PLWJ1017253141
2564

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **COG Operating LLC**	Contact **Pat Ellis**
Address **550 W. Texas, Suite 1300 Midland, Texas 79701**	Telephone No. **(432) 230-0077**
Facility Name **Bates Federal #3**	Facility Type **SWD**

Surface Owner: Federal	Mineral Owner	Lease No. NMNM030941 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
L	28	19S	32E					Lea

Latitude 32 37.813 **Longitude** 103 40.741

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release **90bbls**	Volume Recovered **15bbls**
Source of Release Flowline	Date and Hour of Occurrence *06/11/2010*	Date and Hour of Discovery *06/11/2010* 7:00a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Larry Johnson—OCD** **Geoffrey Leking--OCD**	
By Whom? Josh Russo	Date and Hour 06/11/2010 11:56 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

N/A

Describe Cause of Problem and Remedial Action Taken.*

The Bate Federal flowline ruptured. The flowline has been repaired and put back into service.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Ike Tavarez (agent for COG)	Approved by District Supervisor:	
Title: Project Manager	Approval Date:	Expiration Date:
E-mail Address: ike.tavarez@tetratech.com	Conditions of Approval:	Attached ☐
Date: 3-13-12 Phone: (432) 682-4559		

* Attach Additional Sheets If Necessary

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Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	COG OPERATING LLC	Contact	Pat Ellis
Address	550 W. Texas, Suite 100, Midland, TX 79701	Telephone No.	432-230-0077
Facility Name	Bate Federal #3	Facility Type	SWD

Surface Owner Federal	Mineral Owner	Lease No. NMNM030941 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
L	28	19S	32E					Lea

Latitude 32 37.813 **Longitude** 103 40.741

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 90bbls	Volume Recovered 15bbls
Source of Release Flowline	Date and Hour of Occurrence 06/11/2010	Date and Hour of Discovery 06/11/2010 7:00 a.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Larry Johnson—OCD Geoffrey Leking—OCD	
By Whom? Josh Russo	Date and Hour 06/11/2010 11:56 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 Bate Federal flowline ruptured. The flowline has been repaired and put back into service.

Describe Area Affected and Cleanup Action Taken.*

Initially 90bbls of produced water was release from the ruptured flowline and we were able to recover 15bbls. The produced water from the release flowed 100 yards north from the GPS coordinates listed above, never getting more that 20 yards wide. The average chloride concentration of the produced water that was released is 135,000 mg/l. (The closest well location to the release is 600 yards south of the leak site. Cimarex Energy, Maduro Unit #008, 1740 *FSL 660 FWL, Unit L, Sec. 28-T19S-R32E, API#30-025-38240.Lea County, NM, NMNM-84647.) 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 BLM/NMOCD for approval prior to any significant remediation work.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: Josh Russo	Approved by District Supervisor:
Title: HSE Coordinator	Approval Date: / Expiration Date:
E-mail Address: jrusso@conchoresources.com	Conditions of Approval: / Attached ☐
Date: 06/21/2010 Phone: 432-212-2399	

* Attach Additional Sheets If Necessary

SITE INFORMATION

Report Type: Closure

General Site Information:		
Site:	Bates SWD #3	
Company:	COG Operating LLC	
Section, Township and Range	Section 29, T19S, R33E, Unit I	
Lease Number:	30-025-22597	
County:	Lea County	
GPS:	32.630371	103.679242
Surface Owner:	Federal	
Mineral Owner:		
Directions:	From the intersection of Hwy 529 and CR 126, go South on CR 126 for 10 miles, turn left (East) into lease road for 5 miles, turn right (south) and go 0.3 miles to site on north side (right).	

Release Data:		
Date Released:	6/11/2010	
Type Release:	Produced Water	
Source of Contamination:	Flow line	
Fluid Released:	90 barrels	
Fluids Recovered:	15 barrels	

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

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

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

TETRA TECH

March 13, 2012

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 SWD #3 Leak, Unit I, Section 29, Township 19 South, Range 33 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC. (COG) to assess a spill at the Bates SWD #3 Line Leak located in Unit I, Section 29, Township 19 South, Range 33 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.630371°, W 103.679242°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on June 11, 2010, and released approximately 90 barrels of produced water due to a flow line rupture. To alleviate the problem, COG personnel repaired the leak. Approximately 15 barrels of standing fluids were recovered. The spill migrated west in the pasture approximately 180', at a width of approximately 30'. COG immediately excavated the spill area and removed approximately 1' to 2' of soil and transported the material to proper disposal. The initial C-141 form is enclosed in Appendix A.

