200
	"	20'		X						-	-	-	<200
AH-5	10/27/2010	0-1'		X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	6,490
	"	1-1.5'		X		-	-	-	-	-	-	-	13,700
	"	2-2.5'		X		-	-	-	-	-	-	-	15,600
SB-5	3/16/2011	0-1'		X						-	-	-	6,560
	"	3'		X						-	-	-	12,700
	"	5'		X						-	-	-	9,420
	"	7'		X						-	-	-	8,030
	"	10'		X						-	-	-	4,520
	"	15'		X						-	-	-	372
	"	20'		X						-	-	-	578
	"	25'		X						-	-	-	315
	"	30'		X						-	-	-	<200
	"	40'		X						-	-	-	430
	"	50'		X						-	-	-	1,110



Table 1

**COG Operating LLC.
BATES FEDERAL #3
Lea County, New Mexico**

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-6	10/27/2010	0-1'		X		10.8	<50.0	10.8	<0.0200	<0.0200	<0.0200	<0.0200	9,270
	"	1-1.5'		X		-	-	-	-	-	-	-	16,300
SB-3	3/11/2011	0-1'		X						-	-	-	23,600
	"	3'		X						-	-	-	8,980
	"	5'		X						-	-	-	6,010
	"	7'		X						-	-	-	2,220
	"	10'		X						-	-	-	2,920
	"	15'		X						-	-	-	<200
	"	20'		X						-	-	-	<200
	"	25'		X						-	-	-	<200
	"	30'		X						-	-	-	<200
	"	40'		X						-	-	-	<200



Table 1

COG Operating LLC.

BATES FEDERAL #3

Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-7	10/27/2010	0-1'		X		<2.00	<50.0	<50.0	-	-	-	-	10,200
	"	1-1.5'		X		-	-	-	-	-	-	-	11,700
	"	2-2.5'		X		-	-	-	-	-	-	-	6,640
SB-4	3/11/2011	0-1'		X									4,080
	"	3'		X									8,040
	"	5'		X									7,940
	"	7'		X									10,400
	"	10'		X									<200
	"	15'		X									<200
	"	20'		X									<200
	"	25'		X									238
	"	30'		X									<200

BEB Below Excavation Bottom

(-- Not Analyzed

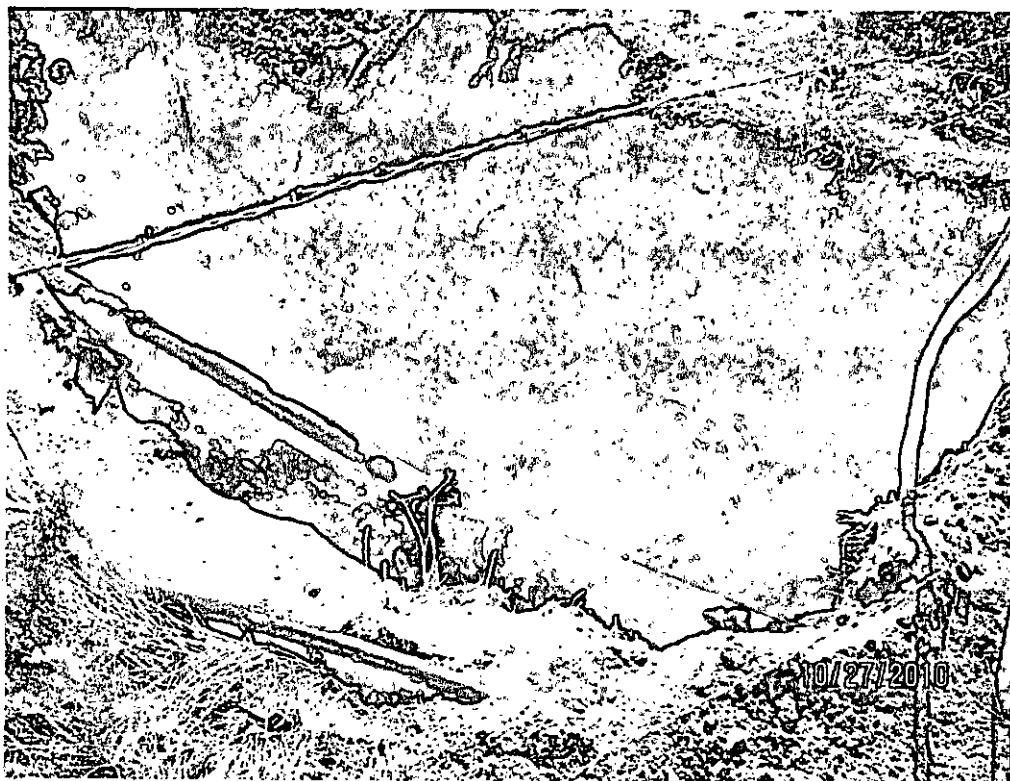
☐ Proposed excavation depths



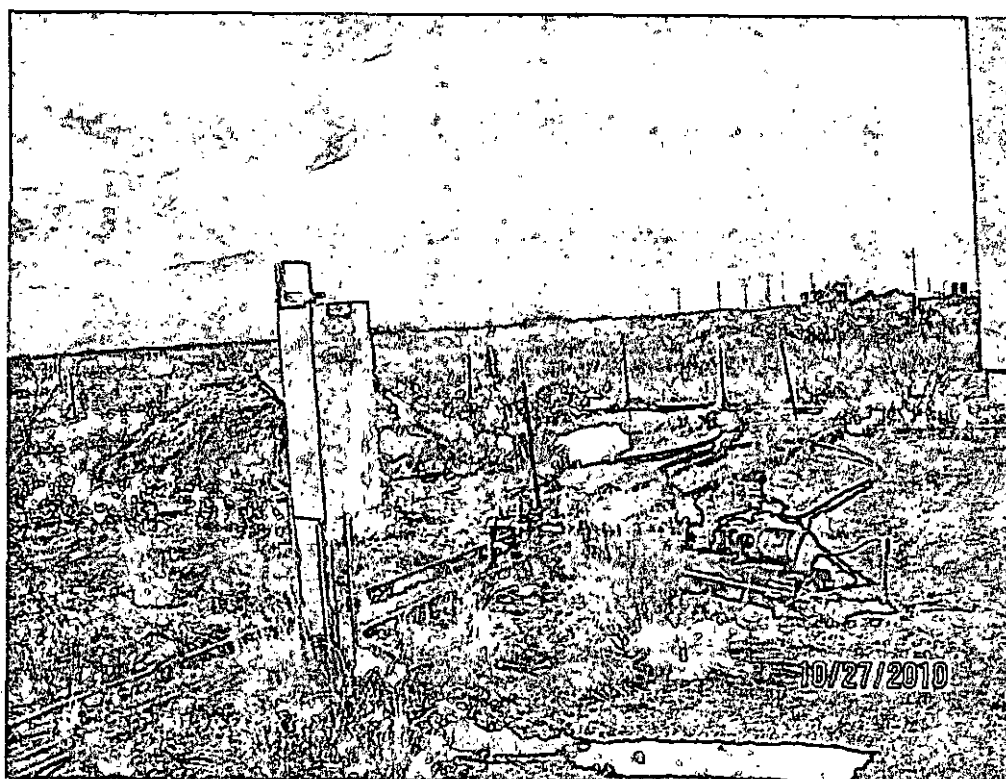
COG Operating LLC
Bates Federal #3 Flowline
Lea County, New Mexico
Site assessment: October 27, 2011



TETRA TECH



Source of spill – Bates Fed #3 Flowline

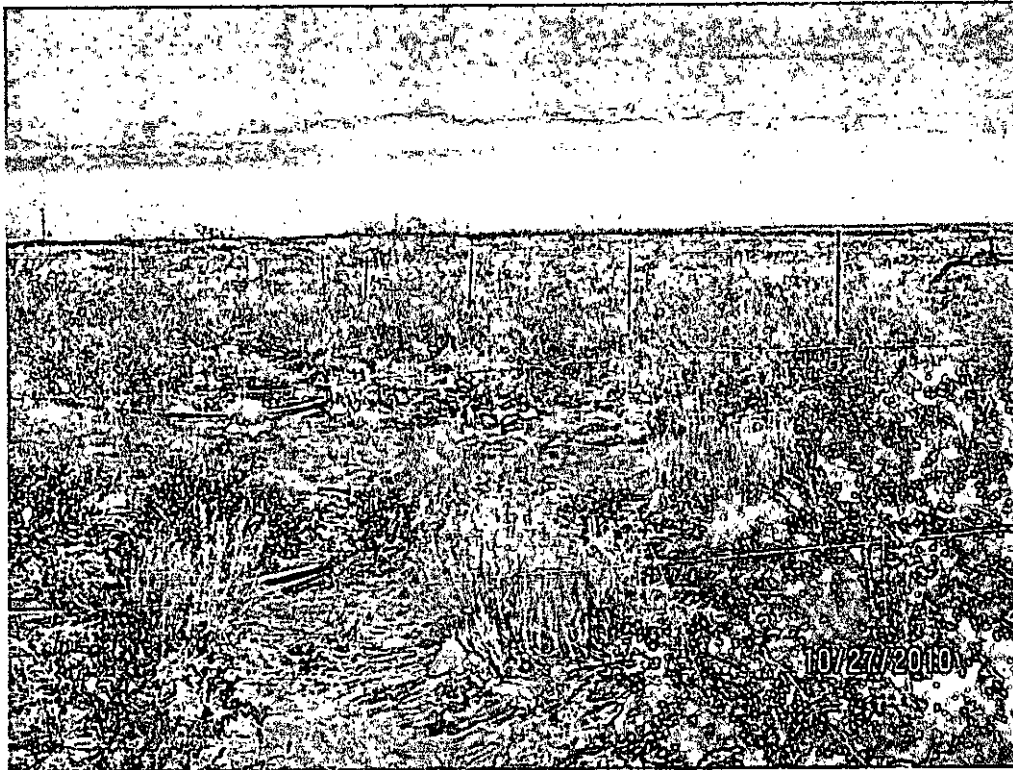


Spill south of Endurance Resources Tank Battery

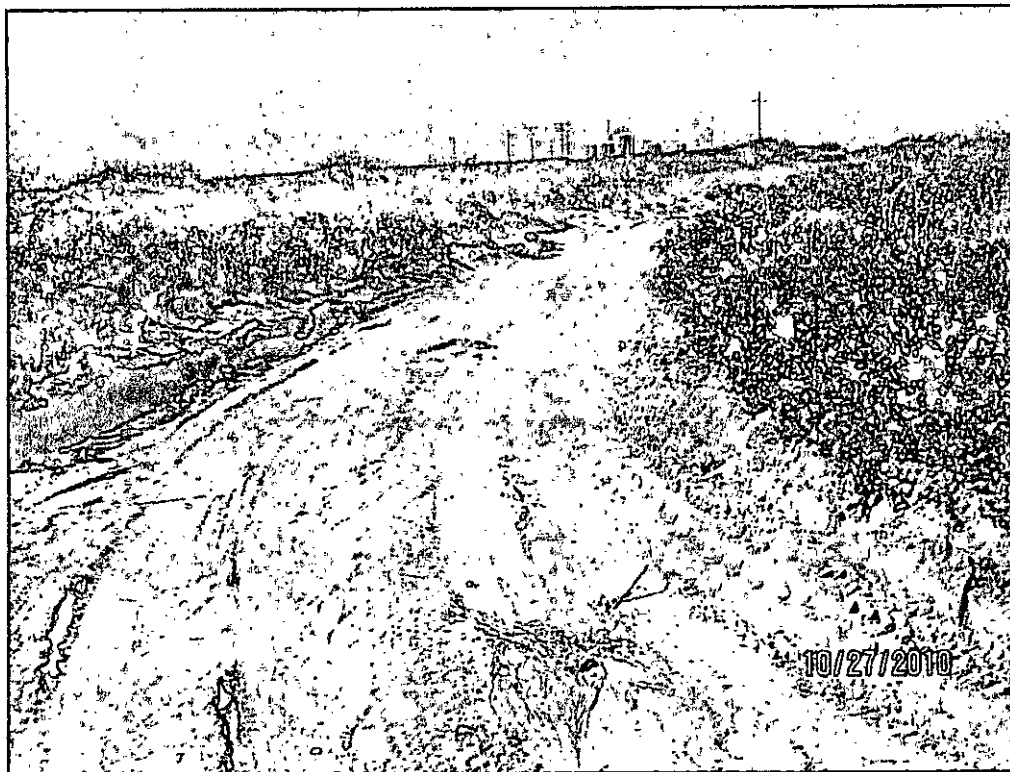
COG Operating LLC
Bates Federal #3 Flowline
Lea County, New Mexico
Site assessment: October 27, 2011



TETRA TECH



View east – Impacted pasture and sand dune area



View south west – Two track road (Near AH-7/SB-4)

Water Well Data
Average Depth to Groundwater (ft)
COG - Bates Federal #3 Flowline
Lea County, New Mexico

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

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

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

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

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

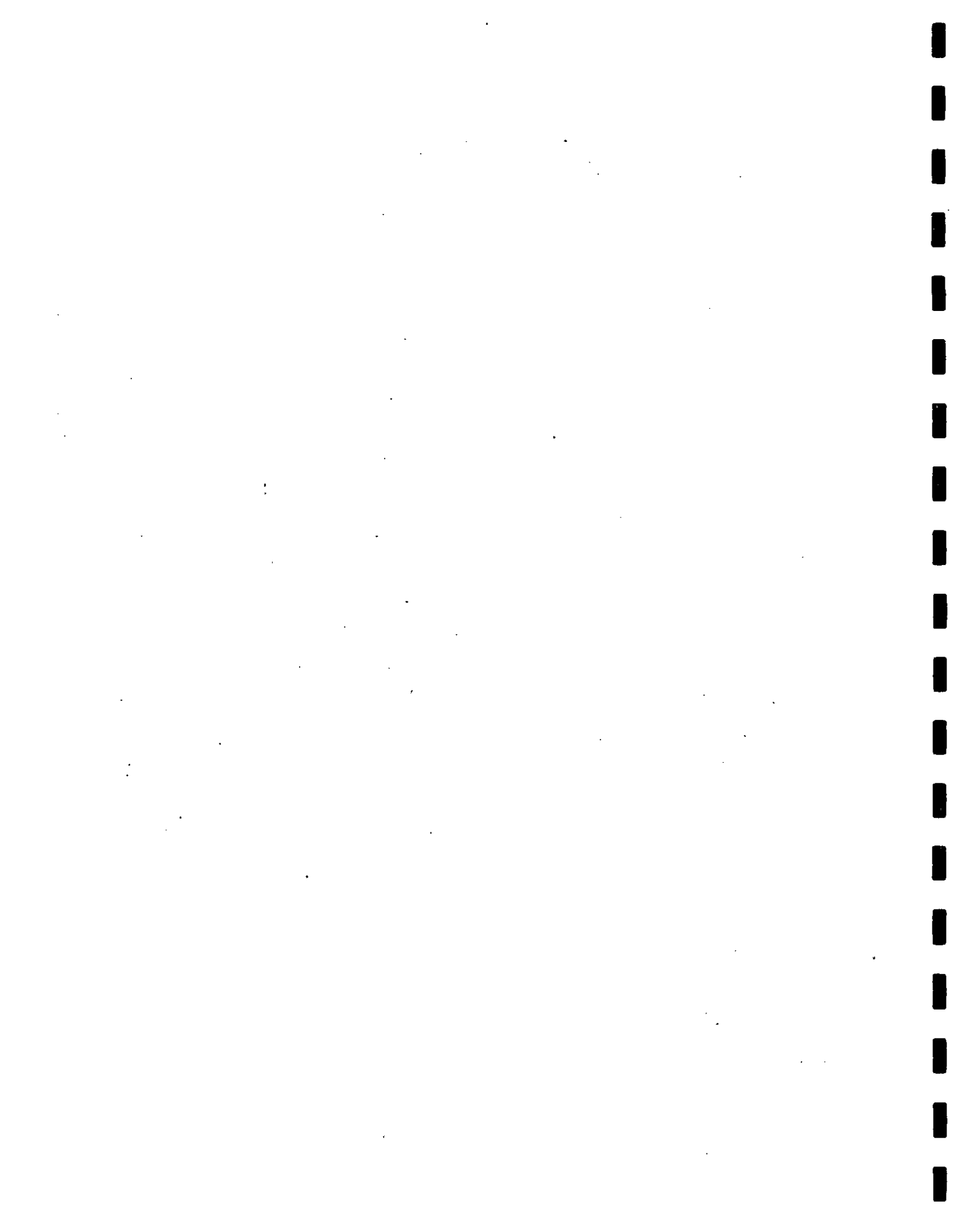
20 South 32 East					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 33 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

19 South 33 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

20 South 33 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
-  Tetra Tech Temporary monitor well (TMW)
-  Eddy and Lea County Boundary

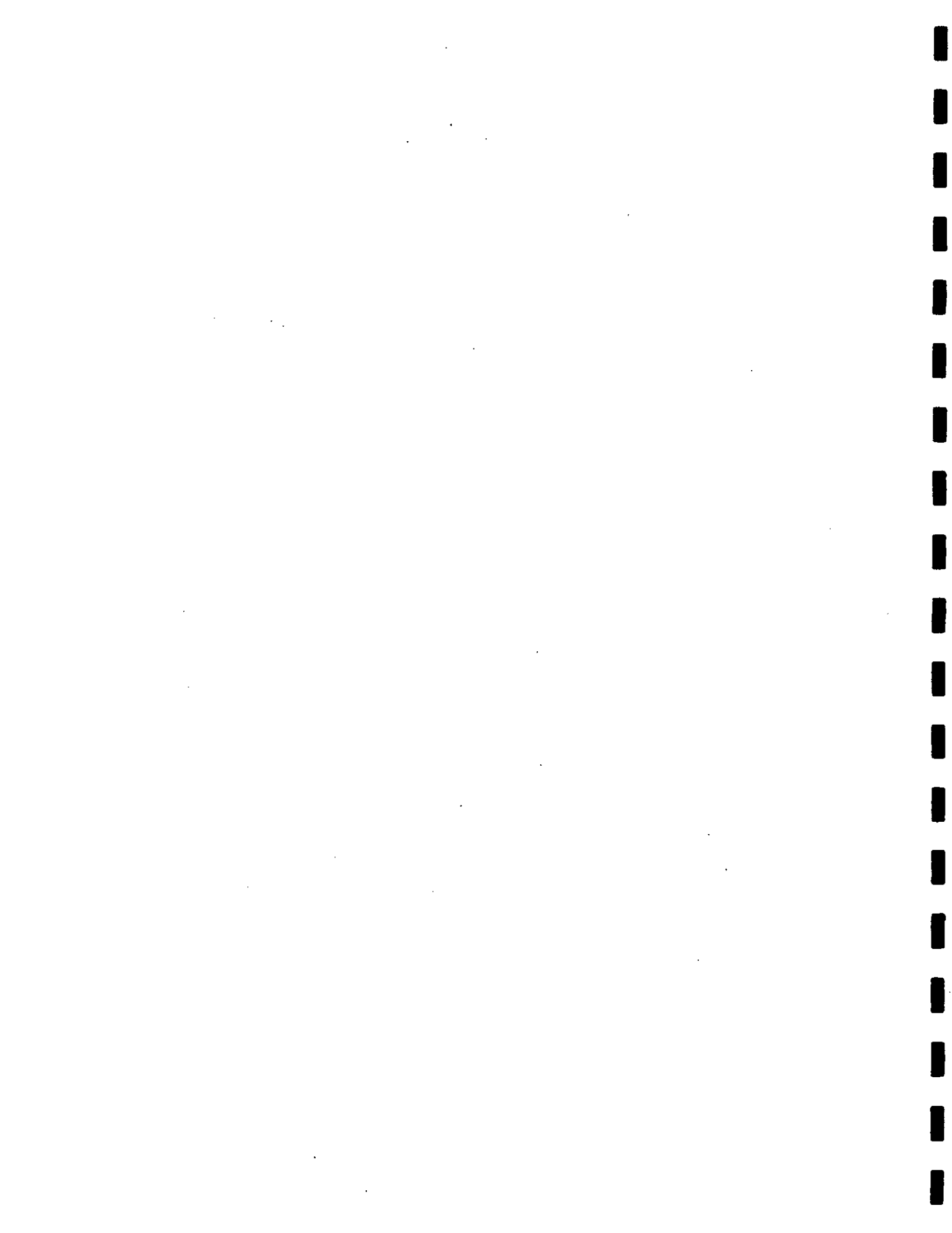


SAMPLE LOG

Boring/Well: TMW-1
 Project Number: 114-6400561
 Client: COG
 Site Location: Bates Federal #3
 Location: Lea County, New Mexico
 Legals: Township 19 South Range 32 East Section 13
 Total Depth: 135
 Date Installed: 08/04/10

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	--	Loose Brown fine grain sand
10-11	--	Soft Calcihe
15-16	--	Soft Calcihe
20-21	--	Soft Calcihe
25-26	--	Soft Calcihe
30-31	--	Loose reddish brown sand
35-36	--	Loose reddish brown sand
40-41	--	Loose reddish brown sand
45-46	--	Stiff red clay
50-51	--	Stiff red clay
55-56	--	Stiff red clay
60-61	--	Stiff red clay
65-66	--	Stiff Blue/Grey clay
70-71	--	Stiff Blue/Grey clay
75-76	--	Stiff Blue/Grey clay
80-81	--	Stiff Blue/Grey clay
85-86	--	Stiff Blue/Grey clay
90-91	--	Stiff brown clay
95-96	--	Very stiff red clay (Redbed)
100-101	--	Very stiff red clay (Redbed)
105-106	--	Very stiff red clay (Redbed)
110-111	--	Very stiff red clay (Redbed)
115-116	--	Very stiff red clay (Redbed)
120-121	--	Very stiff red clay (Redbed)
130-131	--	Very stiff red clay (Redbed)

Total Depth 130' Groundwater was not encountered



Summary Report

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

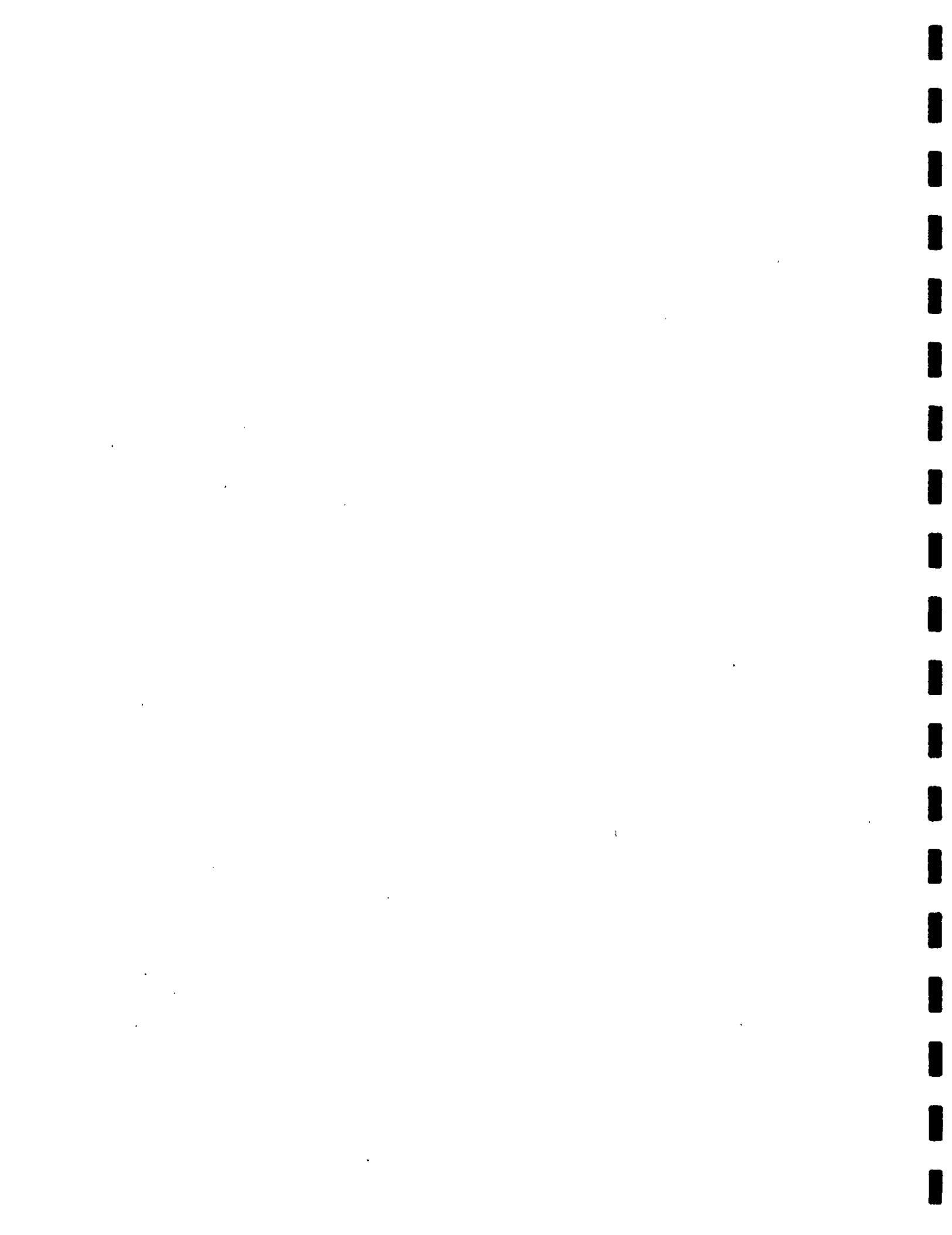
Report Date: November 8, 2010

Work Order: 10102927



Project Location: Lea Co., NM
Project Name: COG/Bates Fed. #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
249127	AH-1 0-1'	soil	2010-10-27	00:00	2010-10-29
249128	AH-1 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249129	AH-1 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249130	AH-2 0-1'	soil	2010-10-27	00:00	2010-10-29
249131	AH-2 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249132	AH-2 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249133	AH-2 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249134	AH-2 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249135	AH-3 0-1'	soil	2010-10-27	00:00	2010-10-29
249136	AH-3 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249137	AH-3 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249138	AH-3 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249139	AH-3 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249140	AH-3 5-5.5'	soil	2010-10-27	00:00	2010-10-29
249141	AH-3 6-6.5'	soil	2010-10-27	00:00	2010-10-29
249142	AH-3 7-7.5'	soil	2010-10-27	00:00	2010-10-29
249143	AH-4 0-1'	soil	2010-10-27	00:00	2010-10-29
249144	AH-4 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249145	AH-4 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249146	AH-5 0-1'	soil	2010-10-27	00:00	2010-10-29
249147	AH-5 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249148	AH-5 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249149	AH-6 0-1'	soil	2010-10-27	00:00	2010-10-29
249150	AH-6 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249151	AH-7 0-1'	soil	2010-10-27	00:00	2010-10-29
249152	AH-7 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249153	AH-7 2-2.5'	soil	2010-10-27	00:00	2010-10-29



Sample - Field Code	BTX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
249127 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249130 - AH-2 0-1'					<50.0	<2.00
249135 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249143 - AH-4 0-1'					<50.0	<2.00
249146 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249149 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	10.8
249151 - AH-7 0-1'					<50.0	<2.00

Sample: 249127 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		1380	mg/Kg	4.00

Sample: 249128 - AH-1 1-1.5'

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

Sample: 249129 - AH-1 2-2.5'

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

Sample: 249130 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		3940	mg/Kg	4.00

Sample: 249131 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		655	mg/Kg	4.00

Sample: 249132 - AH-2 2-2.5;

Param	Flag	Result	Units	RL
Chloride		1010	mg/Kg	4.00

Sample: 249133 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		2120	mg/Kg	4.00

Sample: 249134 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		2690	mg/Kg	4.00

Sample: 249135 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		7810	mg/Kg	4.00

Sample: 249136 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		9210	mg/Kg	4.00

Sample: 249137 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		13400	mg/Kg	4.00

Sample: 249138 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		8540	mg/Kg	4.00

Sample: 249139 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		2310	mg/Kg	4.00

Sample: 249140 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		1320	mg/Kg	4.00



Sample: 249141 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		1540	mg/Kg	4.00

Sample: 249142 - AH-3 7-7.5'

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

Sample: 249143 - AH-4 0-1'

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

Sample: 249144 - AH-4 1-1.5'

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

Sample: 249145 - AH-4 2-2.5'

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

Sample: 249146 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		6490	mg/Kg	4.00

Sample: 249147 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		13700	mg/Kg	4.00

Sample: 249148 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		15600	mg/Kg	4.00



Sample: 249149 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		9270	mg/Kg	4.00

Sample: 249150 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		16300	mg/Kg	4.00

Sample: 249151 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		10200	mg/Kg	4.00

Sample: 249152 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride		11700	mg/Kg	4.00

Sample: 249153 - AH-7 2-2.5'

Param	Flag	Result	Units	RL
Chloride		6640	mg/Kg	4.00

Summary Report

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

Report Date: March 22, 2011

Work Order: 11031512



Project Location: Lea Co., NM
Project Name: COG/Bates Federal #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
260526	SB-1 0-1'	soil	2011-03-10	00:00	2011-03-15
260527	SB-1 3'	soil	2011-03-10	00:00	2011-03-15
260528	SB-1 5'	soil	2011-03-10	00:00	2011-03-15
260529	SB-1 7'	soil	2011-03-10	00:00	2011-03-15
260530	SB-1 10'	soil	2011-03-10	00:00	2011-03-15
260531	SB-1 15'	soil	2011-03-10	00:00	2011-03-15
260532	SB-1 20'	soil	2011-03-10	00:00	2011-03-15
260533	SB-2 0-1'	soil	2011-03-10	00:00	2011-03-15
260534	SB-2 3'	soil	2011-03-10	00:00	2011-03-15
260535	SB-2 5'	soil	2011-03-10	00:00	2011-03-15
260536	SB-2 7'	soil	2011-03-10	00:00	2011-03-15
260537	SB-2 10'	soil	2011-03-10	00:00	2011-03-15
260538	SB-2 15'	soil	2011-03-10	00:00	2011-03-15
260539	SB-2 20'	soil	2011-03-10	00:00	2011-03-15
260540	SB-3 0-1'	soil	2011-03-11	00:00	2011-03-15
260541	SB-3 3'	soil	2011-03-11	00:00	2011-03-15
260542	SB-3 5'	soil	2011-03-11	00:00	2011-03-15
260543	SB-3 7'	soil	2011-03-11	00:00	2011-03-15
260544	SB-3 10'	soil	2011-03-11	00:00	2011-03-15
260545	SB-3 15'	soil	2011-03-11	00:00	2011-03-15
260546	SB-3 20'	soil	2011-03-11	00:00	2011-03-15
260547	SB-3 25'	soil	2011-03-11	00:00	2011-03-15
260548	SB-3 30'	soil	2011-03-11	00:00	2011-03-15
260549	SB-3 40'	soil	2011-03-11	00:00	2011-03-15
260550	SB-4 0-1'	soil	2011-03-11	00:00	2011-03-15
260551	SB-4 3'	soil	2011-03-11	00:00	2011-03-15
260552	SB-4 5'	soil	2011-03-11	00:00	2011-03-15
260553	SB-4 7'	soil	2011-03-11	00:00	2011-03-15
260554	SB-4 10'	soil	2011-03-11	00:00	2011-03-15
260555	SB-4 15'	soil	2011-03-11	00:00	2011-03-15

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
260556	SB-4 20'	soil	2011-03-11	00:00	2011-03-15
260557	SB-4 25'	soil	2011-03-11	00:00	2011-03-15
260558	SB-4 30'	soil	2011-03-11	00:00	2011-03-15

Sample: 260526 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		8340	mg/Kg	4.00

Sample: 260527 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		3010	mg/Kg	4.00

Sample: 260528 - SB-1 5'

Param	Flag	Result	Units	RL
Chloride		2470	mg/Kg	4.00

Sample: 260529 - SB-1 7'

Param	Flag	Result	Units	RL
Chloride		1470	mg/Kg	4.00

Sample: 260530 - SB-1 10'

Param	Flag	Result	Units	RL
Chloride		216	mg/Kg	4.00

Sample: 260531 - SB-1 15'

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4.00

Sample: 260532 - SB-1 20'

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

Sample: 260533 - SB-2 0-1'

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	4.00

Sample: 260534 - SB-2 3'

Param	Flag	Result	Units	RL
Chloride		328	mg/Kg	4.00

Sample: 260535 - SB-2 5'

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

Sample: 260536 - SB-2 7'

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

Sample: 260537 - SB-2 10'

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

Sample: 260538 - SB-2 15'

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

Sample: 260539 - SB-2 20'

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

Sample: 260540 - SB-3 0-1'

Param	Flag	Result	Units	RL
Chloride		23600	mg/Kg	4.00

Sample: 260541 - SB-3 3'

Param	Flag	Result	Units	RL
Chloride		8980	mg/Kg	4.00

Sample: 260542 - SB-3 5'

Param	Flag	Result	Units	RL
Chloride		6010	mg/Kg	4.00

Sample: 260543 - SB-3 7'

Param	Flag	Result	Units	RL
Chloride		2220	mg/Kg	4.00

Sample: 260544 - SB-3 10'

Param	Flag	Result	Units	RL
Chloride		2920	mg/Kg	4.00

Sample: 260545 - SB-3 15'

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

Sample: 260546 - SB-3 20'

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

Sample: 260547 - SB-3 25'

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



Sample: 260548 - SB-3 30'

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

Sample: 260549 - SB-3 40'

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

Sample: 260550 - SB-4 0-1'

Param	Flag	Result	Units	RL
Chloride		4080	mg/Kg	4.00

Sample: 260551 - SB-4 3'

Param	Flag	Result	Units	RL
Chloride		8040	mg/Kg	4.00

Sample: 260552 - SB-4 5'

Param	Flag	Result	Units	RL
Chloride		7940	mg/Kg	4.00

Sample: 260553 - SB-4 7'

Param	Flag	Result	Units	RL
Chloride		10400	mg/Kg	4.00

Sample: 260554 - SB-4 10'

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

Sample: 260555 - SB-4 15'

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

Sample: 260556 - SB-4 20'

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

Sample: 260557 - SB-4 25'

Param	Flag	Result	Units	RL
Chloride		238	mg/Kg	4.00

Sample: 260558 - SB-4 30'

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

Summary Report

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

Report Date: March 28, 2011

Work Order: 11032331



Project Location: Lea Co., NM
Project Name: COG/Bates Federal #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
261380	SB-5 0-1'	soil	2011-03-16	00:00	2011-03-23
261381	SB-5 3'	soil	2011-03-16	00:00	2011-03-23
261382	SB-5 5'	soil	2011-03-16	00:00	2011-03-23
261383	SB-5 7'	soil	2011-03-16	00:00	2011-03-23
261384	SB-5 10'	soil	2011-03-16	00:00	2011-03-23
261385	SB-5 15'	soil	2011-03-16	00:00	2011-03-23
261386	SB-5 20'	soil	2011-03-16	00:00	2011-03-23
261387	SB-5 25'	soil	2011-03-16	00:00	2011-03-23
261388	SB-5 30'	soil	2011-03-16	00:00	2011-03-23
261389	SB-5 40'	soil	2011-03-16	00:00	2011-03-23
261390	SB-5 50'	soil	2011-03-16	00:00	2011-03-23

Sample: 261380 - SB-5 0-1'

Param	Flag	Result	Units	RL
Chloride		6560	mg/Kg	4.00

Sample: 261381 - SB-5 3'

Param	Flag	Result	Units	RL
Chloride		12700	mg/Kg	4.00

Sample: 261382 - SB-5 5'

Param	Flag	Result	Units	RL
Chloride		9420	mg/Kg	4.00

Sample: 261383 - SB-5 7'

Param	Flag	Result	Units	RL
Chloride		8030	mg/Kg	4.00

Sample: 261384 - SB-5 10'

Param	Flag	Result	Units	RL
Chloride		4520	mg/Kg	4.00

Sample: 261385 - SB-5 15'

Param	Flag	Result	Units	RL
Chloride		372	mg/Kg	4.00

Sample: 261386 - SB-5 20'

Param	Flag	Result	Units	RL
Chloride		578	mg/Kg	4.00

Sample: 261387 - SB-5 25'

Param	Flag	Result	Units	RL
Chloride		315	mg/Kg	4.00

Sample: 261388 - SB-5 30'

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

Sample: 261389 - SB-5 40'

Param	Flag	Result	Units	RL
Chloride		430	mg/Kg	4.00

Report Date: March 28, 2011

Work Order: 11032331

Page Number: 3 of 3

Sample: 261390 - SB-5 50'

Param	Flag	Result	Units	RL
Chloride		1110	mg/Kg	4.00



SITE INFORMATION

Report Type: Closure Report

General Site Information:

Site:	Bates Federal #3
Company:	COG Operating LLC
Section, Township and Range	Unit A Sec. 24 T-19S R-32E
Lease Number:	30-025-22597
County:	Lea County
GPS:	32.65091° N 103.71333° W
Surface Owner:	Federal
Mineral Owner:	
Directions:	From the intersection of CR-126 and CR-243, travel north on CR-126 5.9 miles, turn right (Speedbump Road) 4.9 miles, turn right 0.7 miles, turn right 0.3 miles to location. intersection.

Release Data:

Date Released:	10/9/2010
Type Release:	Produced Water
Source of Contamination:	Flowline failure
Fluid Released:	120 bbls
Fluids Recovered:	70 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	300'
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

HOBBS OCD

JAN 14 2013

RECEIVED



TETRA TECH

HOBBS OCD

November 27, 2012

JAN 14 2013

RECEIVED

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the COG Operating LLC, Bates Federal #3, Unit A, Section 24, Township 19 South, Range 32 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC (COG) to assess a spill from the Bates Federal #3, Unit A, Section 24, Township 19 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.65091°, W 103.71333°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Release Report, the leak was discovered on October 9, 2010, and released approximately 120 barrels of produced water from a buried flow line. To alleviate the problem, COG personnel removed and replaced the faulty section of polyline. Seventy (70) barrels were recovered. The spill occurred from the polyline and impacted an area approximately 50' x 125' in the pasture area. The spill migrated north onto the adjacent tank battery caliche pad operated by Endurance Resources, LLC., and impacting an area approximately 20' x 110'. A second finger migrated south along a COG SWD line right-of-way (two track road), impacting an area approximately 3' x 75'. The initial C-141 form is enclosed in Appendix A.

Groundwater

No water wells were reported in Section 24. Tetra Tech had previously installed temporary monitor wells in Section 13. This well was drilled to a total depth of 135' and no groundwater was encountered (dry). According to the NMOCD map, the depth to groundwater in this area is approximately 300' below surface. The groundwater data 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





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 October 27, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of seven (7) auger holes (AH-1 through AH-7) were installed using a stainless steel hand auger to assess the impacted soils. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, all submitted samples were below the RRAL for TPH and BTEX. Elevated chloride concentrations were detected at each auger hole, with the exception of AH-4. The chloride concentrations impact was vertically defined in the areas of AH-1 and AH-3. The remaining auger holes (AH-2, AH-5, AH-6, and AH-7) were not vertically defined.

In order to vertically define the chloride concentration impact, Tetra Tech personnel supervised the installation of soil borings. Utilizing an air rotary drilling rig, five (5) soil borings (SB-1 through SB-5) were installed to collect deeper samples. The soil borings were extended to a maximum depth of 50.0' below surface. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The soil boring locations are shown on Figure 3.

Referring to Table 1, the chloride impact areas were vertically defined at depth ranging from 7.0' to 15.0' below surface. The area of SB-5 detected a bottom hole sample of 1,110 mg/kg at 50.0' below surface. Based on the results, the samples collected in the upper soils did not show a significant chloride impact and the bottom hole sample appears to be cross-contamination from the upper soils.



TETRA TECH

Remediation and 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, with the exception of the areas of AH-3 and AH-5. These areas were proposed to be excavated to approximately 10.0' and 4.0' below grade. However, due to the underground lines located in the vicinity, the area could only be excavated safely.

Tetra Tech contacted the NMOCD and BLM to discuss the safety concerns excavating around the lines in the areas of AH-3 and AH-5. As approved, the areas were excavated and removed approximately 1.0' of soil, placed clay material and mounded the area to grade.