Groundwater

The United States Geological Survey (USGS) database shows wells in Section 17 and Section 18, Township 19 South, Range 33 East, with reported depths to water of approximately 118' and 340', respectively. The New Mexico State Engineer Well Reports showed a well with a reported depth of 185' (Section 32). As requested by the NMOCD, Tetra Tech

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

installed a temporary well onsite (Section 29) to established depth to groundwater. The well was installed to a total depth of 130' and did not encounter groundwater in the well (dry). Based on the data, the depth to groundwater for the site appears to be greater than 100' below surface. The average depth to water map is included in Appendix B.

Regulatory

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

Soil Assessment and Analytical Results

On August 3, 2010, Tetra Tech personnel inspected and sampled the spill area. A total of ten (10) soil borings (SB-1 through SB-10) were installed using an air rotary rig. A total of six (6) soil borings were installed in the excavated area. The remaining soil borings were installed north of the excavation to assess the area. The soil borings were installed to depths ranging from 10' to 25'. Soil samples were collected from each soil boring for analysis. Select samples were analyzed for TPH 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 soil boring locations are shown on Figure 3.

Referring to Table 1, all of the samples were below the BTEX and TPH RRAL. The chloride impacted soils were all vertically defined in all of the soil borings. Based on the data, Figure 5 (Cross-Section A-A') was developed to evaluate distribution of the chloride impact in the subsurface soils. As shown in the A-A' Cross Section, the deepest chloride impact were encountered in the area of SB-2 and SB-6, with chloride concentrations significantly decline around 10' and 15' respectively. The remaining soil borings (SB-7, SB-8, SB-9 and SB-10) north of the spill area did not show a chloride impact to the soils.

TETRA TECH

Remediation Activities and Closure Request

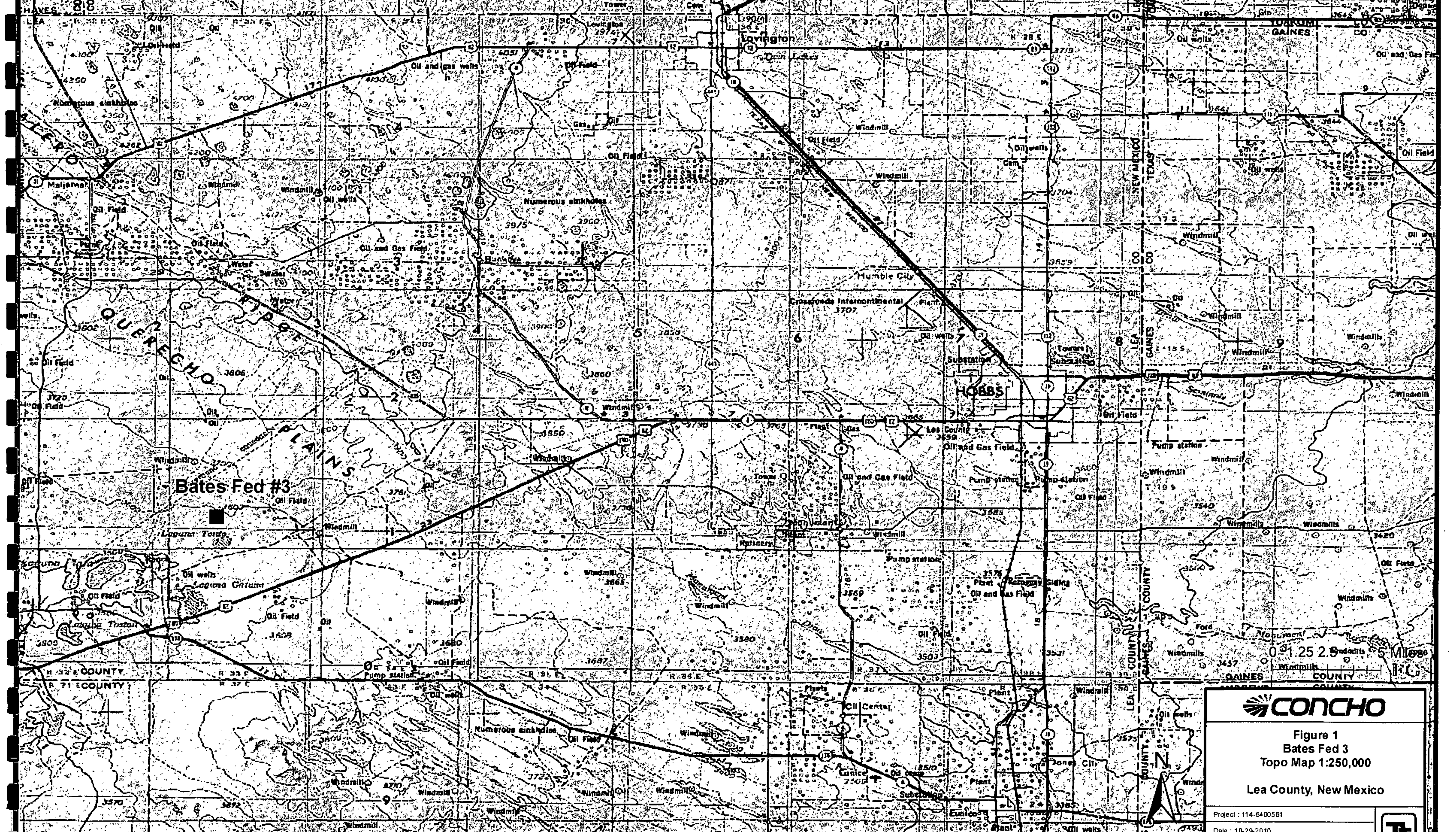
Based on the approved work plan, Tetra Tech personnel supervised the excavation of the site. The final depths of the soil remediation for the entire spill met or exceeded the depths of the approved work plan. The excavation depths are highlighted in Table 1 and shown on Figure 5 and 6. Once excavated, the site was backfilled with clean material.

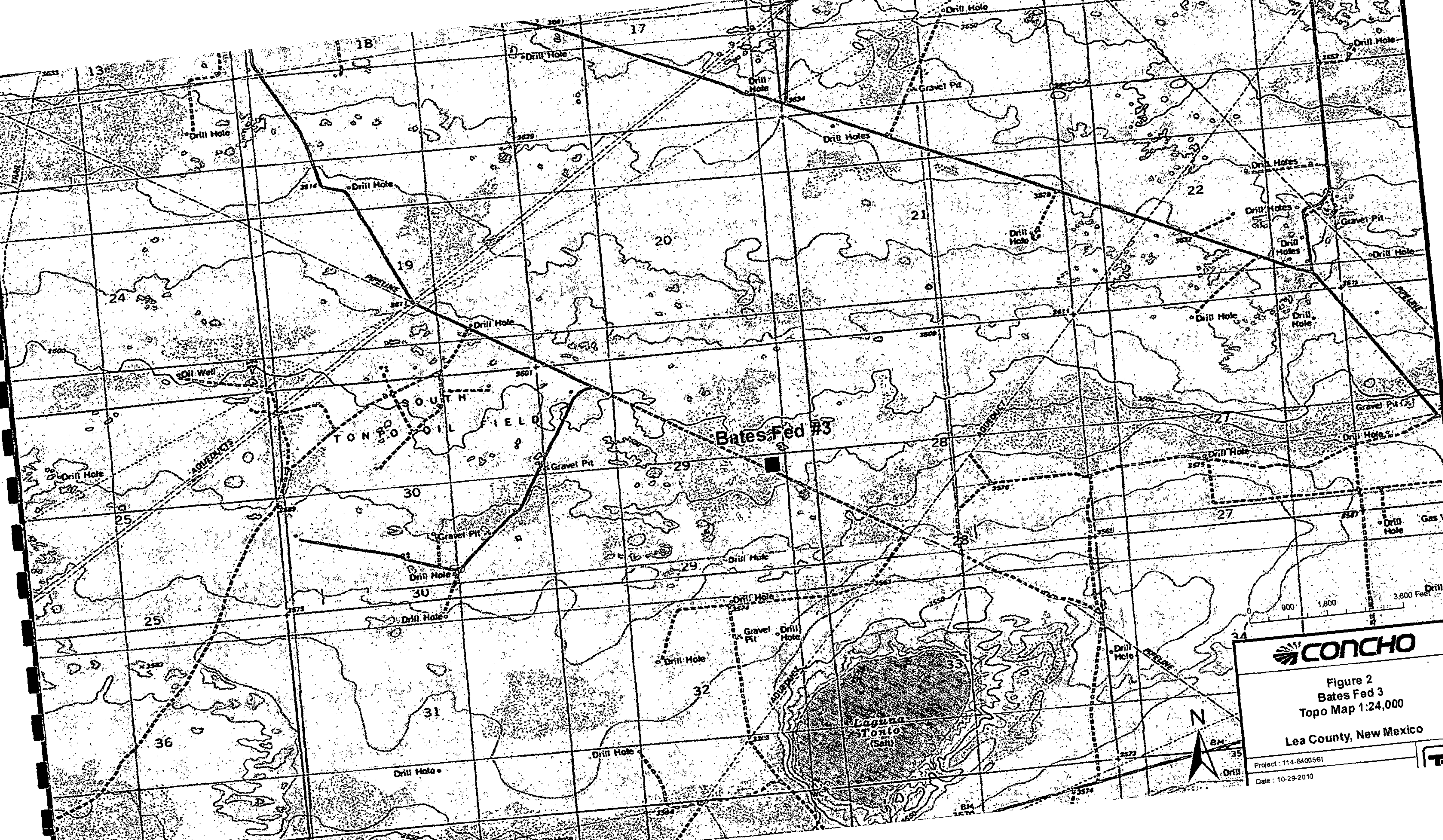
Based on the results, COG requests closure of the site. The C-141 (Final) is included in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities performed at the site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez
Project Manager