A total of 460 cubic yards of soil were excavated and transported to proper disposal. The excavation depths are highlighted in Table 1 and shown on Figure 4. The remaining 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

Ike Tavarez, PG
Project Manager

cc: Pat Ellis -- COG
Jim Amos - BLM



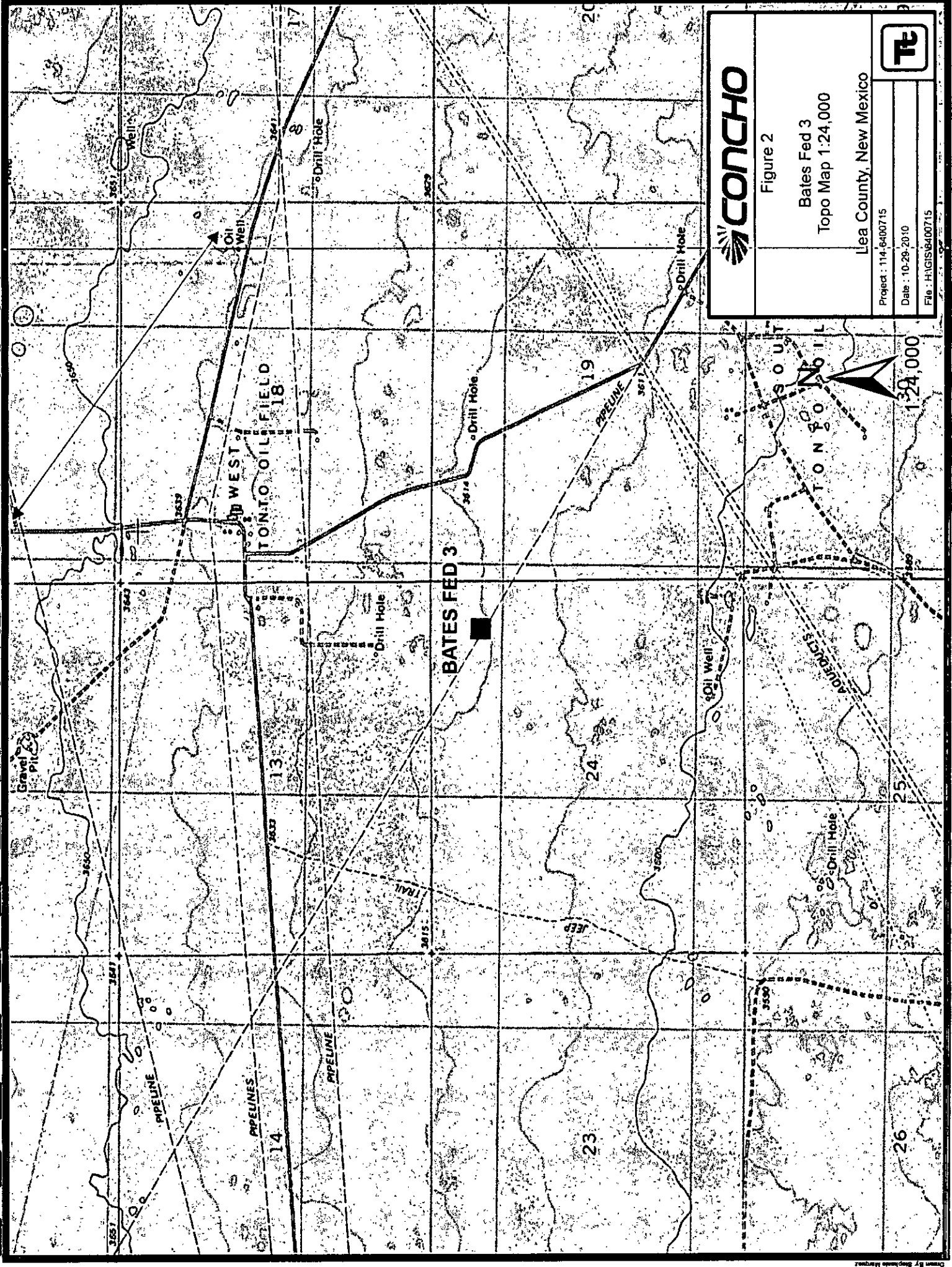
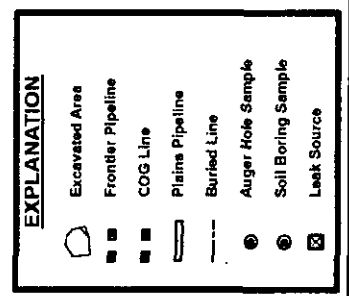


	Figure 2
	Bates Fed 3 Topo Map 1:24,000
Lea County, New Mexico	
Project : 114-6400715	Date : 10-29-2010
File : HAGIS6400715	









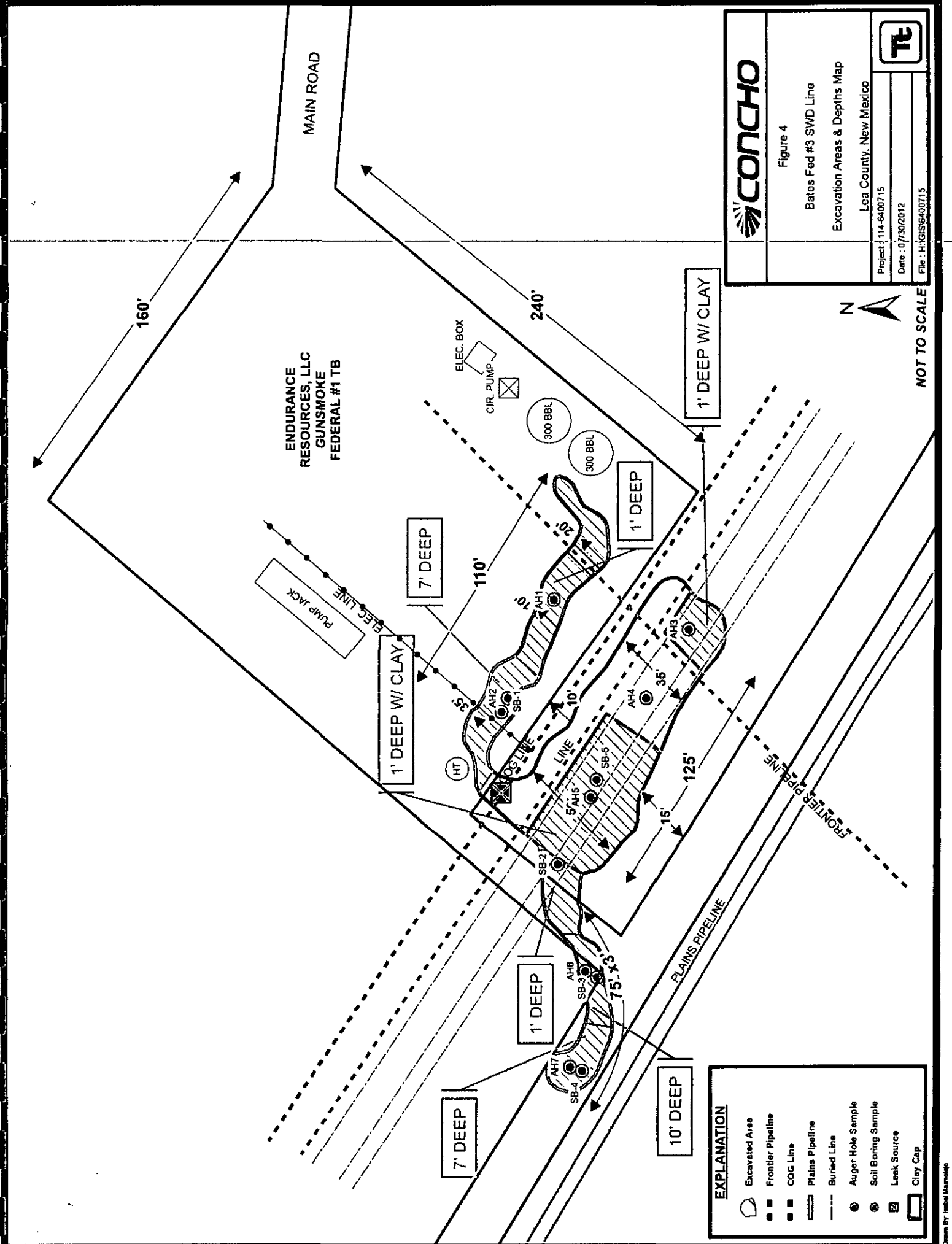


Figure 4

Bates Fed #3 SWD Line

Excavation Areas & Depths Map

Lea County, New Mexico

Project: 114-6400715

Date: 07/30/2012

File: HIGIS6400715



NOT TO SCALE

EXPLANATION

- Excavated Area
- Frontier Pipeline
- COG Line
- Plains Pipeline
- Buried Line
- Auger Hole Sample
- Soil Boring Sample
- Leak Source
- Clay Cap



Table 1
COG Operating LLC.
BATES FEDERAL #3
Lea County, New Mexico

[illegible]

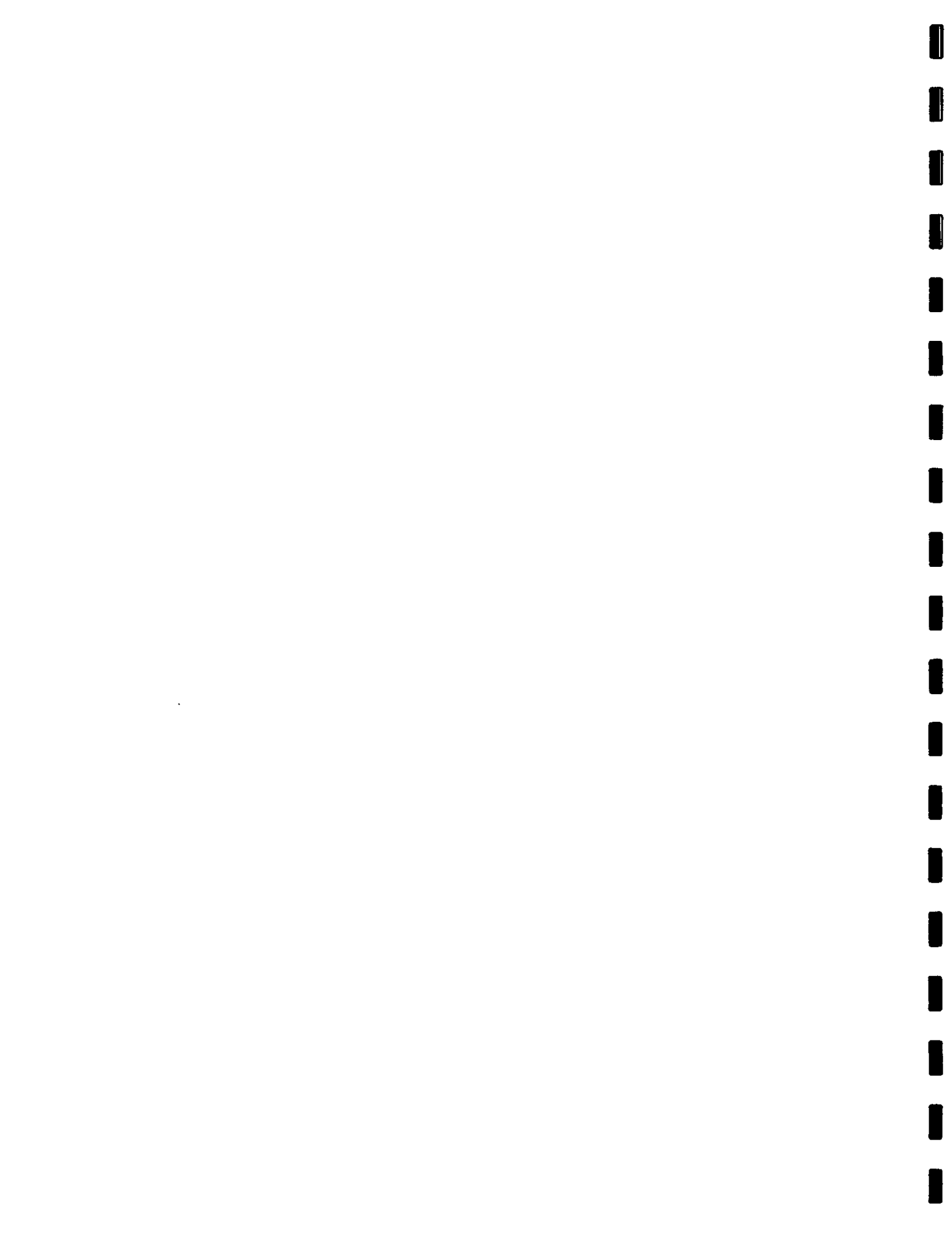


Table 1

COG Operating LLC.

BATES FEDERAL #3

Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-2	3/10/2011	0-1'			X					-	-	-	2,560
	"	3'		X						-	-	-	328
	"	5'		X						-	-	-	<200
	"	7'		X						-	-	-	<200
	"	10'		X						-	-	-	<200
	"	15'		X						-	-	-	<200
	"	20'		X						-	-	-	<200
AH-5	10/27/2010	0-1'		X	X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	6,490
	"	1-1.5'	X			-	-	-	-	-	-	-	13,700
	"	2-2.5'	X			-	-	-	-	-	-	-	15,600
SB-5	3/16/2011	0-1'			X					-	-	-	6,560
	"	3'		X						-	-	-	12,700
	"	5'		X						-	-	-	9,420
	"	7'		X						-	-	-	8,030
	"	10'		X						-	-	-	4,520
	"	15'		X						-	-	-	372
	"	20'		X						-	-	-	578
	"	25'		X						-	-	-	315
	"	30'		X						-	-	-	<200
	"	40'		X						-	-	-	430
	"	50'		X						-	-	-	1,110

Table 1

COG Operating LLC.

BATES FEDERAL #3

Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
AH-7	10/27/2010	0-1'			X	<2.00	<50.0	<50.0	-	-	-	-	10,200
	"	1-1.5'			X	-	-	-	-	-	-	-	11,700
	"	2-2.5'			X	-	-	-	-	-	-	-	6,640
SB-4	3/11/2011	0-1'			X	-	-	-	-	-	-	-	4,080
	"	3'			X	-	-	-	-	-	-	-	8,040
	"	5'			X	-	-	-	-	-	-	-	7,940
	"	7'			X	-	-	-	-	-	-	-	10,400
	"	10'		X		-	-	-	-	-	-	-	<200
	"	15'		X		-	-	-	-	-	-	-	<200
	"	20'		X		-	-	-	-	-	-	-	<200
	"	25'		X		-	-	-	-	-	-	-	238
	"	30'		X		-	-	-	-	-	-	-	<200

BEB Below Excavation Bottom

(-- Not Analyzed

☐ Excavation depths☐ Clay Installed



f

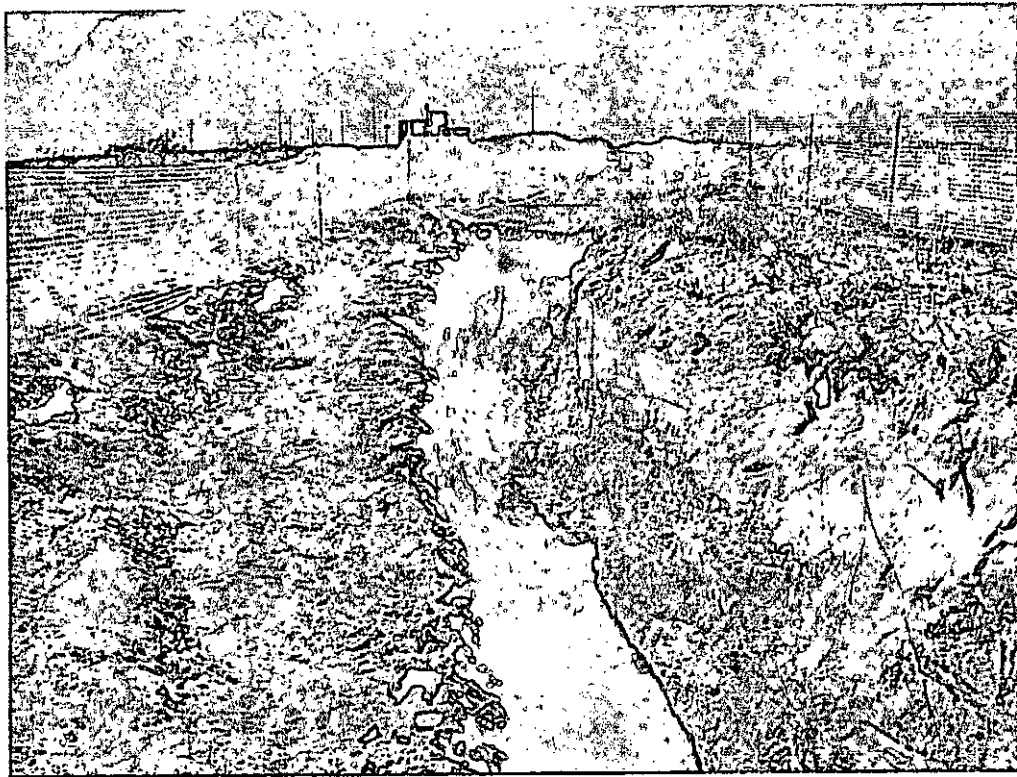


View Southwest – Excavation of AH-1.

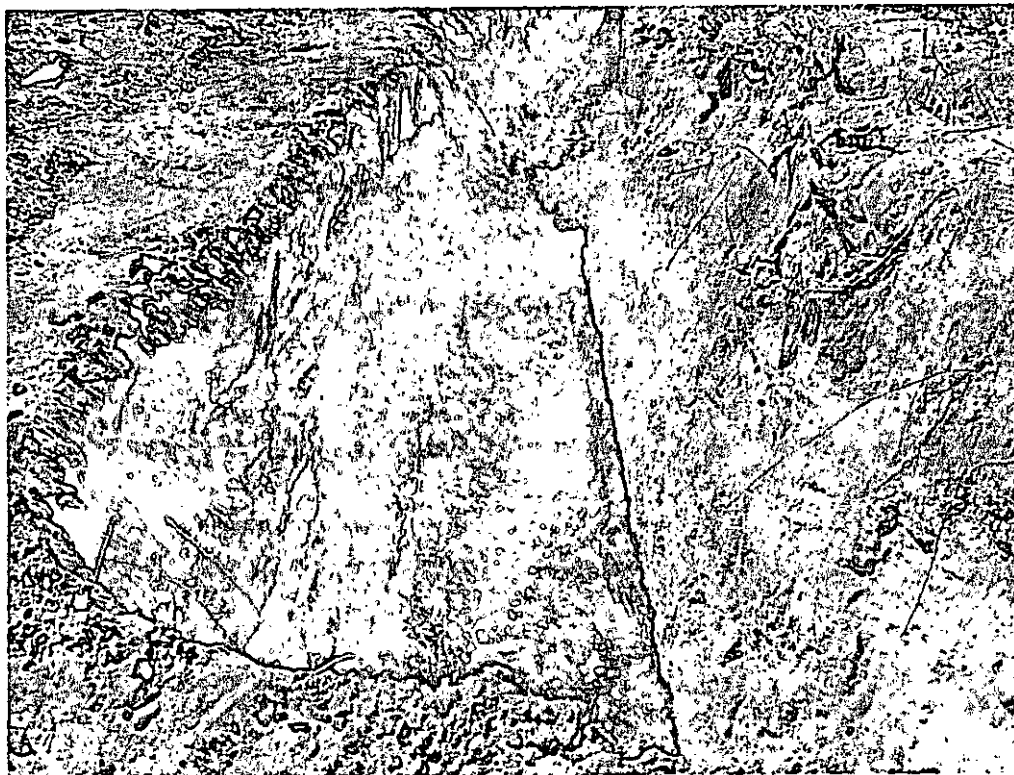


View Southeast – Excavation of AH-2 (SB-1).





View West – Excavation of AH-7 (SB-4).