cc: Pat Ellis – COG
cc: Paul Evans – BLM
cc:Jim Amos - BLM


Bates Fed #3
QUERECHO
RIDGE
PLAINS
HOBBS
Lovington
Humble City
Maljamar
Eunice
Monument
Oil Center
Laguna Tonto
Laguna Gatuna
NEW MEXICO
TEXAS
LEA
GAINES
COUNTY
YOAKUM
CHAVES
0 1.25 2.5 5 Miles
CONCHO
Figure 1
Bates Fed 3
Topo Map 1:250,000
Lea County, New Mexico
Project : 114-6400561
Date : 10-29-2010


CONCHO
Figure 2
Bates Fed 3
Topo Map 1:24,000
Lea County, New Mexico
Project : 114-6400561
Date : 10-29-2010
Bates Fed #3
SOUTH TONTO OIL FIELD
Laguna Tonto (Salt)
0 900 1,800 3,600 Feet
N

TMW-1

SB-6

SB-10

SB-9

250'

SB-5

SB-8

SB-4

SB-7

SB-3

SB-2

SB-1

LEASE ROAD

LEAK SOURCE

N

EXPLANATION

- Spill & Excavated Area (2')
- Leak Source
- Pipeline
- COG Water Disposal Line
- Plains Pipeline

CONCHO

Figure 3
Bates Fed 3
Spill Assessment Map
with Bore Hole Samples

Lea County, New Mexico

Project : 114-6400561

Date : 10-29-2010

TMW-1

A

SB-6

SB-10

SB-9

250'

SB-5

SB-8

SB-4

SB-7

SB-3

SB-2

SB-1

A'

LEASE ROAD

LEAK SOURCE

N

EXPLANATION

- Spill Area
- Leak Source
- Pipeline
- COG Water Disposal Line
- Plains Pipeline

CONCHO

Figure 4
Bates Fed 3
Cross Section
Reference Map

Lea County, New Mexico

Project : 114-6400561

Date : 10-29-2010

TMW-1

SB-6

SB-10

32' WIDE

10' DEEP

SB-9

40' WIDE

250'

SB-5

SB-8

48' WIDE

5' DEEP

SB-4

SB-7

SB-3

50' WIDE

7' DEEP

35' WIDE

SB-2

5' DEEP

LEASE ROAD

40' WIDE

SB-1

7' DEEP

20'

3' DEEP

LEAK SOURCE

N

EXPLANATION

- Excavated Area(2')
- Leak Source
- Pipeline
- COG Water Disposal Line
- Plains Pipeline

CONCHO

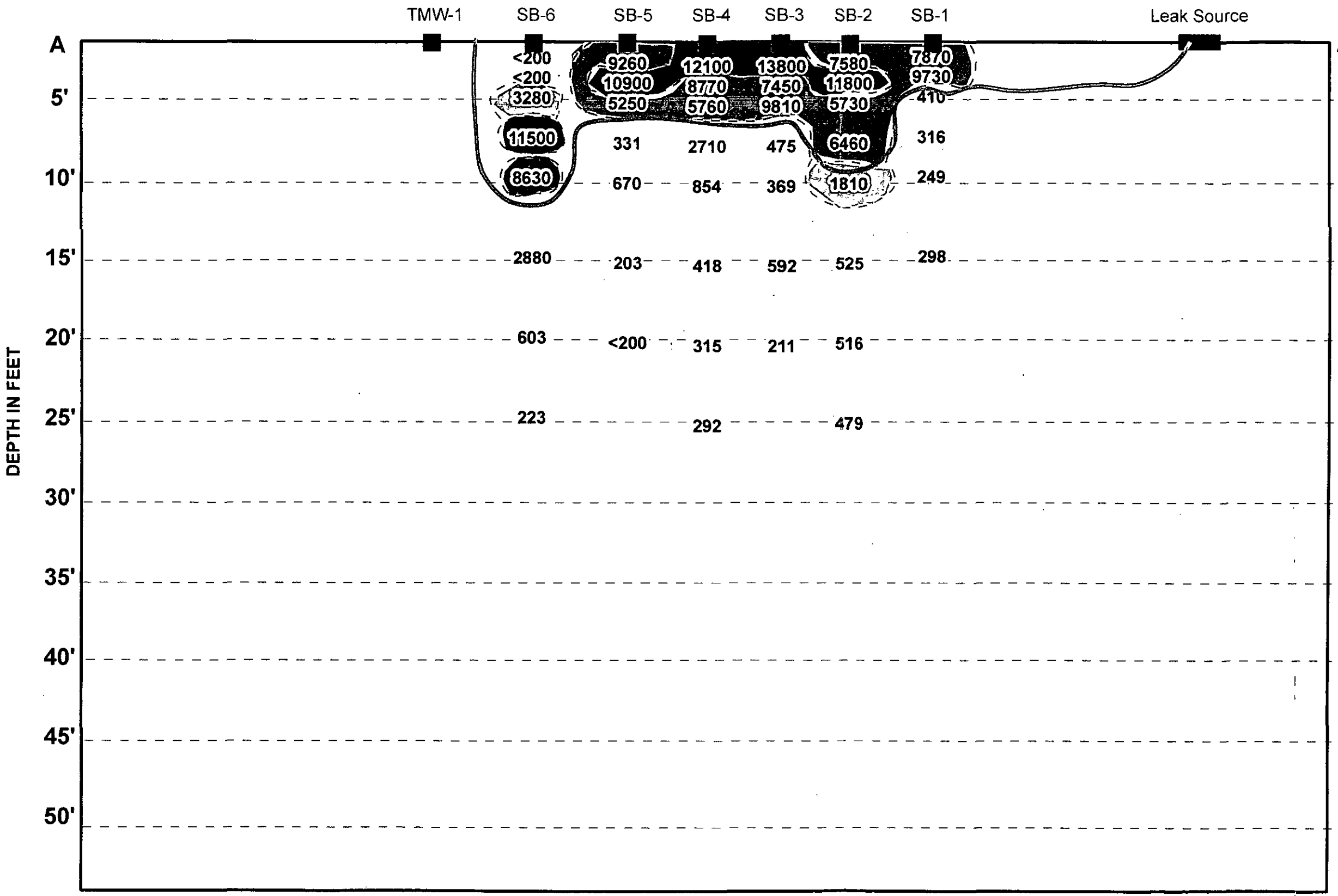
Figure 6

Bates Fed 3

Excavation Depths Map

Lea County, New Mexico

Project : 114-6400561



CONCHO

Figure 5
Bates #3 Federal
A to A' Analytical Cross Section
and Excavation Depths
Lea County, New Mexico