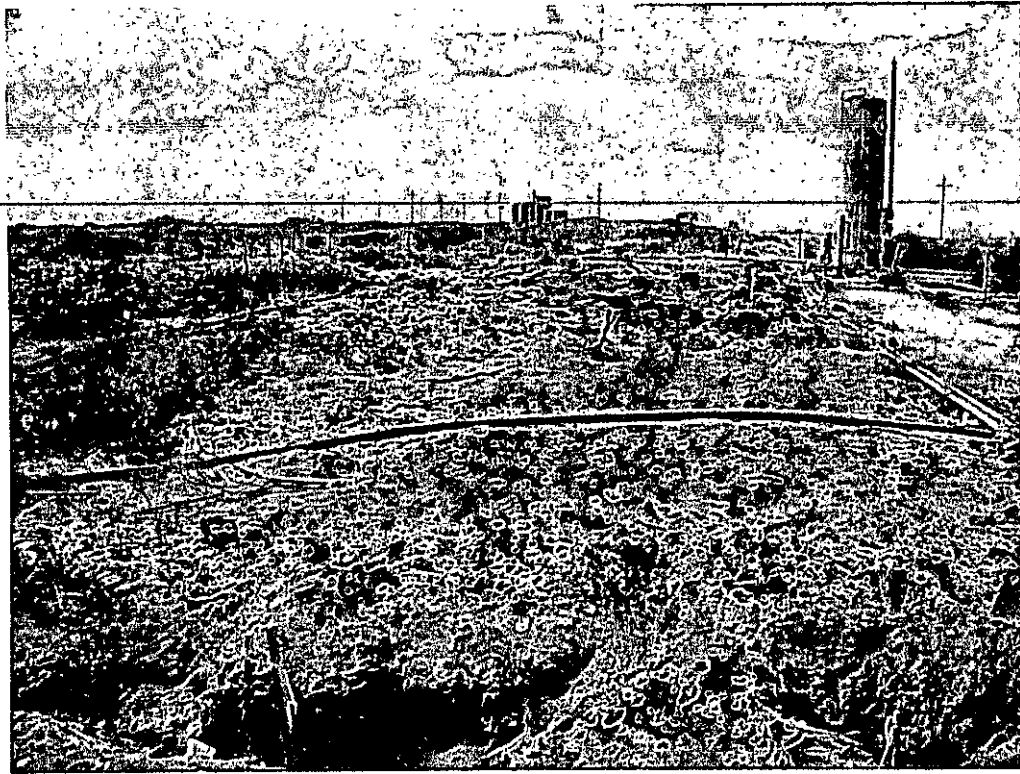
View Southwest – Excavation of AH-6 (SB-3).



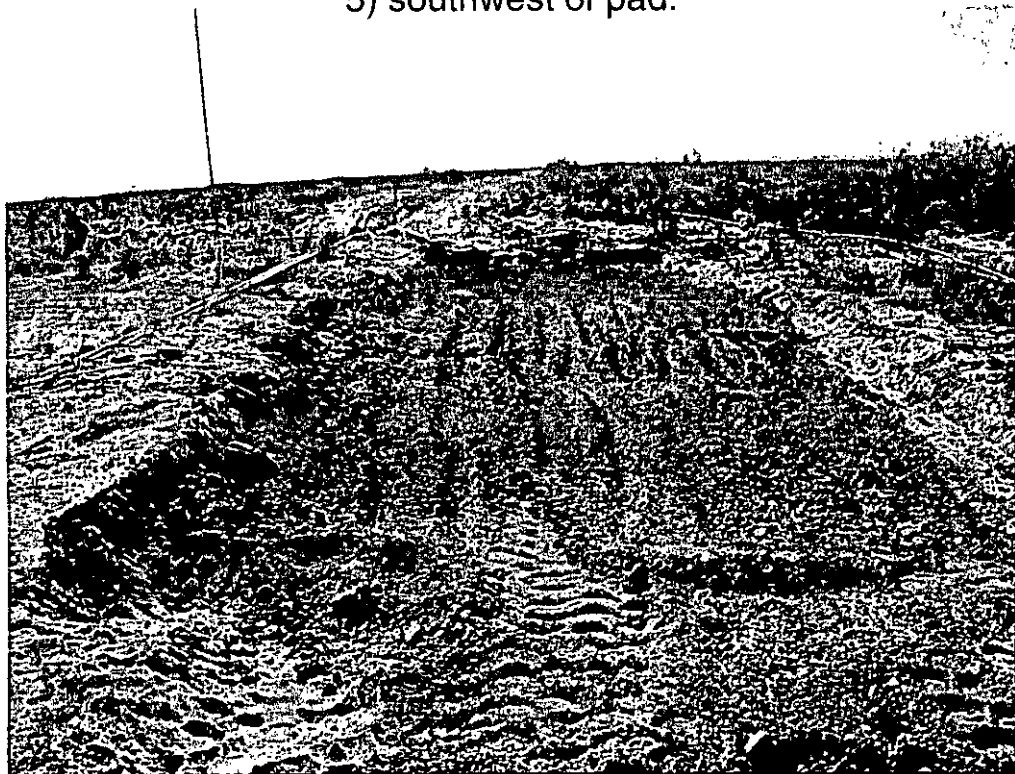
COG Operating LLC
Bates Fed #3 SWD Line
Lea County, New Mexico



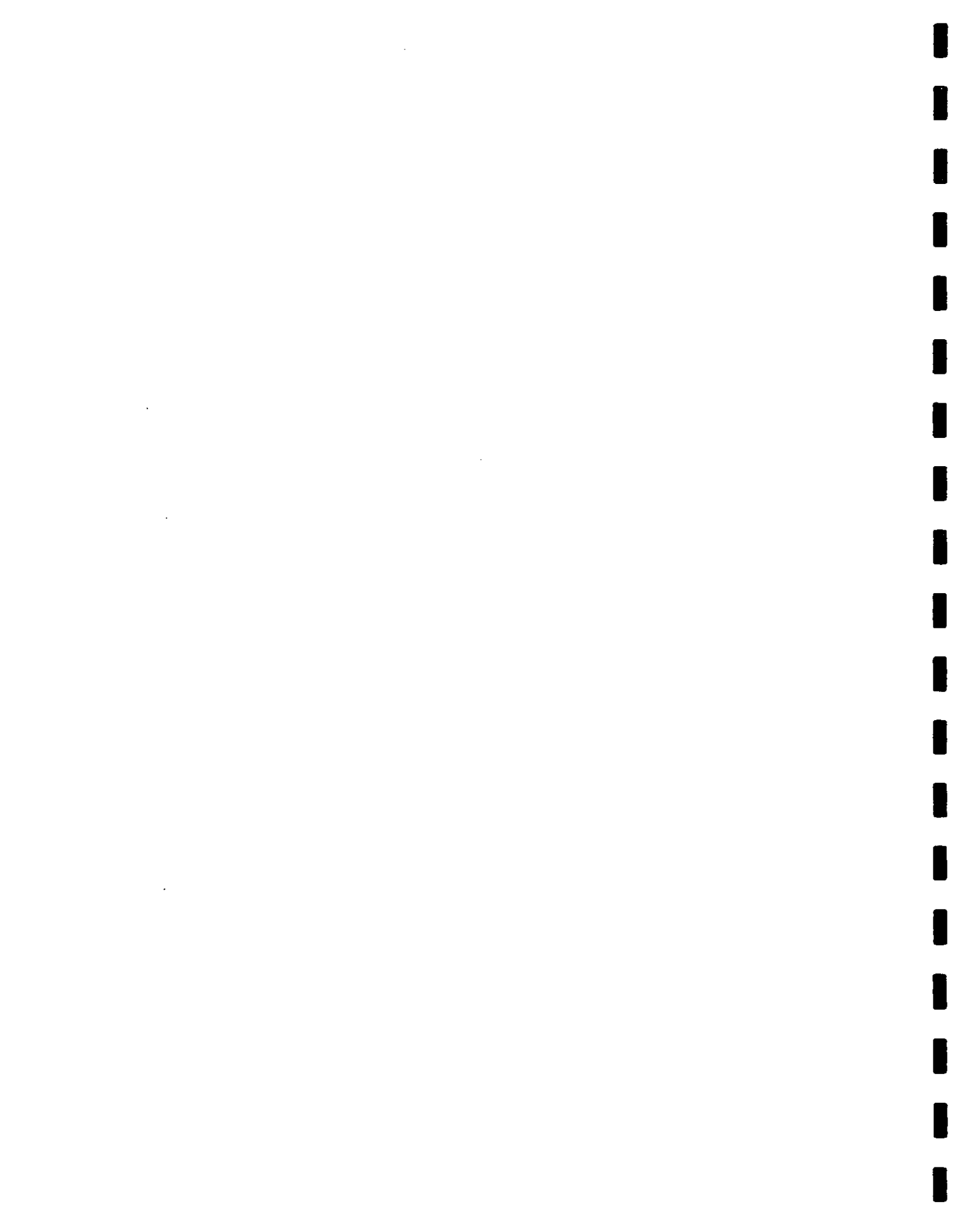
TETRA TECH



View Northwest – Pipeline right-of-way in area of AH-5 (SB-5) southwest of pad.



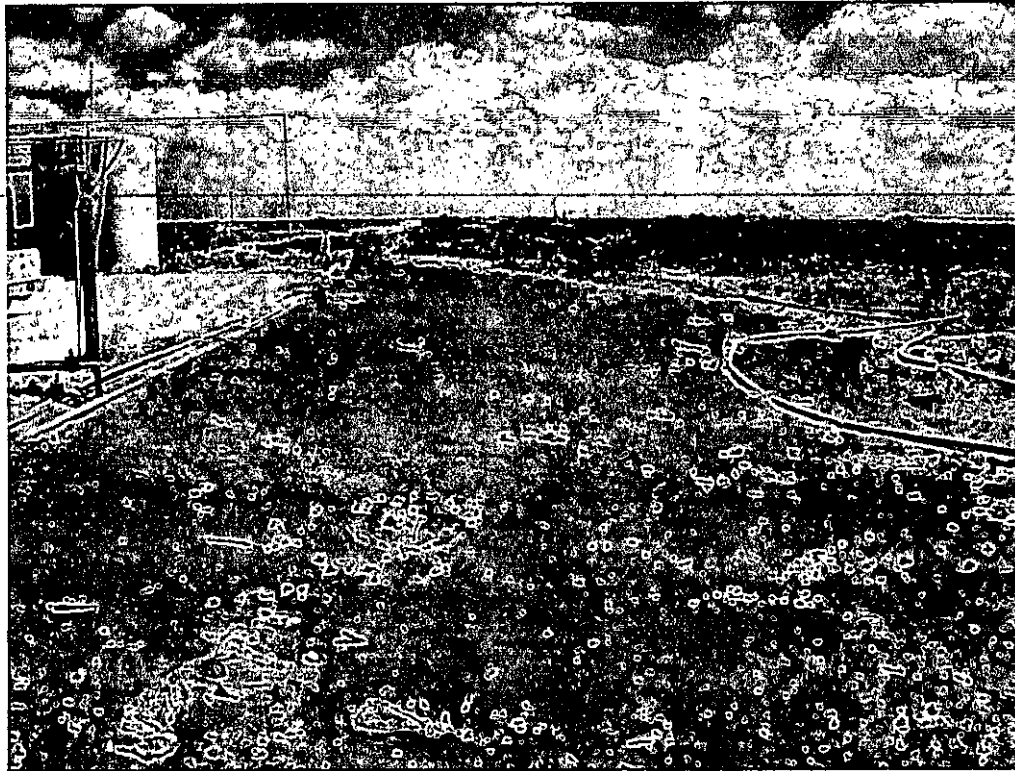
View Southeast – Clay cap added to AH-3 and AH-5 (SB-5).



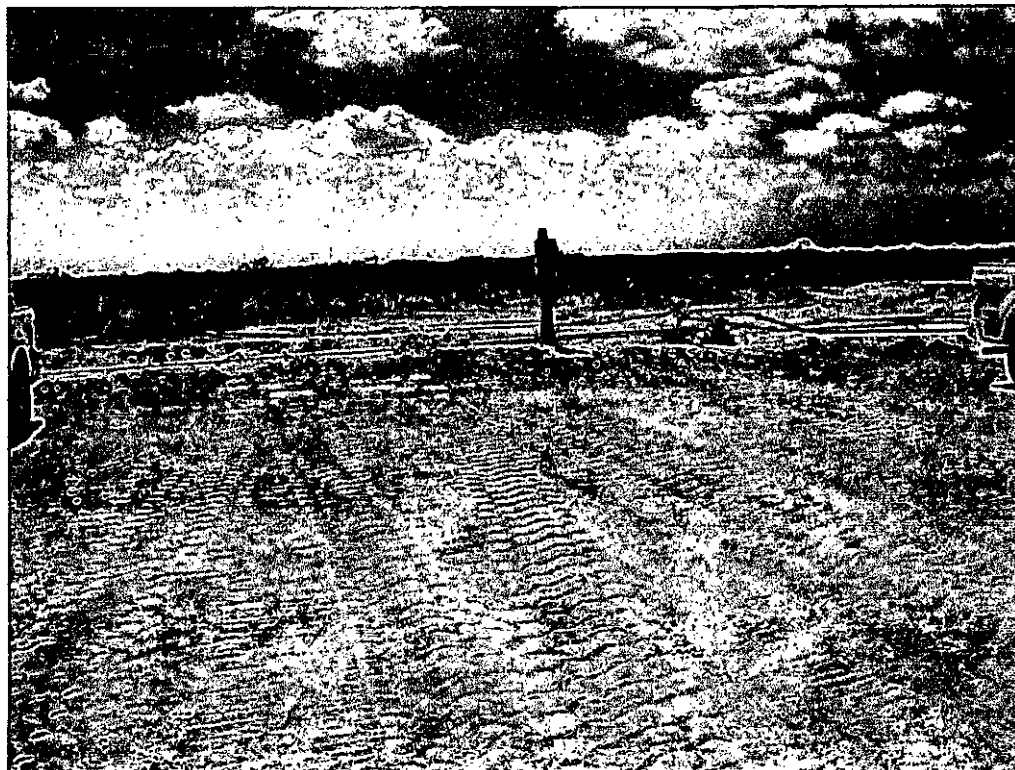
COG Operating LLC
Bates Fed #3 SWD Line
Lea County, New Mexico



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View Southeast – Backfill



View Southwest – Backfill

APPENDIX A

Water Well Data
Average Depth to Groundwater (ft)
COG - Bates Federal #3 Flowline
Lea County, New Mexico

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

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

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

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

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

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

18 South 33 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

19 South 33 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

20 South 33 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
-  Tetra Tech Temporary monitor well (TMW)
-  Eddy and Lea County Boundary



SAMPLE LOG

Boring/Well: TMW-1
Project Number: 114-6400561
Client: COG
Site Location: Bates Federal #3
Location: Lea County, New Mexico
Legals: Township 19 South Range 32 East Section 13

Total Depth 135
Date Installed: 08/04/10

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	--	Loose Brown fine grain sand
10-11	--	Soft Calcihe
15-16	--	Soft Calcihe
20-21	--	Soft Calcihe
25-26	--	Soft Calcihe
30-31	--	Loose reddish brown sand
35-36	--	Loose reddish brown sand
40-41	--	Loose reddish brown sand
45-46	--	Stiff red clay
50-51	--	Stiff red clay
55-56	--	Stiff red clay
60-61	--	Stiff red clay
65-66	--	Stiff Blue/Grey clay
70-71	--	Stiff Blue/Grey clay
75-76	--	Stiff Blue/Grey clay
80-81	--	Stiff Blue/Grey clay
85-86	--	Stiff Blue/Grey clay
90-91	--	Stiff brown clay
95-96	--	Very stiff red clay (Redbed)
100-101	--	Very stiff red clay (Redbed)
105-106	--	Very stiff red clay (Redbed)
110-111	--	Very stiff red clay (Redbed)
115-116	--	Very stiff red clay (Redbed)
120-121	--	Very stiff red clay (Redbed)
130-131	--	Very stiff red clay (Redbed)

Total Depth 130' **Groundwater was not encountered**

Appendix C



Summary Report

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

Report Date: November 8, 2010

Work Order: 10102927



Project Location: Lea Co., NM
Project Name: COG/Bates Fed. #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
249127	AH-1 0-1'	soil	2010-10-27	00:00	2010-10-29
249128	AH-1 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249129	AH-1 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249130	AH-2 0-1'	soil	2010-10-27	00:00	2010-10-29
249131	AH-2 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249132	AH-2 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249133	AH-2 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249134	AH-2 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249135	AH-3 0-1'	soil	2010-10-27	00:00	2010-10-29
249136	AH-3 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249137	AH-3 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249138	AH-3 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249139	AH-3 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249140	AH-3 5-5.5'	soil	2010-10-27	00:00	2010-10-29
249141	AH-3 6-6.5'	soil	2010-10-27	00:00	2010-10-29
249142	AH-3 7-7.5'	soil	2010-10-27	00:00	2010-10-29
249143	AH-4 0-1'	soil	2010-10-27	00:00	2010-10-29
249144	AH-4 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249145	AH-4 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249146	AH-5 0-1'	soil	2010-10-27	00:00	2010-10-29
249147	AH-5 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249148	AH-5 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249149	AH-6 0-1'	soil	2010-10-27	00:00	2010-10-29
249150	AH-6 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249151	AH-7 0-1'	soil	2010-10-27	00:00	2010-10-29
249152	AH-7 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249153	AH-7 2-2.5'	soil	2010-10-27	00:00	2010-10-29



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)
249127 - AH-1 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249130 - AH-2 0-1'					<50.0	<2.00
249135 - AH-3 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249143 - AH-4 0-1'					<50.0	<2.00
249146 - AH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
249149 - AH-6 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	10.8
249151 - AH-7 0-1'					<50.0	<2.00

Sample: 249127 - AH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		1380	mg/Kg	4.00

Sample: 249128 - AH-1 1-1.5'

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

Sample: 249129 - AH-1 2-2.5'

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

Sample: 249130 - AH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		3940	mg/Kg	4.00

Sample: 249131 - AH-2 1-1.5'

Param	Flag	Result	Units	RL
Chloride		655	mg/Kg	4.00

Sample: 249132 - AH-2 2-2.5;

Param	Flag	Result	Units	RL
Chloride		1010	mg/Kg	4.00



Sample: 249133 - AH-2 3-3.5'

Param	Flag	Result	Units	RL
Chloride		2120	mg/Kg	4.00

Sample: 249134 - AH-2 4-4.5'

Param	Flag	Result	Units	RL
Chloride		2690	mg/Kg	4.00

Sample: 249135 - AH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		7810	mg/Kg	4.00

Sample: 249136 - AH-3 1-1.5'

Param	Flag	Result	Units	RL
Chloride		9210	mg/Kg	4.00

Sample: 249137 - AH-3 2-2.5'

Param	Flag	Result	Units	RL
Chloride		13400	mg/Kg	4.00

Sample: 249138 - AH-3 3-3.5'

Param	Flag	Result	Units	RL
Chloride		8540	mg/Kg	4.00

Sample: 249139 - AH-3 4-4.5'

Param	Flag	Result	Units	RL
Chloride		2310	mg/Kg	4.00

Sample: 249140 - AH-3 5-5.5'

Param	Flag	Result	Units	RL
Chloride		1320	mg/Kg	4.00



Sample: 249141 - AH-3 6-6.5'

Param	Flag	Result	Units	RL
Chloride		1540	mg/Kg	4.00

Sample: 249142 - AH-3 7-7.5'

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

Sample: 249143 - AH-4 0-1'

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

Sample: 249144 - AH-4 1-1.5'

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

Sample: 249145 - AH-4 2-2.5'

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

Sample: 249146 - AH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		6490	mg/Kg	4.00

Sample: 249147 - AH-5 1-1.5'

Param	Flag	Result	Units	RL
Chloride		13700	mg/Kg	4.00

Sample: 249148 - AH-5 2-2.5'

Param	Flag	Result	Units	RL
Chloride		15600	mg/Kg	4.00



Sample: 249149 - AH-6 0-1'

Param	Flag	Result	Units	RL
Chloride		9270	mg/Kg	4.00

Sample: 249150 - AH-6 1-1.5'

Param	Flag	Result	Units	RL
Chloride		16300	mg/Kg	4.00

Sample: 249151 - AH-7 0-1'

Param	Flag	Result	Units	RL
Chloride		10200	mg/Kg	4.00

Sample: 249152 - AH-7 1-1.5'

Param	Flag	Result	Units	RL
Chloride		11700	mg/Kg	4.00

Sample: 249153 - AH-7 2-2.5'