PROJECT :114-6400561

DATE : 10-4-2010

Table 1
COG Operating LLC.
Bates #3 SWD
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-1	8/3/2010	1'	2'		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	7,870
	"	3'	2'		X	-	-	-	-	-	-	-	9,730
	"	5'	2'	X		-	-	-	-	-	-	-	410
	"	7'	2'	X		-	-	-	-	-	-	-	316
	"	10'	2'	X		-	-	-	-	-	-	-	249
	"	15'	2'	X		-	-	-	-	-	-	-	298
SB-2	8/3/2010	1'	2'		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	7,580
	"	3'	2'		X	-	-	-	-	-	-	-	11,800
	"	5'	2'		X	-	-	-	-	-	-	-	5,730
	"	7'	2'		X	-	-	-	-	-	-	-	6,460
	"	10'	2'	X		-	-	-	-	-	-	-	1,810
	"	15'	2'	X		-	-	-	-	-	-	-	525
	"	20'	2'	X		-	-	-	-	-	-	-	516
	"	25'	2'	X		-	-	-	-	-	-	-	479
SB-3	8/3/2010	1'	2'		X	<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	13,800
	"	3'	2'		X	-	-	-	-	-	-	-	7,450
	"	5'	2'		X	-	-	-	-	-	-	-	9,810
	"	7'	2'	X		-	-	-	-	-	-	-	475
	"	10'	2'	X		-	-	-	-	-	-	-	369
	"	15'	2'	X		-	-	-	-	-	-	-	592
	"	20'	2'	X		-	-	-	-	-	-	-	211

Table 1
COG Operating LLC.
Bates #3 SWD
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-4	8/3/2010	1'	2'		X	<2.00	<50.0	<50.0	-	-	-	-	12,100
	"	3'	2'		X	-	-	-	-	-	-	-	8,770
	"	5'	2'		X	-	-	-	-	-	-	-	5,760
	"	7'	2'		X	-	-	-	-	-	-	-	2,710
	"	10'	2'	X		-	-	-	-	-	-	-	854
	"	15'	2'	X		-	-	-	-	-	-	-	418
	"	20'	2'	X		-	-	-	-	-	-	-	315
	"	25'	2'	X		-	-	-	-	-	-	-	292
SB-5	8/3/2010	1'	2'		X	<2.00	<50.0	<50.0	-	-	-	-	9,260
	"	3'	2'		X	-	-	-	-	-	-	-	10,900
	"	5'	2'		X	-	-	-	-	-	-	-	5,250
	"	7'	2'	X		-	-	-	-	-	-	-	331
	"	10'	2'	X		-	-	-	-	-	-	-	670
	"	15'	2'	X		-	-	-	-	-	-	-	203
	"	20'	2'	X		-	-	-	-	-	-	-	<200
SB-6	8/3/2010	1'	1'		X	<2.00	<50.0	<50.0	-	-	-	-	<200
	"	3'	1'		X	-	-	-	-	-	-	-	<200
	"	5'	1'		X	-	-	-	-	-	-	-	3,280
	"	7'	1'		X	-	-	-	-	-	-	-	11,500
	"	10'	1'		X	-	-	-	-	-	-	-	8,630
	"	15'	1'	X		-	-	-	-	-	-	-	2,880
	"	20'	1'	X		-	-	-	-	-	-	-	603
	"	25'	1'	X		-	-	-	-	-	-	-	223

Table 1
COG Operating LLC.
Bates #3 SWD
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth (ft)	Depth (BEB)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	Total					
SB-7	8/4/2010	1'	6"	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	285
	"	3'	6"	X		-	-	-	-	-	-	-	<200
	"	5'	6"	X		-	-	-	-	-	-	-	<200
	"	7'	6"	X		-	-	-	-	-	-	-	<200
	"	10'	6"	X		-	-	-	-	-	-	-	210
	"	15'	6"	X		-	-	-	-	-	-	-	215
SB-8	8/4/2010	1'	6"	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	3'	6"	X		-	-	-	-	-	-	-	262
	"	5'	6"	X		-	-	-	-	-	-	-	<200
	"	7'	6"	X		-	-	-	-	-	-	-	267
	"	10'	6"	X		-	-	-	-	-	-	-	<200
	"	15'	6"	X		-	-	-	-	-	-	-	219
	"	20'	6"	X		-	-	-	-	-	-	-	<200
	"	25'	6"	X		-	-	-	-	-	-	-	<200