Param	Flag	Result	Units	RL
Chloride		6640	mg/Kg	4.00





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Certifications

WBENC: 237019 HUB: 1752439743100-86536 DBE: VN 20657
NCTRC A WF WB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX El Paso: T104704221-08-TX Midland: T104704392-08-TX
LELAP-02003 LELAP-02002
Kansas E-10317

Analytical and Quality Control Report

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

Report Date: November 8, 2010

Work Order: 10102927



Project Location: Lea Co., NM
Project Name: COG/Bates Fed. #3
Project Number: 114-6400715

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
249127	AH-1 0-1'	soil	2010-10-27	00:00	2010-10-29
249128	AH-1 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249129	AH-1 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249130	AH-2 0-1'	soil	2010-10-27	00:00	2010-10-29
249131	AH-2 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249132	AH-2 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249133	AH-2 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249134	AH-2 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249135	AH-3 0-1'	soil	2010-10-27	00:00	2010-10-29
249136	AH-3 1-1.5'	soil	2010-10-27	00:00	2010-10-29

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
249137	AH-3 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249138	AH-3 3-3.5'	soil	2010-10-27	00:00	2010-10-29
249139	AH-3 4-4.5'	soil	2010-10-27	00:00	2010-10-29
249140	AH-3 5-5.5'	soil	2010-10-27	00:00	2010-10-29
249141	AH-3 6-6.5'	soil	2010-10-27	00:00	2010-10-29
249142	AH-3 7-7.5'	soil	2010-10-27	00:00	2010-10-29
249143	AH-4 0-1'	soil	2010-10-27	00:00	2010-10-29
249144	AH-4 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249145	AH-4 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249146	AH-5 0-1'	soil	2010-10-27	00:00	2010-10-29
249147	AH-5 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249148	AH-5 2-2.5'	soil	2010-10-27	00:00	2010-10-29
249149	AH-6 0-1'	soil	2010-10-27	00:00	2010-10-29
249150	AH-6 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249151	AH-7 0-1'	soil	2010-10-27	00:00	2010-10-29
249152	AH-7 1-1.5'	soil	2010-10-27	00:00	2010-10-29
249153	AH-7 2-2.5'	soil	2010-10-27	00:00	2010-10-29

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 30 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/Bates Fed. #3 were received by TraceAnalysis, Inc. on 2010-10-29 and assigned to work order 10102927. Samples for work order 10102927 were received intact at a temperature of 3.5 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	64292	2010-11-01 at 11:00	74940	2010-11-01 at 13:18
Chloride (Titration)	SM 4500-Cl B	64211	2010-10-29 at 12:32	74953	2010-11-02 at 11:43
Chloride (Titration)	SM 4500-Cl B	64211	2010-10-29 at 12:32	74989	2010-11-03 at 14:08
Chloride (Titration)	SM 4500-Cl B	64211	2010-10-29 at 12:32	74990	2010-11-03 at 14:08
Chloride (Titration)	SM 4500-Cl B	64211	2010-10-29 at 12:32	74991	2010-11-03 at 14:09
TPH DRO - NEW	S 8015 D	64334	2010-11-01 at 13:25	75008	2010-11-01 at 15:34
TPH GRO	S 8015 D	64292	2010-11-01 at 11:00	74941	2010-11-01 at 13:45
TPH GRO	S 8015 D	64310	2010-11-02 at 10:15	74969	2010-11-02 at 10:57

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 10102927 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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



Report Date: November 8, 2010
114-6400715

Work Order: 10102927
COG/Bates Fed. #3

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Lea Co., NM

Analytical Report

Sample: 249127 - AH-1 0-1'

Laboratory: Midland

Analysis: BTEX

QC Batch: 74940

Prep Batch: 64292

Analytical Method: S 8021B

Date Analyzed: 2010-11-01

Sample Preparation: 2010-11-01

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)		1.58	mg/Kg	1	2.00	79	66.5 - 148
4-Bromofluorobenzene (4-BFB)		1.72	mg/Kg	1	2.00	86	50 - 189

Sample: 249127 - AH-1 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 74953

Prep Batch: 64211

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-11-02

Sample Preparation: 2010-10-29

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1380	mg/Kg	100	4.00

Sample: 249127 - AH-1 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 75008

Prep Batch: 64334

Analytical Method: S 8015 D

Date Analyzed: 2010-11-01

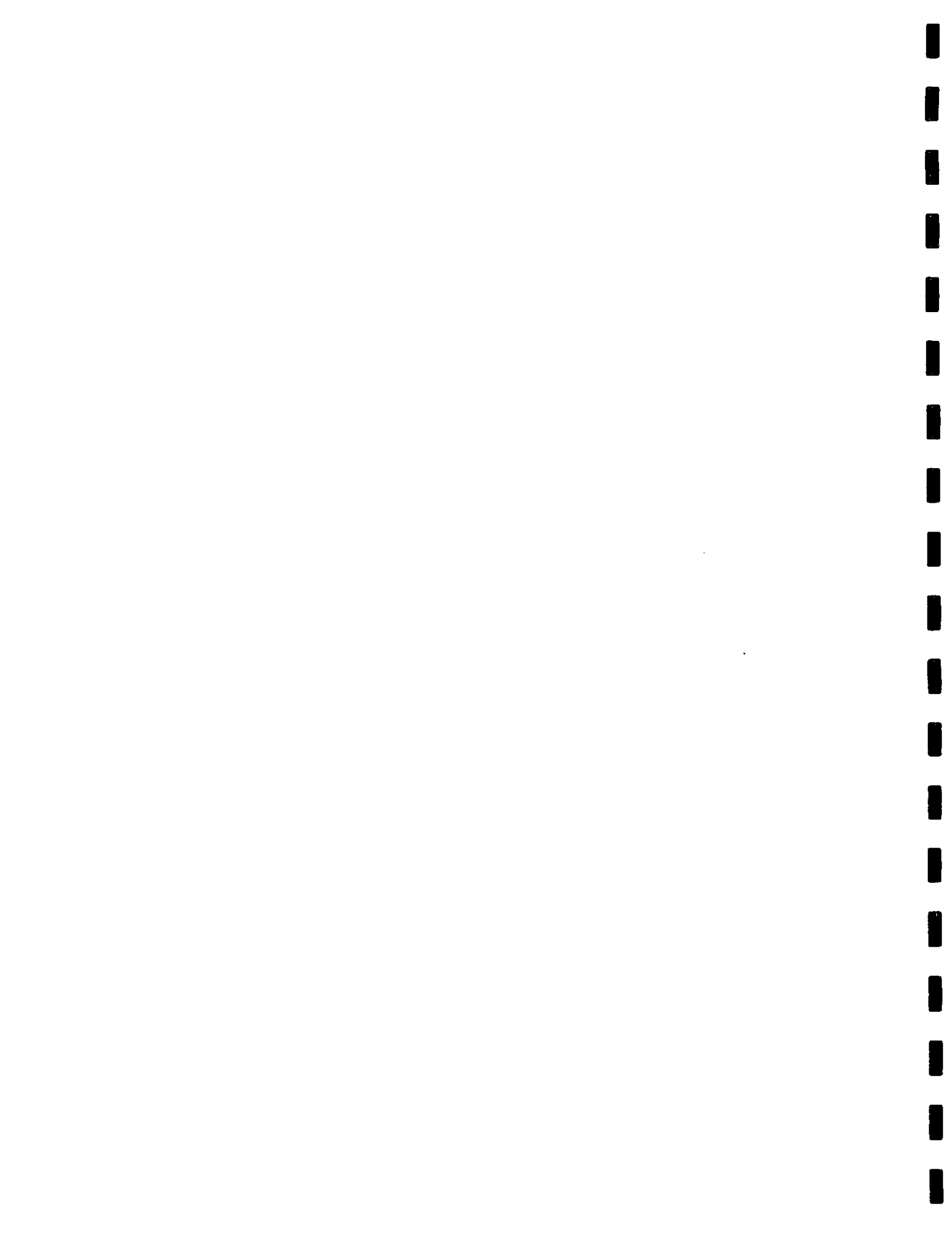
Sample Preparation: 2010-11-01

Prep Method: N/A

Analyzed By: kg

Prepared By: AG

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



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Lea Co., NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		120	mg/Kg	1	100	120	70 - 130

Sample: 249127 - AH-1 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 74941
Prep Batch: 64292

Analytical Method: S 8015 D
Date Analyzed: 2010-11-01
Sample Preparation: 2010-11-01

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)		1.56	mg/Kg	1	2.00	78	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.59	mg/Kg	1	2.00	80	50 - 138

Sample: 249128 - AH-1 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 74953
Prep Batch: 64211

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-11-02
Sample Preparation: 2010-10-29

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

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

Sample: 249129 - AH-1 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 74953
Prep Batch: 64211

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-11-02
Sample Preparation: 2010-10-29

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

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



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Lea Co., NM

Sample: 249130 - AH-2 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)

Analytical Method: SM 4500-Cl B

Prep Method: N/A

QC Batch: 74953

Date Analyzed: 2010-11-02

Analyzed By: AR

Prep Batch: 64211

Sample Preparation: 2010-10-29

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3940	mg/Kg	100	4.00

Sample: 249130 - AH-2 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW

Analytical Method: S 8015 D

Prep Method: N/A

QC Batch: 75008

Date Analyzed: 2010-11-01

Analyzed By: kg

Prep Batch: 64334

Sample Preparation: 2010-11-01

Prepared By: AG

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		114	mg/Kg	1	100	114	70 - 130

Sample: 249130 - AH-2 0-1'

Laboratory: Midland

Analysis: TPH GRO

Analytical Method: S 8015 D

Prep Method: S 5035

QC Batch: 74941

Date Analyzed: 2010-11-01

Analyzed By: AG

Prep Batch: 64292

Sample Preparation: 2010-11-01

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)		1.10	mg/Kg	1	2.00	55	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.14	mg/Kg	1	2.00	57	50 - 138

¹SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •



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Work Order: 10102927
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Lea Co., NM

Sample: 249131 - AH-2 1-1.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-03	Analyzed By:	AR
QC Batch:	74989	Sample Preparation:	2010-10-29	Prepared By:	AR
Prep Batch:	64211				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		655	mg/Kg	50	4.00

Sample: 249132 - AH-2 2-2.5;

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-03	Analyzed By:	AR
QC Batch:	74989	Sample Preparation:	2010-10-29	Prepared By:	AR
Prep Batch:	64211				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1010	mg/Kg	100	4.00

Sample: 249133 - AH-2 3-3.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-03	Analyzed By:	AR
QC Batch:	74989	Sample Preparation:	2010-10-29	Prepared By:	AR
Prep Batch:	64211				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2120	mg/Kg	100	4.00

Sample: 249134 - AH-2 4-4.5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2010-11-03	Analyzed By:	AR
QC Batch:	74989	Sample Preparation:	2010-10-29	Prepared By:	AR
Prep Batch:	64211				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2690	mg/Kg	100	4.00



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Lea Co., NM

Sample: 249135 - AH-3 0-1'

Laboratory: Midland

Analysis: BTEX	Analytical Method: S 8021B	Prep Method: S 5035
QC Batch: 74940	Date Analyzed: 2010-11-01	Analyzed By: AG
Prep Batch: 64292	Sample Preparation: 2010-11-01	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)		1.33	mg/Kg	1	2.00	67	66.5 - 148
4-Bromofluorobenzene (4-BFB)		1.49	mg/Kg	1	2.00	74	50 - 189

Sample: 249135 - AH-3 0-1'

Laboratory: Midland

Analysis: Chloride (Titration)	Analytical Method: SM 4500-Cl B	Prep Method: N/A
QC Batch: 74989	Date Analyzed: 2010-11-03	Analyzed By: AR
Prep Batch: 64211	Sample Preparation: 2010-10-29	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7810	mg/Kg	100	4.00

Sample: 249135 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH DRO - NEW	Analytical Method: S 8015 D	Prep Method: N/A
QC Batch: 75008	Date Analyzed: 2010-11-01	Analyzed By: kg
Prep Batch: 64334	Sample Preparation: 2010-11-01	Prepared By: AG

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		115	mg/Kg	1	100	115	70 - 130



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Lea Co., NM

Sample: 249135 - AH-3 0-1'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 74941

Prep Batch: 64292

Analytical Method: S 8015 D

Date Analyzed: 2010-11-01

Sample Preparation: 2010-11-01

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)	2	1.32	mg/Kg	1	2.00	66	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.36	mg/Kg	1	2.00	68	50 - 138

Sample: 249136 - AH-3 1-1.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 74989

Prep Batch: 64211

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-11-03

Sample Preparation: 2010-10-29

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9210	mg/Kg	100	4.00

Sample: 249137 - AH-3 2-2.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 74989

Prep Batch: 64211

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-11-03

Sample Preparation: 2010-10-29

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		13400	mg/Kg	100	4.00

Sample: 249138 - AH-3 3-3.5'

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 74989

Prep Batch: 64211

Analytical Method: SM 4500-Cl B

Date Analyzed: 2010-11-03

Sample Preparation: 2010-10-29

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

²SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •



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Lea Co., NM

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8540	mg/Kg	100	4.00

Sample: 249139 - AH-3 4-4.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74989 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2310	mg/Kg	100	4.00

Sample: 249140 - AH-3 5-5.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74989 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1320	mg/Kg	100	4.00

Sample: 249141 - AH-3 6-6.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1540	mg/Kg	100	4.00

Sample: 249142 - AH-3 7-7.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR



Report Date: November 8, 2010
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Lea Co., NM

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

Sample: 249143 - AH-4 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

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

Sample: 249143 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 75008 Date Analyzed: 2010-11-01 Analyzed By: kg
Prep Batch: 64334 Sample Preparation: 2010-11-01 Prepared By: AG

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		120	mg/Kg	1	100	120	70 - 130

Sample: 249143 - AH-4 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 74969 Date Analyzed: 2010-11-02 Analyzed By: AG
Prep Batch: 64310 Sample Preparation: Prepared By: AG

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

continued ...



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Lea Co., NM

sample continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	³	1.03	mg/Kg	1	2.00	52	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.07	mg/Kg	1	2.00	54	50 - 138

Sample: 249144 - AH-4 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

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

Sample: 249145 - AH-4 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

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

Sample: 249146 - AH-5 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 74940 Date Analyzed: 2010-11-01 Analyzed By: AG
Prep Batch: 64292 Sample Preparation: 2010-11-01 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

³SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.63	mg/Kg	1	2.00	82	66.5 - 148
4-Bromofluorobenzene (4-BFB)		1.77	mg/Kg	1	2.00	88	50 - 189

Sample: 249146 - AH-5 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6490	mg/Kg	100	4.00

Sample: 249146 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 75008 Date Analyzed: 2010-11-01 Analyzed By: kg
Prep Batch: 64334 Sample Preparation: 2010-11-01 Prepared By: AG

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		111	mg/Kg	1	100	111	70 - 130

Sample: 249146 - AH-5 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 74941 Date Analyzed: 2010-11-01 Analyzed By: AG
Prep Batch: 64292 Sample Preparation: 2010-11-01 Prepared By: AG

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



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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.60	mg/Kg	1	2.00	80	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.63	mg/Kg	1	2.00	82	50 - 138

Sample: 249147 - AH-5 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		13700	mg/Kg	100	4.00

Sample: 249148 - AH-5 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		15600	mg/Kg	100	4.00

Sample: 249149 - AH-6 0-1'

Laboratory: Midland
Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5035
QC Batch: 74940 Date Analyzed: 2010-11-01 Analyzed By: AG
Prep Batch: 64292 Sample Preparation: 2010-11-01 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

continued ...



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sample continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	4	0.930	mg/Kg	1	2.00	46	66.5 - 148
4-Bromofluorobenzene (4-BFB)		1.05	mg/Kg	1	2.00	52	50 - 189

Sample: 249149 - AH-6 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9270	mg/Kg	100	4.00

Sample: 249149 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 75008 Date Analyzed: 2010-11-01 Analyzed By: kg
Prep Batch: 64334 Sample Preparation: 2010-11-01 Prepared By: AG

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

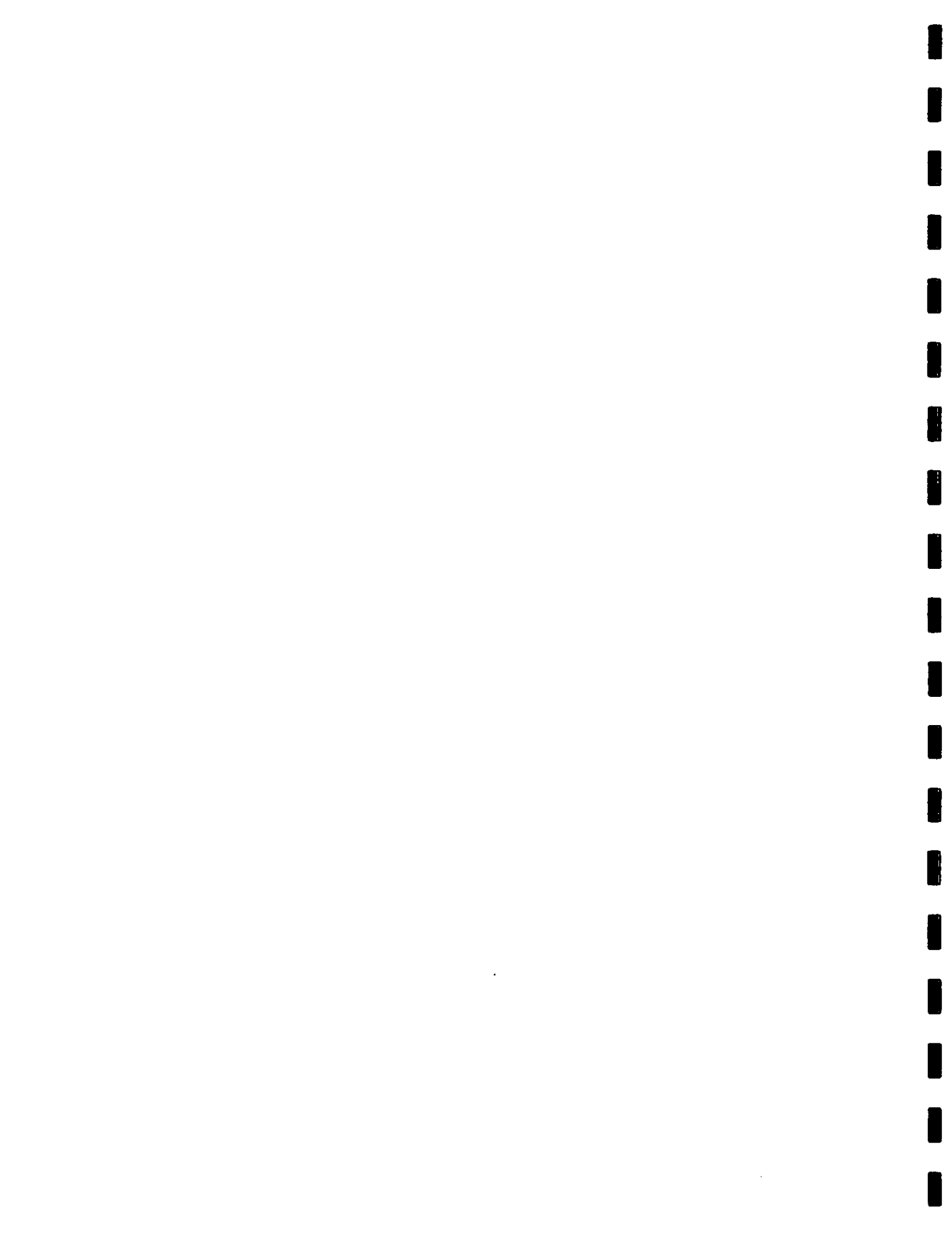
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		110	mg/Kg	1	100	110	70 - 130

Sample: 249149 - AH-6 0-1'

Laboratory: Midland
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 74941 Date Analyzed: 2010-11-01 Analyzed By: AG
Prep Batch: 64292 Sample Preparation: 2010-11-01 Prepared By: AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		10.8	mg/Kg	1	2.00

⁴SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •



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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	⁵	0.900	mg/Kg	1	2.00	45	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.02	mg/Kg	1	2.00	51	50 - 138

Sample: 249150 - AH-6 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74990 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		16300	mg/Kg	100	4.00

Sample: 249151 - AH-7 0-1'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 74991 Date Analyzed: 2010-11-03 Analyzed By: AR
Prep Batch: 64211 Sample Preparation: 2010-10-29 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		10200	mg/Kg	100	4.00

Sample: 249151 - AH-7 0-1'

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 75008 Date Analyzed: 2010-11-01 Analyzed By: kg
Prep Batch: 64334 Sample Preparation: 2010-11-01 Prepared By: AG

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		108	mg/Kg	1	100	108	70 - 130

⁵SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •



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Sample: 249151 - AH-7 0-1'

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 74941
Prep Batch: 64292

Analytical Method: S 8015 D
Date Analyzed: 2010-11-01
Sample Preparation: 2010-11-01

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)	6	1.06	mg/Kg	1	2.00	53	73.4 - 122
4-Bromofluorobenzene (4-BFB)		1.12	mg/Kg	1	2.00	56	50 - 138

Sample: 249152 - AH-7 1-1.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 74991
Prep Batch: 64211

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-11-03
Sample Preparation: 2010-10-29

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		11700	mg/Kg	100	4.00

Sample: 249153 - AH-7 2-2.5'

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 74991
Prep Batch: 64211

Analytical Method: SM 4500-Cl B
Date Analyzed: 2010-11-03
Sample Preparation: 2010-10-29

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

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6640	mg/Kg	100	4.00

Method Blank (1) QC Batch: 74940

QC Batch: 74940
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: AG
Prepared By: AG

⁶SPECIAL - TFT is out of control limits due to an unknown anomaly. However, 4-BFB is within control limits and shows the method to be in control. •



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Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00750	mg/Kg	0.02
Toluene		<0.0109	mg/Kg	0.02
Ethylbenzene		<0.00630	mg/Kg	0.02
Xylene		<0.0144	mg/Kg	0.02

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.00	mg/Kg	1	2.00	100	75.6 - 110
4-Bromofluorobenzene (4-BFB)		2.23	mg/Kg	1	2.00	112	41.5 - 139

Method Blank (1) QC Batch: 74941

QC Batch: 74941
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.747	mg/Kg	2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.07	mg/Kg	1	2.00	104	76.9 - 115
4-Bromofluorobenzene (4-BFB)		2.07	mg/Kg	1	2.00	104	45.8 - 147

Method Blank (1) QC Batch: 74953

QC Batch: 74953
Prep Batch: 64211

Date Analyzed: 2010-11-02
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 74969

QC Batch: 74969
Prep Batch: 64310

Date Analyzed: 2010-11-02
QC Preparation: 2010-11-02

Analyzed By: AG
Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		<0.747	mg/Kg	2

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.04	mg/Kg	1	2.00	102	76.9 - 115
4-Bromofluorobenzene (4-BFB)		2.02	mg/Kg	1	2.00	101	45.8 - 147

Method Blank (1) QC Batch: 74989

QC Batch: 74989
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 74990

QC Batch: 74990
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 74991

QC Batch: 74991
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 75008

QC Batch: 75008
Prep Batch: 64334

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: kg
Prepared By: kg

Parameter	Flag	MDL Result	Units	RL
DRO		<14.6	mg/Kg	50

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

Laboratory Control Spike (LCS-1)

QC Batch: 74940
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: AG
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	1.97	mg/Kg	1	2.00	<0.00750	98	81.7 - 120
Toluene	1.94	mg/Kg	1	2.00	<0.0109	97	81.8 - 120
Ethylbenzene	1.98	mg/Kg	1	2.00	<0.00630	99	79.8 - 120
Xylene	6.06	mg/Kg	1	6.00	<0.0144	101	74 - 123

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

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.00	mg/Kg	1	2.00	<0.00750	100	81.7 - 120	2	20
Toluene	1.94	mg/Kg	1	2.00	<0.0109	97	81.8 - 120	0	20
Ethylbenzene	2.00	mg/Kg	1	2.00	<0.00630	100	79.8 - 120	1	20
Xylene	6.11	mg/Kg	1	6.00	<0.0144	102	74 - 123	1	20

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

Surrogate	LCS Result	LCS Result	Units	Dil.	Spike Amount	LCS Rec.	LCS Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.98	1.79	mg/Kg	1	2.00	99	90	77.4 - 110
4-Bromofluorobenzene (4-BFB)	2.25	2.04	mg/Kg	1	2.00	112	102	46 - 140

Laboratory Control Spike (LCS-1)

QC Batch: 74941
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

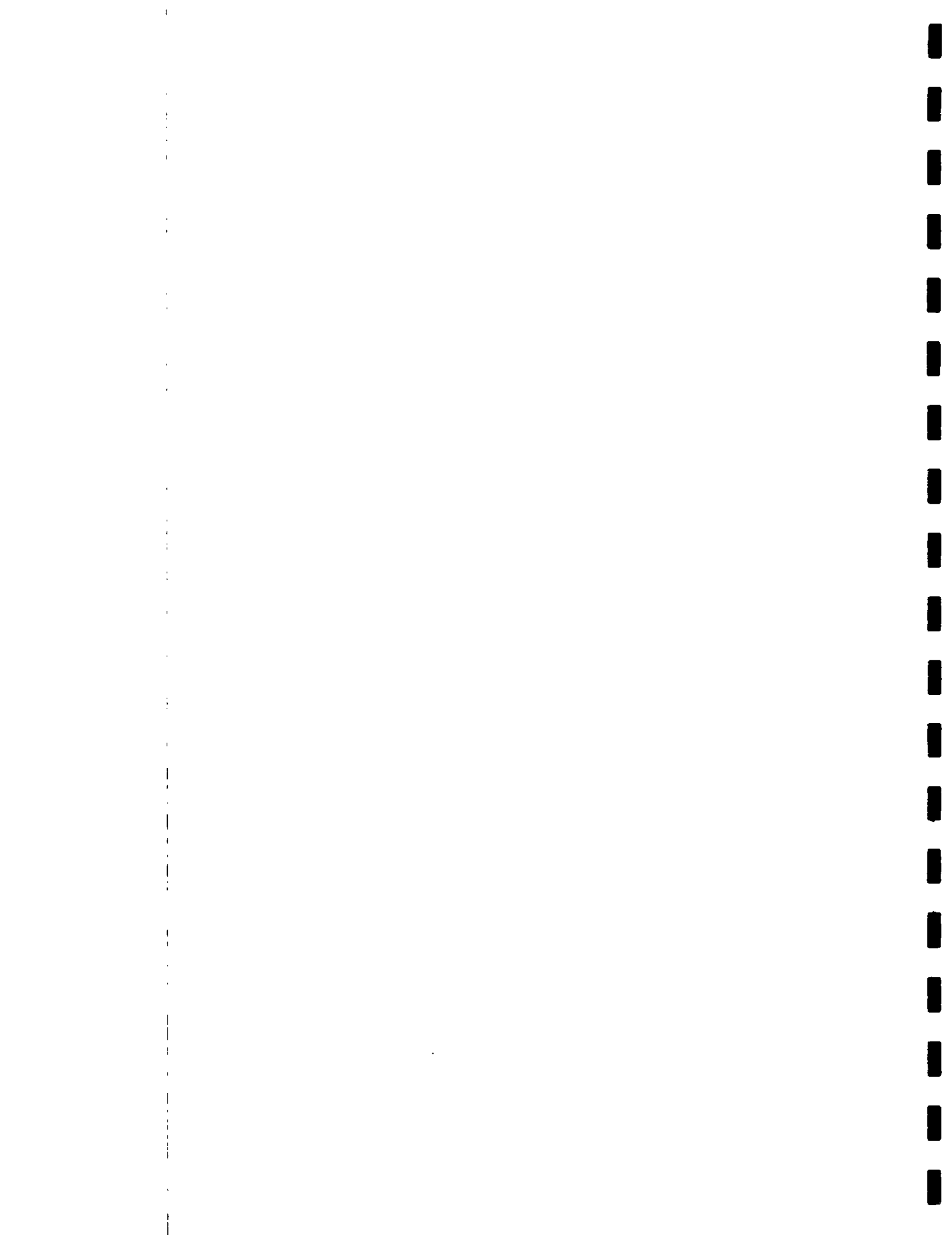
Analyzed By: AG
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	18.3	mg/Kg	1	20.0	<0.747	92	56.5 - 98.2

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

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	18.9	mg/Kg	1	20.0	<0.747	94	56.5 - 98.2	3	20

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



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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.90	1.85	mg/Kg	1	2.00	95	92	76.5 - 118
4-Bromofluorobenzene (4-BFB)	1.99	1.94	mg/Kg	1	2.00	100	97	51.1 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 74953
Prep Batch: 64211

Date Analyzed: 2010-11-02
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.7	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	101	mg/Kg	1	100	<2.18	101	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: 74969
Prep Batch: 64310

Date Analyzed: 2010-11-02
QC Preparation: 2010-11-02

Analyzed By: AG
Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	18.9	mg/Kg	1	20.0	<0.747	94	56.5 - 98.2

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	19.2	mg/Kg	1	20.0	<0.747	96	56.5 - 98.2	2	20

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

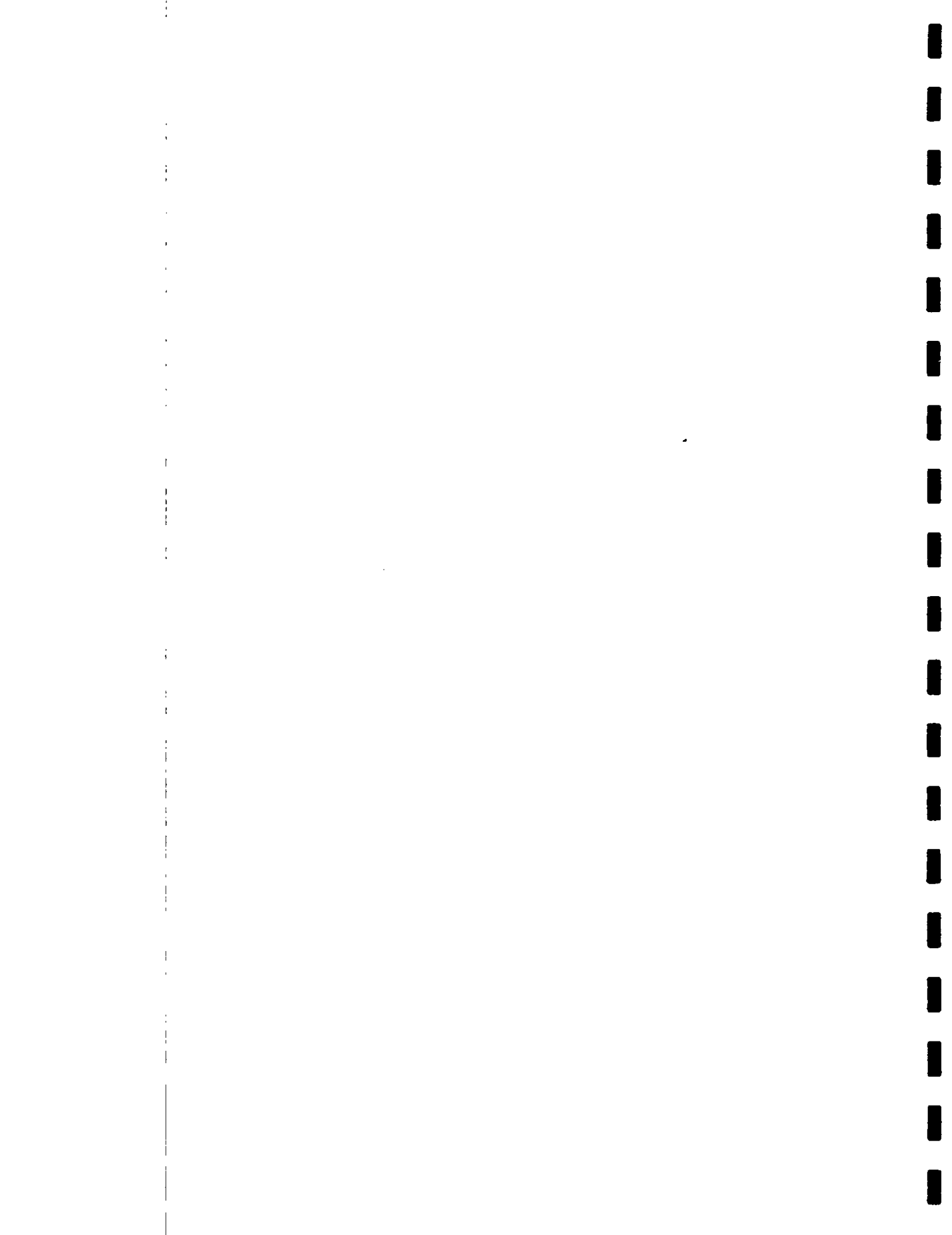
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.02	2.03	mg/Kg	1	2.00	101	102	76.5 - 118
4-Bromofluorobenzene (4-BFB)	2.10	2.08	mg/Kg	1	2.00	105	104	51.1 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 74989
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR



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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	96.8	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	103	mg/Kg	1	100	<2.18	103	85 - 115	6	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: 74990
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
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	104	mg/Kg	1	100	<2.18	104	85 - 115	8	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 74991
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.9	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

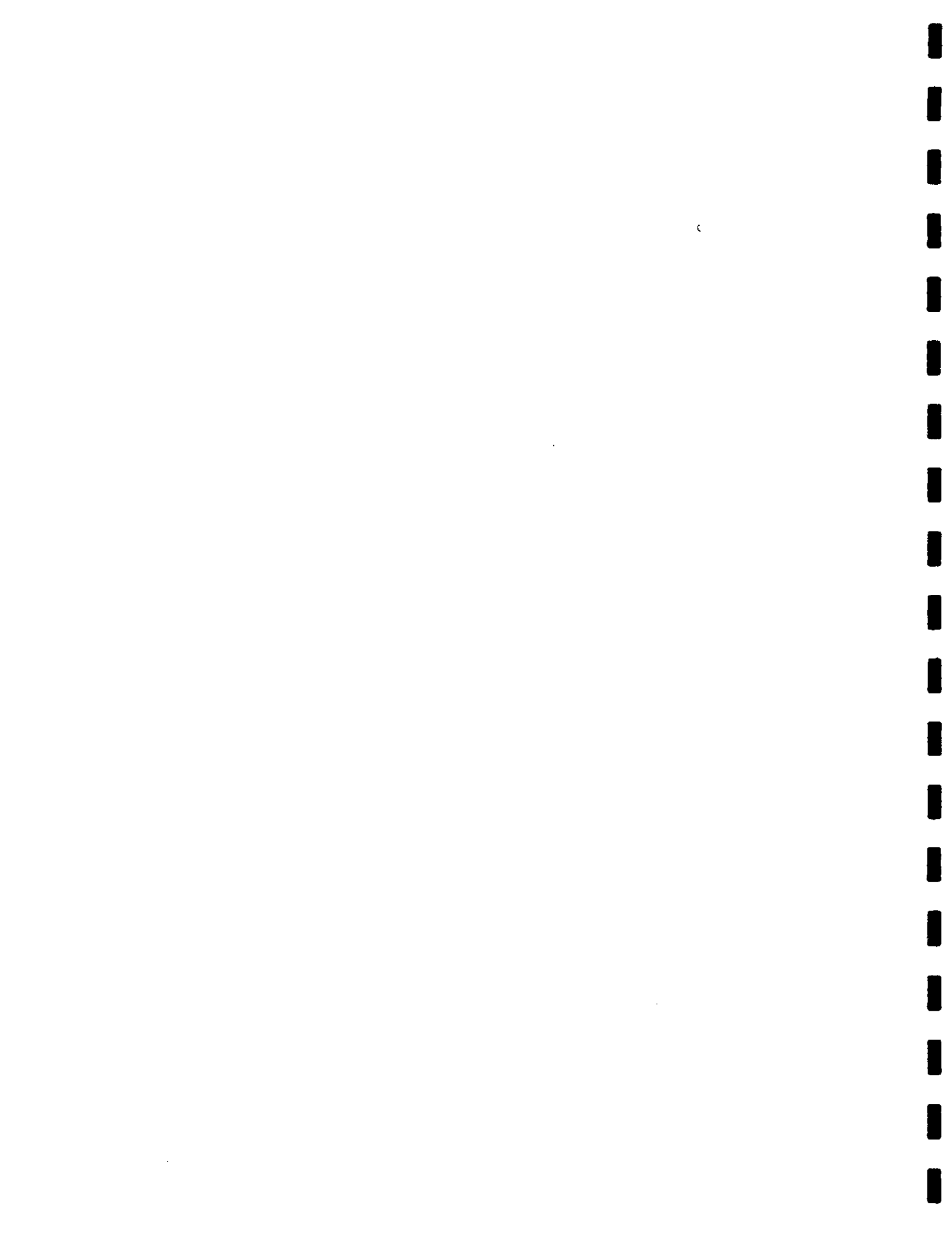
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 75008
Prep Batch: 64334

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: kg
Prepared By: kg



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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	230	mg/Kg	1	250	<14.6	92	47.5 - 144.1

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	224	mg/Kg	1	250	<14.6	90	47.5 - 144.1	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	121	119	mg/Kg	1	100	121	119	70 - 130

Matrix Spike (MS-1) Spiked Sample: 249164

QC Batch: 74940
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.38	mg/Kg	1	2.00	<0.00750	119	75.7 - 125
Toluene	2.37	mg/Kg	1	2.00	<0.0109	118	74.4 - 125
Ethylbenzene	2.89	mg/Kg	1	2.00	<0.00630	144	72.2 - 128
Xylene	7.78	mg/Kg	1	6.00	<0.0144	130	63 - 131

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.98	mg/Kg	1	2.00	<0.00750	99	75.7 - 125	18	20
Toluene	1.96	mg/Kg	1	2.00	<0.0109	98	74.4 - 125	19	20
Ethylbenzene	2.07	mg/Kg	1	2.00	<0.00630	104	72.2 - 128	33	20
Xylene	6.32	mg/Kg	1	6.00	<0.0144	105	63 - 131	21	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)	1.80	1.48	mg/Kg	1	2	90	74	78.8 - 109
4-Bromofluorobenzene (4-BFB)	2.02	1.66	mg/Kg	1	2	101	83	50 - 136

⁷Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

⁸MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

⁹MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

¹⁰Surrogate out due to peak interference.

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Matrix Spike (MS-1) Spiked Sample: 249127

QC Batch: 74941
Prep Batch: 64292

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: AG
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	15.2	mg/Kg	1	20.0	<0.747	76	50 - 150

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	¹¹ 19.0	mg/Kg	1	20.0	<0.747	95	50 - 150	22	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)	¹² ¹³ 0.954	1.18	mg/Kg	1	2	48	59	71.6 - 117
4-Bromofluorobenzene (4-BFB)	1.12	1.30	mg/Kg	1	2	56	65	50 - 170

Matrix Spike (MS-1) Spiked Sample: 249130

QC Batch: 74953
Prep Batch: 64211

Date Analyzed: 2010-11-02
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	14400	mg/Kg	100	10000	3940	105	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	14800	mg/Kg	100	10000	3940	109	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: 249241

QC Batch: 74969
Prep Batch: 64310

Date Analyzed: 2010-11-02
QC Preparation: 2010-11-02

Analyzed By: AG
Prepared By: AG

¹¹MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

¹²Surrogate out due to peak interference.

¹³Surrogate out due to peak interference.

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Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
CRO	18.7	mg/Kg	1	20.0	<0.747	94	50 - 150

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	19.4	mg/Kg	1	20.0	<0.747	97	50 - 150	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	¹⁴ 1.36	0.759	mg/Kg	1	2	68	38	71.6 - 117
4-Bromofluorobenzene (4-BFB)	¹⁶ 1.56	0.911	mg/Kg	1	2	78	46	50 - 170

Matrix Spike (MS-1) Spiked Sample: 249140

QC Batch: 74989
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11500	mg/Kg	100	10000	1320	102	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	11700	mg/Kg	100	10000	1320	104	85 - 115	2	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: 249150

QC Batch: 74990
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	26200	mg/Kg	100	10000	16300	99	85 - 115

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

¹⁴Surrogate out due to peak interference.

¹⁵Surrogate out due to peak interference.

¹⁶Surrogate out due to peak interference.



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Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	26600	mg/Kg	100	10000	16300	103	85 - 115	2	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: 249153

QC Batch: 74991
Prep Batch: 64211

Date Analyzed: 2010-11-03
QC Preparation: 2010-10-29

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	16600	mg/Kg	100	10000	6640	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	17000	mg/Kg	100	10000	6640	104	85 - 115	2	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: 249214

QC Batch: 75008
Prep Batch: 64334

Date Analyzed: 2010-11-01
QC Preparation: 2010-11-01

Analyzed By: kg
Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	194	mg/Kg	1	250	<14.6	78	11.7 - 152.3

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	192	mg/Kg	1	250	<14.6	77	11.7 - 152.3	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	117	114	mg/Kg	1	100	117	114	70 - 130

Standard (CCV-1)

QC Batch: 74940

Date Analyzed: 2010-11-01

Analyzed By: AG



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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.105	105	80 - 120	2010-11-01
Toluene		mg/Kg	0.100	0.103	103	80 - 120	2010-11-01
Ethylbenzene		mg/Kg	0.100	0.107	107	80 - 120	2010-11-01
Xylene		mg/Kg	0.300	0.326	109	80 - 120	2010-11-01

Standard (CCV-2)

QC Batch: 74940

Date Analyzed: 2010-11-01

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	0.101	101	80 - 120	2010-11-01
Toluene		mg/Kg	0.100	0.0985	98	80 - 120	2010-11-01
Ethylbenzene		mg/Kg	0.100	0.101	101	80 - 120	2010-11-01
Xylene		mg/Kg	0.300	0.308	103	80 - 120	2010-11-01

Standard (CCV-1)

QC Batch: 74941

Date Analyzed: 2010-11-01

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	1.18	118	80 - 120	2010-11-01

Standard (CCV-2)

QC Batch: 74941

Date Analyzed: 2010-11-01

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	1.18	118	80 - 120	2010-11-01

Standard (ICV-1)

QC Batch: 74953

Date Analyzed: 2010-11-02

Analyzed By: AR



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Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.6	99	85 - 115	2010-11-02

Standard (CCV-1)

QC Batch: 74953

Date Analyzed: 2010-11-02

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	2010-11-02

Standard (CCV-1)

QC Batch: 74969

Date Analyzed: 2010-11-02

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	1.12	112	80 - 120	2010-11-02

Standard (CCV-2)

QC Batch: 74969

Date Analyzed: 2010-11-02

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	1.13	113	80 - 120	2010-11-02

Standard (ICV-1)

QC Batch: 74989

Date Analyzed: 2010-11-03

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	2010-11-03

Standard (CCV-1)

QC Batch: 74989

Date Analyzed: 2010-11-03

Analyzed By: AR

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.4	98	85 - 115	2010-11-03

Standard (ICV-1)

QC Batch: 74990

Date Analyzed: 2010-11-03

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.9	98	85 - 115	2010-11-03

Standard (CCV-1)

QC Batch: 74990

Date Analyzed: 2010-11-03

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-11-03

Standard (ICV-1)

QC Batch: 74991

Date Analyzed: 2010-11-03

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.8	100	85 - 115	2010-11-03

Standard (CCV-1)

QC Batch: 74991

Date Analyzed: 2010-11-03

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	2010-11-03

Standard (CCV-1)

QC Batch: 75008

Date Analyzed: 2010-11-01

Analyzed By: kg



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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	244	98	80 - 120	2010-11-01

Standard (CCV-2)

QC Batch: 75008

Date Analyzed: 2010-11-01

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	213	85	80 - 120	2010-11-01



Analysis Request of Chain of Custody Record



TETRA TECH

**1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3948**

(432) 682-4559 • Fax (432) 682-3948

[illegible][illegible]

200 #1010292-1

Analysis Request of Chain of Custody Record

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ANALYSIS REQUEST
(Circle or Specify Method No.)



TETRA TECH

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

CLIENT NAME: COG		SITE MANAGER: Jke Tovar		PROJECT NAME: COG / Date Feb #3		SAMPLE IDENTIFICATION Line A, AM	
LAB ID. NUMBER	DATE 2010	TIME	MATRIX	COMP	GRAB	NUMBER OF CONTAINERS	PRESERVATIVE METHOD
249147	10/27		S	X		1	HCL
148							HNO3
149							ICE
150							NONE
151							
152							
153							

RELINQUISHED BY: (Signature)	Date: 10/29/10	Time: 11:00	SAMPLED BY: (Print & Initial)	Date: 10/29/10	Time: 11:00
RELINQUISHED BY: (Signature)	Date: 10/29/10	Time: 11:00	SAMPLE SHIPPED BY: (Circle)	FEDEX ☒ BUS ☐ UPS ☐	
RELINQUISHED BY: (Signature)	Date: 10/29/10	Time: 11:00	TETRA TECH CONTACT PERSON:	Jke Tovar	
RECEIVING LABORATORY: Jke Tovar	STATE: TX	PHONE: 432-4559	DATE: 10/29/10	TIME: 11:00	
ADDRESS: 1910 N. Big Spring St.	CITY: Midland	ZIP: 79705	REMARKS: If total TPH exceeds 1,000 mg/kg run deeper surplus / If total TPH exceeds 50 mg/kg		
SAMPLE CONDITION WHEN RECEIVED: 3.5 contact					

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

Summary Report

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

Report Date: March 22, 2011

Work Order: 11031512



Project Location: Lea Co., NM
Project Name: COG/Bates Federal #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
260526	SB-1 0-1'	soil	2011-03-10	00:00	2011-03-15
260527	SB-1 3'	soil	2011-03-10	00:00	2011-03-15
260528	SB-1 5'	soil	2011-03-10	00:00	2011-03-15
260529	SB-1 7'	soil	2011-03-10	00:00	2011-03-15
260530	SB-1 10'	soil	2011-03-10	00:00	2011-03-15
260531	SB-1 15'	soil	2011-03-10	00:00	2011-03-15
260532	SB-1 20'	soil	2011-03-10	00:00	2011-03-15
260533	SB-2 0-1'	soil	2011-03-10	00:00	2011-03-15
260534	SB-2 3'	soil	2011-03-10	00:00	2011-03-15
260535	SB-2 5'	soil	2011-03-10	00:00	2011-03-15
260536	SB-2 7'	soil	2011-03-10	00:00	2011-03-15
260537	SB-2 10'	soil	2011-03-10	00:00	2011-03-15
260538	SB-2 15'	soil	2011-03-10	00:00	2011-03-15
260539	SB-2 20'	soil	2011-03-10	00:00	2011-03-15
260540	SB-3 0-1'	soil	2011-03-11	00:00	2011-03-15
260541	SB-3 3'	soil	2011-03-11	00:00	2011-03-15
260542	SB-3 5'	soil	2011-03-11	00:00	2011-03-15
260543	SB-3 7'	soil	2011-03-11	00:00	2011-03-15
260544	SB-3 10'	soil	2011-03-11	00:00	2011-03-15
260545	SB-3 15'	soil	2011-03-11	00:00	2011-03-15
260546	SB-3 20'	soil	2011-03-11	00:00	2011-03-15
260547	SB-3 25'	soil	2011-03-11	00:00	2011-03-15
260548	SB-3 30'	soil	2011-03-11	00:00	2011-03-15
260549	SB-3 40'	soil	2011-03-11	00:00	2011-03-15
260550	SB-4 0-1'	soil	2011-03-11	00:00	2011-03-15
260551	SB-4 3'	soil	2011-03-11	00:00	2011-03-15
260552	SB-4 5'	soil	2011-03-11	00:00	2011-03-15
260553	SB-4 7'	soil	2011-03-11	00:00	2011-03-15
260554	SB-4 10'	soil	2011-03-11	00:00	2011-03-15
260555	SB-4 15'	soil	2011-03-11	00:00	2011-03-15



Sample	Description	Matrix	Date Taken	Time Taken	Date Received
260556	SB-4 20'	soil	2011-03-11	00:00	2011-03-15
260557	SB-4 25'	soil	2011-03-11	00:00	2011-03-15
260558	SB-4 30'	soil	2011-03-11	00:00	2011-03-15

Sample: 260526 - SB-1 0-1'

Param	Flag	Result	Units	RL
Chloride		8340	mg/Kg	4.00

Sample: 260527 - SB-1 3'

Param	Flag	Result	Units	RL
Chloride		3010	mg/Kg	4.00

Sample: 260528 - SB-1 5'

Param	Flag	Result	Units	RL
Chloride		2470	mg/Kg	4.00

Sample: 260529 - SB-1 7'

Param	Flag	Result	Units	RL
Chloride		1470	mg/Kg	4.00

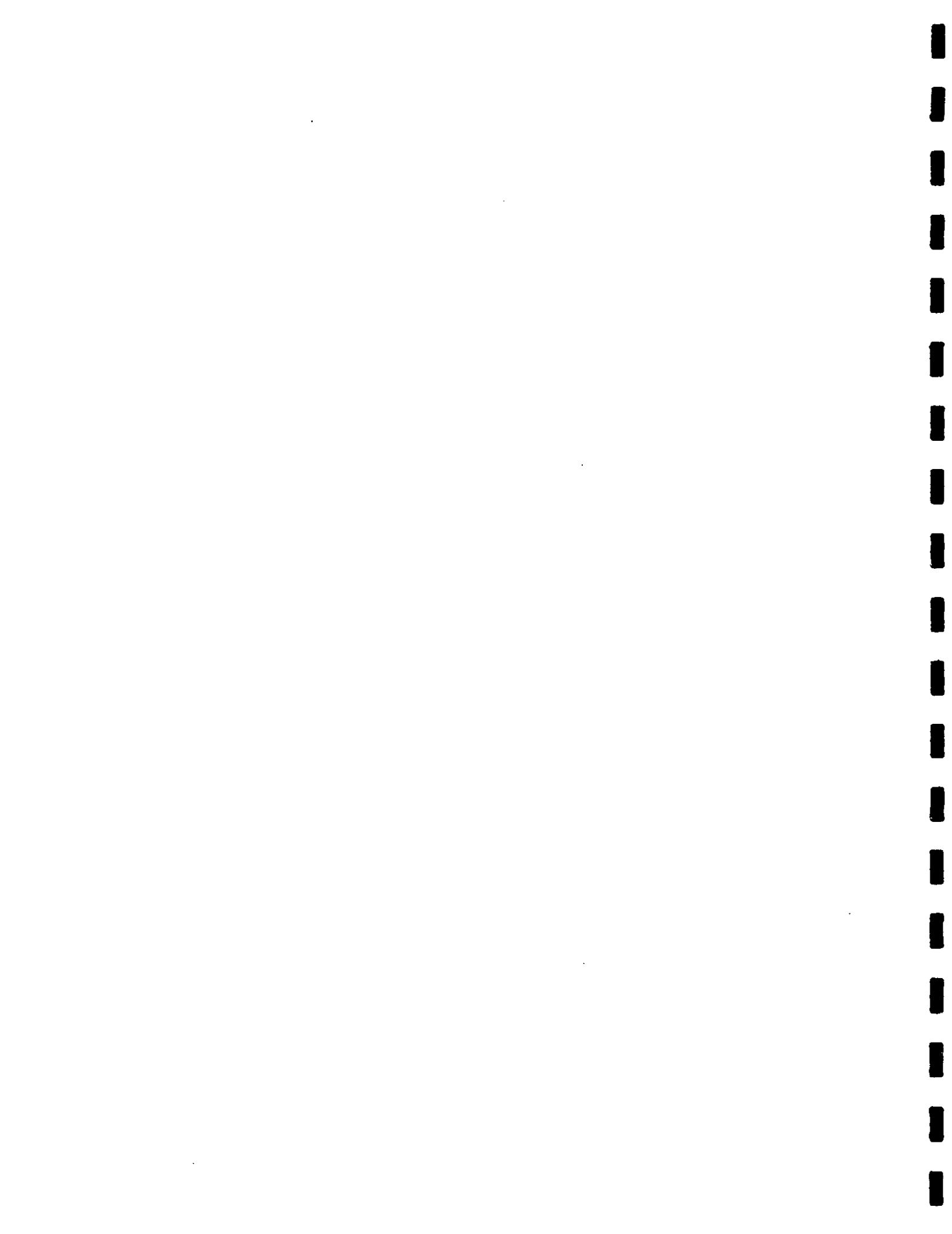
Sample: 260530 - SB-1 10'

Param	Flag	Result	Units	RL
Chloride		216	mg/Kg	4.00

Sample: 260531 - SB-1 15'

Param	Flag	Result	Units	RL
Chloride		201	mg/Kg	4.00

Sample: 260532 - SB-1 20'



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

Sample: 260533 - SB-2 0-1'

Param	Flag	Result	Units	RL
Chloride		2560	mg/Kg	4.00

Sample: 260534 - SB-2 3'

Param	Flag	Result	Units	RL
Chloride		328	mg/Kg	4.00

Sample: 260535 - SB-2 5'

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

Sample: 260536 - SB-2 7'

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

Sample: 260537 - SB-2 10'

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

Sample: 260538 - SB-2 15'

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

Sample: 260539 - SB-2 20'

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



Sample: 260540 - SB-3 0-1'

Param	Flag	Result	Units	RL
Chloride		23600	mg/Kg	4.00

Sample: 260541 - SB-3 3'

Param	Flag	Result	Units	RL
Chloride		8980	mg/Kg	4.00

Sample: 260542 - SB-3 5'

Param	Flag	Result	Units	RL
Chloride		6010	mg/Kg	4.00

Sample: 260543 - SB-3 7'

Param	Flag	Result	Units	RL
Chloride		2220	mg/Kg	4.00

Sample: 260544 - SB-3 10'

Param	Flag	Result	Units	RL
Chloride		2920	mg/Kg	4.00

Sample: 260545 - SB-3 15'

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

Sample: 260546 - SB-3 20'

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

Sample: 260547 - SB-3 25'

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



Sample: 260548 - SB-3 30'

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

Sample: 260549 - SB-3 40'

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

Sample: 260550 - SB-4 0-1'

Param	Flag	Result	Units	RL
Chloride		4080	mg/Kg	4.00

Sample: 260551 - SB-4 3'

Param	Flag	Result	Units	RL
Chloride		8040	mg/Kg	4.00

Sample: 260552 - SB-4 5'

Param	Flag	Result	Units	RL
Chloride		7940	mg/Kg	4.00

Sample: 260553 - SB-4 7'

Param	Flag	Result	Units	RL
Chloride		10400	mg/Kg	4.00

Sample: 260554 - SB-4 10'

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

Sample: 260555 - SB-4 15'

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



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Sample: 260556 - SB-4 20'

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

Sample: 260557 - SB-4 25'

Param	Flag	Result	Units	RL
Chloride		238	mg/Kg	4.00

Sample: 260558 - SB-4 30'

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



TRACE ANALYSIS, INC.

5701 Alvarado Avenue, Suite B Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 209 East Sunset Road, Suite E El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4044
 5002 Rusan 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: info@traceanalysis.com

Certifications

WBENC: 237019

HUB: 1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

NELAP Certifications

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

El Paso: T104704221-08-TX
 LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

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

Report Date: March 22, 2011

Work Order: 11031512



Project Location: Lea Co., NM
 Project Name: COG/Bates Federal #3
 Project Number: 114-6400715

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
260526	SB-1 0-1'	soil	2011-03-10	00:00	2011-03-15
260527	SB-1 3'	soil	2011-03-10	00:00	2011-03-15
260528	SB-1 5'	soil	2011-03-10	00:00	2011-03-15
260529	SB-1 7'	soil	2011-03-10	00:00	2011-03-15
260530	SB-1 10'	soil	2011-03-10	00:00	2011-03-15
260531	SB-1 15'	soil	2011-03-10	00:00	2011-03-15
260532	SB-1 20'	soil	2011-03-10	00:00	2011-03-15
260533	SB-2 0-1'	soil	2011-03-10	00:00	2011-03-15
260534	SB-2 3'	soil	2011-03-10	00:00	2011-03-15
260535	SB-2 5'	soil	2011-03-10	00:00	2011-03-15



Sample	Description	Matrix	Date Taken	Time Taken	Date Received
260536	SB-2 7'	soil	2011-03-10	00:00	2011-03-15
260537	SB-2 10'	soil	2011-03-10	00:00	2011-03-15
260538	SB-2 15'	soil	2011-03-10	00:00	2011-03-15
260539	SB-2 20'	soil	2011-03-10	00:00	2011-03-15
260540	SB-3 0-1'	soil	2011-03-11	00:00	2011-03-15
260541	SB-3 3'	soil	2011-03-11	00:00	2011-03-15
260542	SB-3 5'	soil	2011-03-11	00:00	2011-03-15
260543	SB-3 7'	soil	2011-03-11	00:00	2011-03-15
260544	SB-3 10'	soil	2011-03-11	00:00	2011-03-15
260545	SB-3 15'	soil	2011-03-11	00:00	2011-03-15
260546	SB-3 20'	soil	2011-03-11	00:00	2011-03-15
260547	SB-3 25'	soil	2011-03-11	00:00	2011-03-15
260548	SB-3 30'	soil	2011-03-11	00:00	2011-03-15
260549	SB-3 40'	soil	2011-03-11	00:00	2011-03-15
260550	SB-4 0-1'	soil	2011-03-11	00:00	2011-03-15
260551	SB-4 3'	soil	2011-03-11	00:00	2011-03-15
260552	SB-4 5'	soil	2011-03-11	00:00	2011-03-15
260553	SB-4 7'	soil	2011-03-11	00:00	2011-03-15
260554	SB-4 10'	soil	2011-03-11	00:00	2011-03-15
260555	SB-4 15'	soil	2011-03-11	00:00	2011-03-15
260556	SB-4 20'	soil	2011-03-11	00:00	2011-03-15
260557	SB-4 25'	soil	2011-03-11	00:00	2011-03-15
260558	SB-4 30'	soil	2011-03-11	00:00	2011-03-15

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 17 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/Bates Federal #3 were received by TraceAnalysis, Inc. on 2011-03-15 and assigned to work order 11031512. Samples for work order 11031512 were received intact at a temperature of 3.9 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	67381	2011-03-16 at 10:49	79593	2011-03-17 at 14:33
Chloride (Titration)	SM 4500-Cl B	67381	2011-03-16 at 10:49	79594	2011-03-17 at 14:35
Chloride (Titration)	SM 4500-Cl B	67381	2011-03-16 at 10:49	79596	2011-03-17 at 14:42
Chloride (Titration)	SM 4500-Cl B	67555	2011-03-16 at 11:09	79632	2011-03-17 at 11:10

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 11031512 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.



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Analytical Report

Sample: 260526 - SB-1 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79593	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8340	mg/Kg	100	4.00

Sample: 260527 - SB-1 3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79593	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		3010	mg/Kg	100	4.00

Sample: 260528 - SB-1 5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79593	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2470	mg/Kg	100	4.00

Sample: 260529 - SB-1 7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79593	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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sample 260529 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1470	mg/Kg	100	4.00

Sample: 260530 - SB-1 10'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 79593 Date Analyzed: 2011-03-17 Analyzed By: AR
Prep Batch: 67381 Sample Preparation: 2011-03-16 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		216	mg/Kg	50	4.00

Sample: 260531 - SB-1 15'

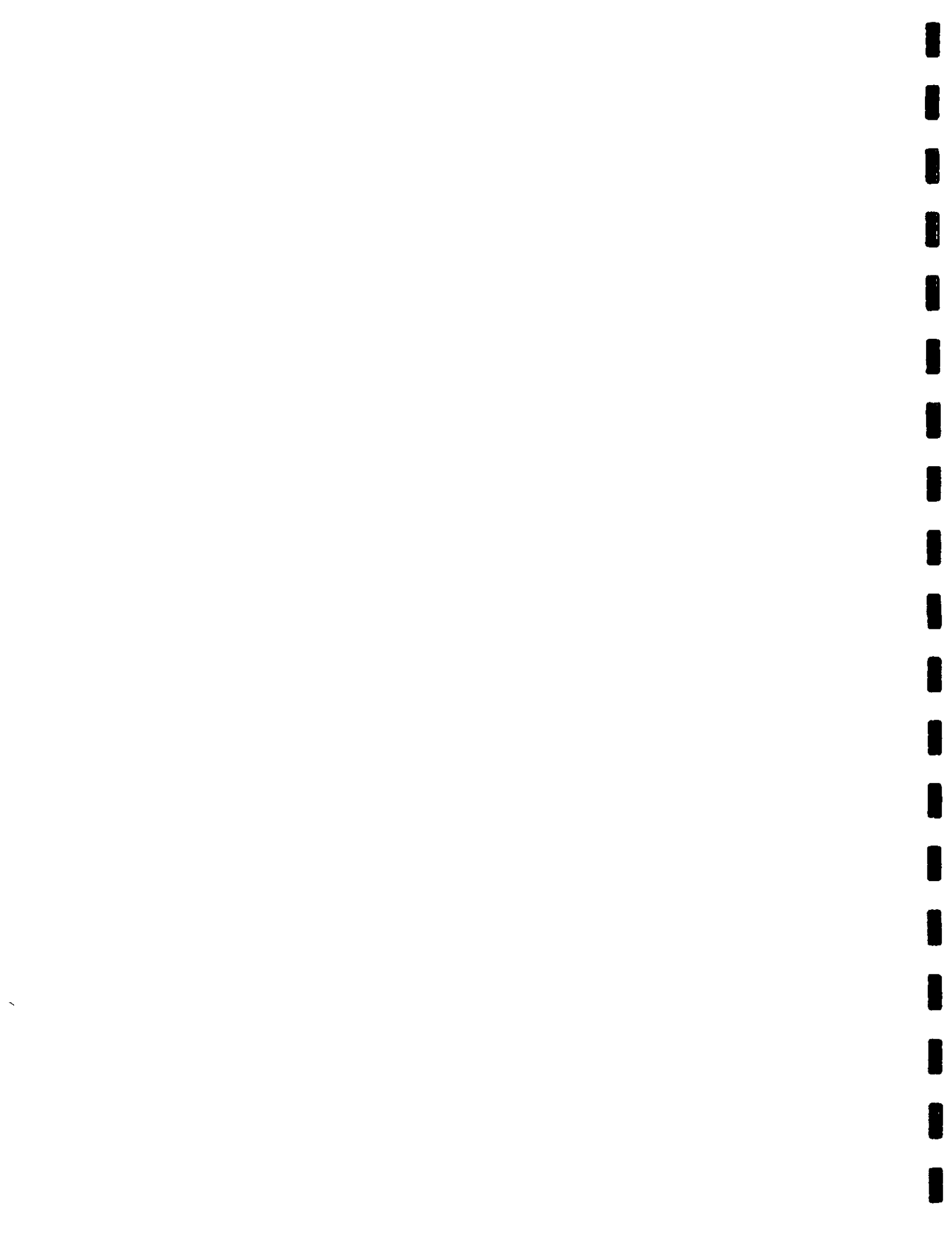
Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 79593 Date Analyzed: 2011-03-17 Analyzed By: AR
Prep Batch: 67381 Sample Preparation: 2011-03-16 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		201	mg/Kg	50	4.00

Sample: 260532 - SB-1 20'

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 79593 Date Analyzed: 2011-03-17 Analyzed By: AR
Prep Batch: 67381 Sample Preparation: 2011-03-16 Prepared By: AR

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



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Sample: 260533 - SB-2 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79593	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2560	mg/Kg	100	4.00

Sample: 260534 - SB-2 3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260535 - SB-2 5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260536 - SB-2 7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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



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Sample: 260537 - SB-2 10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260538 - SB-2 15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260539 - SB-2 20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260540 - SB-3 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		23600	mg/Kg	100	4.00



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Sample: 260541 - SB-3 3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8980	mg/Kg	100	4.00

Sample: 260542 - SB-3 5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6010	mg/Kg	100	4.00

Sample: 260543 - SB-3 7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79594	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2220	mg/Kg	100	4.00

Sample: 260544 - SB-3 10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2920	mg/Kg	100	4.00

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Sample: 260545 - SB-3 15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79632	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67555				

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

Sample: 260546 - SB-3 20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260547 - SB-3 25'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260548 - SB-3 30'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

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Sample: 260549 - SB-3 40'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260550 - SB-4 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4080	mg/Kg	100	4.00

Sample: 260551 - SB-4 3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8040	mg/Kg	100	4.00

Sample: 260552 - SB-4 5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		7940	mg/Kg	100	4.00

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Sample: 260553 - SB-4 7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		10400	mg/Kg	100	4.00

Sample: 260554 - SB-4 10'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79596	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67381				

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

Sample: 260555 - SB-4 15'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79632	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67555				

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

Sample: 260556 - SB-4 20'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79632	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67555				

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

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Sample: 260557 - SB-4 25'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79632	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67555				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		238	mg/Kg	50	4.00

Sample: 260558 - SB-4 30'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-17	Analyzed By:	AR
QC Batch:	79632	Sample Preparation:	2011-03-16	Prepared By:	AR
Prep Batch:	67555				

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

Method Blank (1) QC Batch: 79593

QC Batch:	79593	Date Analyzed:	2011-03-17	Analyzed By:	AR
Prep Batch:	67381	QC Preparation:	2011-03-16	Prepared By:	AR

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

Method Blank (1) QC Batch: 79594

QC Batch:	79594	Date Analyzed:	2011-03-17	Analyzed By:	AR
Prep Batch:	67381	QC Preparation:	2011-03-16	Prepared By:	AR

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



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Method Blank (1) QC Batch: 79596

QC Batch: 79596
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 79632

QC Batch: 79632
Prep Batch: 67555

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

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

Laboratory Control Spike (LCS-1)

QC Batch: 79593
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.2	mg/Kg	1	100	<3.85	97	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	103	mg/Kg	1	100	<3.85	103	85 - 115	6	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: 79594
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

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	<3.85	97	85 - 115



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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<3.85	102	85 - 115	5	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 79596
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.1	mg/Kg	1	100	<3.85	97	85 - 115

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	102	mg/Kg	1	100	<3.85	102	85 - 115	5	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 79632
Prep Batch: 67555

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.3	mg/Kg	1	100	<3.85	98	85 - 115

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

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

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

Matrix Spike (MS-1) Spiked Sample: 260533

QC Batch: 79593
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR



Report Date: March 22, 2011
114-6400715

Work Order: 11031512
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Lea Co., NM

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12300	mg/Kg	100	10000	2560	97	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12600	mg/Kg	100	10000	2560	100	80 - 120	2	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: 260543

QC Batch: 79594
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12100	mg/Kg	100	10000	2220	99	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	12600	mg/Kg	100	10000	2220	104	80 - 120	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: 260554

QC Batch: 79596
Prep Batch: 67381

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10600	mg/Kg	100	10000	<385	104	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10900	mg/Kg	100	10000	<385	107	80 - 120	3	20

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

Matrix Spike (MS-1) Spiked Sample: 260558

QC Batch: 79632
Prep Batch: 67555

Date Analyzed: 2011-03-17
QC Preparation: 2011-03-16

Analyzed By: AR
Prepared By: AR



Report Date: March 22, 2011
114-6400715

Work Order: 11031512
COG/Bates Federal #3

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Lea Co., NM

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10300	mg/Kg	100	10000	<385	103	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10600	mg/Kg	100	10000	<385	106	80 - 120	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: 79593

Date Analyzed: 2011-03-17

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	2011-03-17

Standard (CCV-1)

QC Batch: 79593

Date Analyzed: 2011-03-17

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	2011-03-17

Standard (ICV-1)

QC Batch: 79594

Date Analyzed: 2011-03-17

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2011-03-17

Standard (CCV-1)

QC Batch: 79594

Date Analyzed: 2011-03-17

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2011-03-17

Report Date: March 22, 2011
114-6400715

Work Order: 11031512
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Lea Co., NM

Standard (ICV-1)

QC Batch: 79596

Date Analyzed: 2011-03-17

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.8	99	85 - 115	2011-03-17

Standard (CCV-1)

QC Batch: 79596

Date Analyzed: 2011-03-17

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	2011-03-17

Standard (ICV-1)

QC Batch: 79632

Date Analyzed: 2011-03-17

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	2011-03-17

Standard (CCV-1)

QC Batch: 79632

Date Analyzed: 2011-03-17

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.4	99	85 - 115	2011-03-17



Analysis Request of Chain of Custody Record

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ANALYSIS REQUEST
(Circle or Specify Method No.)

TETRA TECH

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

CLIENT NAME: CDC						SITE MANAGER: Ike Taverre		PRESERVATIVE METHOD	
PROJECT NO.: 11-1-6900715		PROJECT NAME: Bates Federal #3				NUMBER OF CONTAINERS		FILTERED (Y/N)	
LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION		HCL	HNO3
200526	3/10		S	X		SB-1	0-1"		X
527						SB-1	3'		
528						SB-1	5'		
529						SB-1	7'		
530						SB-1	10'		
531						SB-1	15'		
532						SB-1	20'		
533						SB-2	0-1		
534						SB-2	3		
535						SB-2	5'		

RELINQUISHED BY: (Signature) _____ Date: **March 13, 2011** RECEIVED BY: (Signature) _____ Date: **3/15/11**

RELINQUISHED BY: (Signature) _____ Date: _____ RECEIVED BY: (Signature) _____ Date: **11:00**

RELINQUISHED BY: (Signature) _____ Date: _____ RECEIVED BY: (Signature) _____ Date: _____

RECEIVING LABORATORY: **TRACE** ADDRESS: _____ CITY: **MILWAUKEE** STATE: **TX** ZIP: _____ PHONE: _____ DATE: _____ TIME: _____

SAMPLE CONDITION WHEN RECEIVED:
3.9°C intact

REMARKS: ~~X~~ All tests - Mid band

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



* wo #: 11031512

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ANALYSIS REQUEST
(Circle or Specify Method No.)

TETRA TECH

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

CLIENT NAME: <u>COG</u>				SITE MANAGER: <u>Ike Tavaraz</u>		PROJECT NAME: <u>Bates Federal #3</u>		PROJECT NO.: <u>161-6400715</u>	
LAB I.D. NUMBER	DATE 2011	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION			
536	3/10		S		X	SB-2	7'		
537						SB-2	10'		
538						SB-2	15'		
539						SB-2	20'		
540	3/11					SB-3	0-1'		
541						SB-3	3'		
542						SB-3	5'		
543						SB-3	7'		
544						SB-3	10'		
545						SB-3	15'		

RECEIVING LABORATORY: <u>TRACE</u>		RECEIVED BY: (Signature) <u>[Signature]</u>	
CITY: <u>MILWAUKEE</u>	STATE: <u>TX</u>	DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>

RECEIVING LABORATORY: <u>TRACE</u>		RECEIVED BY: (Signature) <u>[Signature]</u>	
CITY: <u>MILWAUKEE</u>	STATE: <u>TX</u>	DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>
RELINQUISHED BY: (Signature) <u>[Signature]</u>		DATE: <u>11/02</u>	TIME: <u>11:00</u>

SAMPLE CONDITION WHEN RECEIVED:

39°C intact

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





Analysis Request of Chain of Custody Record

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ANALYSIS REQUEST
(Circle or Specify Method No.)

TETRA TECH

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

[illegible]

RELINQUISHED BY: (Signature) <i>John K...</i>	Date: <u>March 15, 2001</u>	RECEIVED BY: (Signature) <i>[Signature]</i>	Date: <u>2/15/11</u>	SAMPLED BY: (Print & Initial) <u>Kim</u>	Date: <u>3/11/11</u>
RELINQUISHED BY: (Signature)	Time: <u>11:00</u>	RECEIVED BY: (Signature)	Time: <u>11:00</u>	AIRBILL #: _____	Time: _____
RELINQUISHED BY: (Signature)	Date: _____	RECEIVED BY: (Signature)	Date: _____	SAMPLE SHIPPED BY: (Circle) FEDEX ☒ BUS ☐ UPS ☐	OTHER: _____
RELINQUISHED BY: (Signature)	Date: _____	RECEIVED BY: (Signature)	Date: _____	TETRA TECH CONTACT PERSON: <u>Ike Tavernier</u>	
RELINQUISHED BY: (Signature)	Date: _____	RECEIVED BY: (Signature)	Date: _____	Results by: _____	
RECEIVING LABORATORY: <u>TRAC</u>	RUSH Charges Authorized: _____				
ADDRESS: _____	Yes _____ No _____				
CITY: <u>MILWAUKEE</u> STATE: <u>TX</u>					
CONTACT: _____ PHONE: _____					
SAMPLER CONDITION WHEN RECEIVED: _____					

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

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

Report Date: March 28, 2011

Work Order: 11032331



Project Location: Lea Co., NM
Project Name: COG/Bates Federal #3
Project Number: 114-6400715

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
261380	SB-5 0-1'	soil	2011-03-16	00:00	2011-03-23
261381	SB-5 3'	soil	2011-03-16	00:00	2011-03-23
261382	SB-5 5'	soil	2011-03-16	00:00	2011-03-23
261383	SB-5 7'	soil	2011-03-16	00:00	2011-03-23
261384	SB-5 10'	soil	2011-03-16	00:00	2011-03-23
261385	SB-5 15'	soil	2011-03-16	00:00	2011-03-23
261386	SB-5 20'	soil	2011-03-16	00:00	2011-03-23
261387	SB-5 25'	soil	2011-03-16	00:00	2011-03-23
261388	SB-5 30'	soil	2011-03-16	00:00	2011-03-23
261389	SB-5 40'	soil	2011-03-16	00:00	2011-03-23
261390	SB-5 50'	soil	2011-03-16	00:00	2011-03-23

Sample: 261380 - SB-5 0-1'

Param	Flag	Result	Units	RL
Chloride		6560	mg/Kg	4.00

Sample: 261381 - SB-5 3'

Param	Flag	Result	Units	RL
Chloride		12700	mg/Kg	4.00

Sample: 261382 - SB-5 5'



Param	Flag	Result	Units	RL
Chloride		9420	mg/Kg	4.00

Sample: 261383 - SB-5 7'

Param	Flag	Result	Units	RL
Chloride		8030	mg/Kg	4.00

Sample: 261384 - SB-5 10'

Param	Flag	Result	Units	RL
Chloride		4520	mg/Kg	4.00

Sample: 261385 - SB-5 15'

Param	Flag	Result	Units	RL
Chloride		372	mg/Kg	4.00

Sample: 261386 - SB-5 20'

Param	Flag	Result	Units	RL
Chloride		578	mg/Kg	4.00

Sample: 261387 - SB-5 25'

Param	Flag	Result	Units	RL
Chloride		315	mg/Kg	4.00

Sample: 261388 - SB-5 30'

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

Sample: 261389 - SB-5 40'

Param	Flag	Result	Units	RL
Chloride		430	mg/Kg	4.00



Report Date: March 28, 2011

Work Order: 11032331

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Sample: 261390 - SB-5-50'

Param	Flag	Result	Units	RL
Chloride		1110	mg/Kg	4.00





6701 Arden Avenue, Suite 9 Lubbock, Texas 79424 806•378•1296 806•794•1296 FAX 806•794•1296
200 East Sunset Road, Suite E El Paso, Texas 79922 898•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•291•5260
E-Mail: tab@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

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

Report Date: March 28, 2011

Work Order: 11032331



Project Location: Lea Co., NM
Project Name: COG/Bates Federal #3
Project Number: 114-6400715

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
261380	SB-5 0-1'	soil	2011-03-16	00:00	2011-03-23
261381	SB-5 3'	soil	2011-03-16	00:00	2011-03-23
261382	SB-5 5'	soil	2011-03-16	00:00	2011-03-23
261383	SB-5 7'	soil	2011-03-16	00:00	2011-03-23
261384	SB-5 10'	soil	2011-03-16	00:00	2011-03-23
261385	SB-5 15'	soil	2011-03-16	00:00	2011-03-23
261386	SB-5 20'	soil	2011-03-16	00:00	2011-03-23
261387	SB-5 25'	soil	2011-03-16	00:00	2011-03-23
261388	SB-5 30'	soil	2011-03-16	00:00	2011-03-23
261389	SB-5 40'	soil	2011-03-16	00:00	2011-03-23
261390	SB-5 50'	soil	2011-03-16	00:00	2011-03-23



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 9 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/Bates Federal #3 were received by TraceAnalysis, Inc. on 2011-03-23 and assigned to work order 11032331. Samples for work order 11032331 were received intact at a temperature of 8.9 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	67649	2011-03-24 at 09:55	79739	2011-03-25 at 09:56
Chloride (Titration)	SM 4500-Cl B	67649	2011-03-24 at 09:55	79795	2011-03-28 at 10:02

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 11032331 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
COG/Bates Federal #3

Page Number: 4 of 9
Lea Co., NM

Analytical Report

Sample: 261380 - SB-5 0-1'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		6560	mg/Kg	100	4.00

Sample: 261381 - SB-5 3'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		12700	mg/Kg	100	4.00

Sample: 261382 - SB-5 5'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		9420	mg/Kg	100	4.00

Sample: 261383 - SB-5 7'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

continued ...



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
COG/Bates Federal #3

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Lea Co., NM

sample 261383 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8030	mg/Kg	100	4.00

Sample: 261384 - SB-5 10'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	79795	Date Analyzed:	2011-03-28	Analyzed By: AR
Prep Batch:	67649	Sample Preparation:	2011-03-24	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		4520	mg/Kg	100	4.00

Sample: 261385 - SB-5 15'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	79795	Date Analyzed:	2011-03-28	Analyzed By: AR
Prep Batch:	67649	Sample Preparation:	2011-03-24	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		372	mg/Kg	50	4.00

Sample: 261386 - SB-5 20'

Laboratory:	Midland			
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method: N/A
QC Batch:	79795	Date Analyzed:	2011-03-28	Analyzed By: AR
Prep Batch:	67649	Sample Preparation:	2011-03-24	Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		578	mg/Kg	50	4.00



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
COG/Bates Federal #3

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Lea Co., NM

Sample: 261387 - SB-5 25'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		315	mg/Kg	50	4.00

Sample: 261388 - SB-5 30'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

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

Sample: 261389 - SB-5 40'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-28	Analyzed By:	AR
QC Batch:	79795	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		430	mg/Kg	50	4.00

Sample: 261390 - SB-5 50'

Laboratory:	Midland	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Analysis:	Chloride (Titration)	Date Analyzed:	2011-03-25	Analyzed By:	AR
QC Batch:	79739	Sample Preparation:	2011-03-24	Prepared By:	AR
Prep Batch:	67649				

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		1110	mg/Kg	100	4.00



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
COG/Bates Federal #3

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Lea Co., NM

Method Blank (1) QC Batch: 79739

QC Batch: 79739
Prep Batch: 67649

Date Analyzed: 2011-03-25
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

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

Method Blank (1) QC Batch: 79795

QC Batch: 79795
Prep Batch: 67649

Date Analyzed: 2011-03-28
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

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

Laboratory Control Spike (LCS-1)

QC Batch: 79739
Prep Batch: 67649

Date Analyzed: 2011-03-25
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	95.0	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	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	104	mg/Kg	1	100	<3.85	104	85 - 115	9	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: 79795
Prep Batch: 67649

Date Analyzed: 2011-03-28
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	95.9	mg/Kg	1	100	<3.85	96	85 - 115



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
COG/Bates Federal #3

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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	105	mg/Kg	1	100	<3.85	105	85 - 115	9	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: 261658

QC Batch: 79739
Prep Batch: 67649

Date Analyzed: 2011-03-25
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	9600	mg/Kg	100	10000	<385	96	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	9980	mg/Kg	100	10000	<385	100	80 - 120	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: 261389

QC Batch: 79795
Prep Batch: 67649

Date Analyzed: 2011-03-28
QC Preparation: 2011-03-24

Analyzed By: AR
Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	9620	mg/Kg	100	10000	430	92	80 - 120

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10200	mg/Kg	100	10000	430	98	80 - 120	6	20

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

Standard (ICV-1)

QC Batch: 79739

Date Analyzed: 2011-03-25

Analyzed By: AR



Report Date: March 28, 2011
114-6400715

Work Order: 11032331
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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	2011-03-25

Standard (CCV-1)

QC Batch: 79739

Date Analyzed: 2011-03-25

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.7	99	85 - 115	2011-03-25

Standard (ICV-1)

QC Batch: 79795

Date Analyzed: 2011-03-28

Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	97.7	98	85 - 115	2011-03-28

Standard (CCV-1)

QC Batch: 79795

Date Analyzed: 2011-03-28

Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2011-03-28





Analysis Request of Chain of Custody Record

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ANALYSIS REQUEST
(Circle or Specify Method No.)

TETRA TECH

**1910 N. Big Spring St.
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IN 100
Please fill out all copies - Laboratory retains Yellow copy - Return Original copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