Table 1
COG Operating LLC.
Bates #3 SWD
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-9	8/4/2010	1'	6"	X		<2.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<200
	"	3'	6"	X		-	-	-	-	-	-	-	<200
	"	5'	6"	X		-	-	-	-	-	-	-	<200
	"	7'	6"	X		-	-	-	-	-	-	-	<200
	"	10'	6"	X		-	-	-	-	-	-	-	<200
SB-10	8/4/2010	1'	6"	X		<2.00	<50.0	<50.0	-	-	-	-	<200
	"	3'	6"	X		-	-	-	-	-	-	-	<200
	"	5'	6"	X		-	-	-	-	-	-	-	<200
	"	7'	6"	X		-	-	-	-	-	-	-	<200
	"	10'	6"	X		-	-	-	-	-	-	-	203
	"	15'	6"	X		-	-	-	-	-	-	-	250
	"	20'	6"	X		-	-	-	-	-	-	-	217
	"	25'	6"	X		-	-	-	-	-	-	-	216

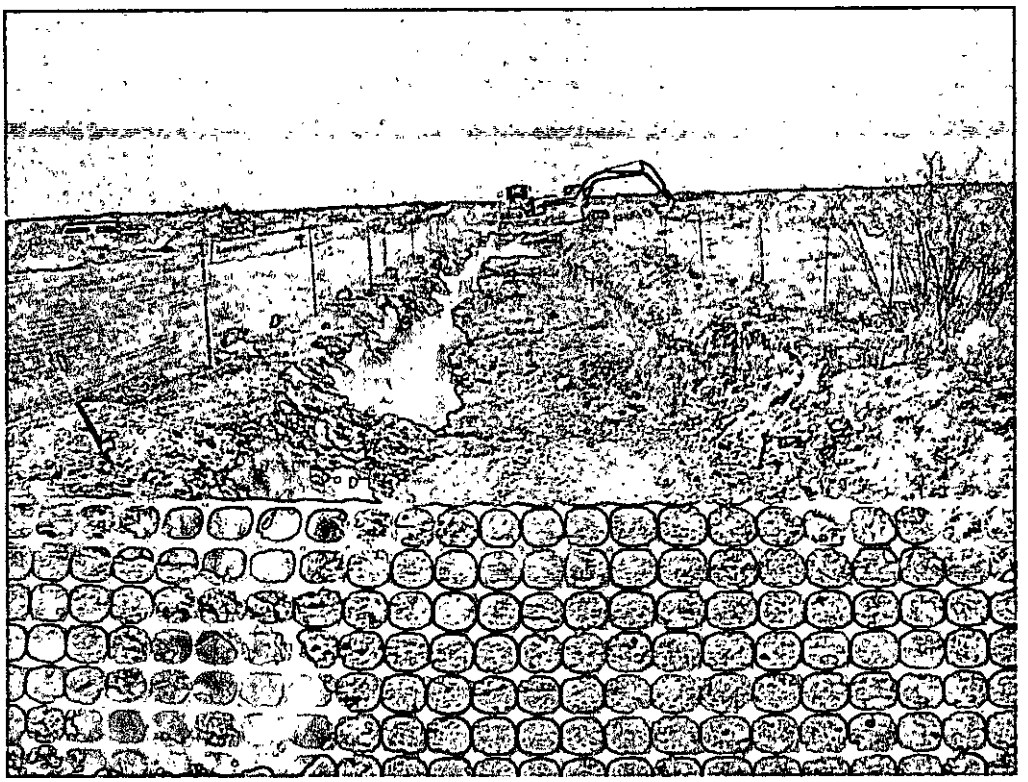
BEB Below Excavation Bottom

(--) Not Analyzed

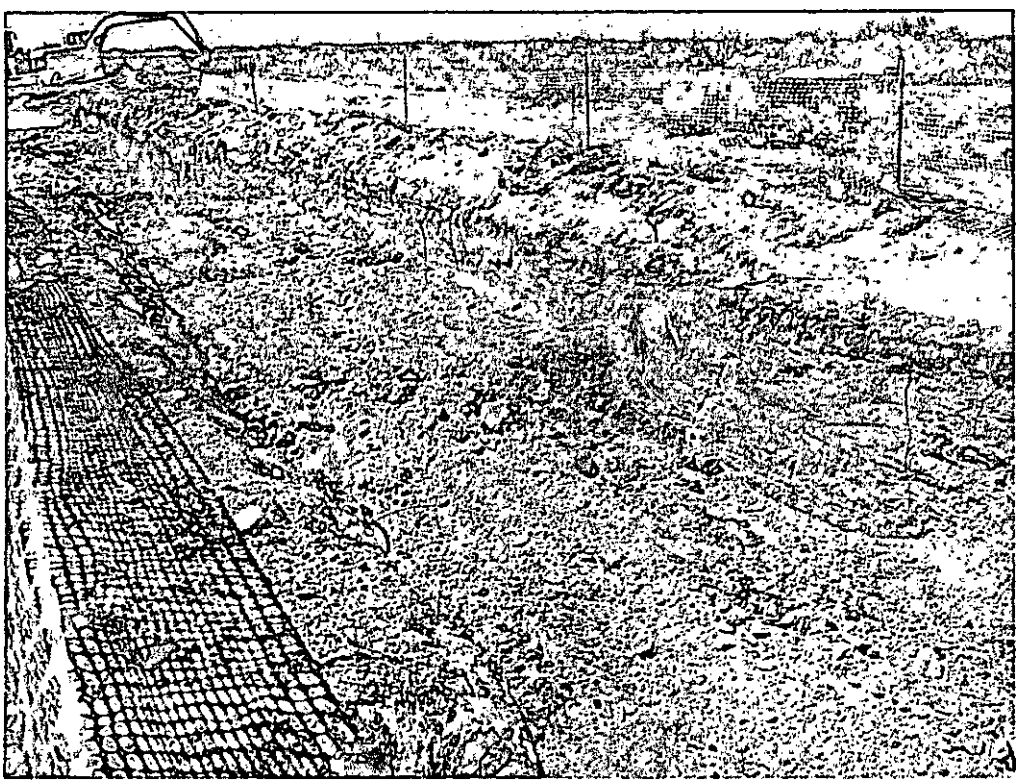
Excavation Depths

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

TETRA TECH



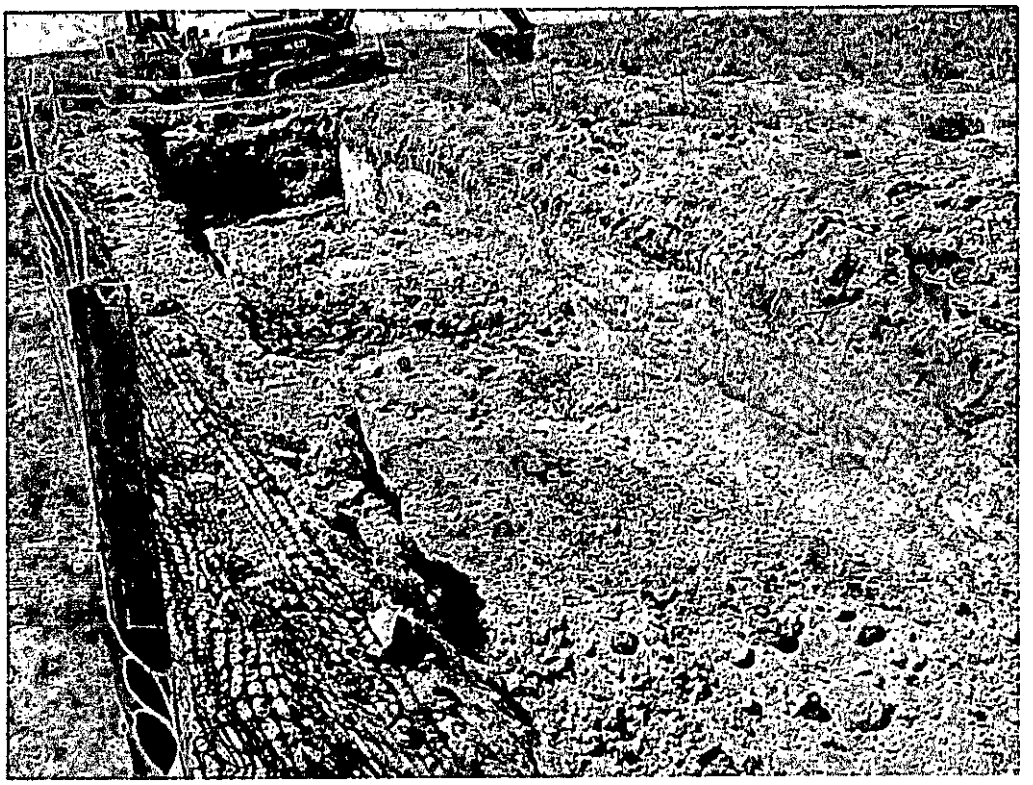
View North - SB-1 through SB-6



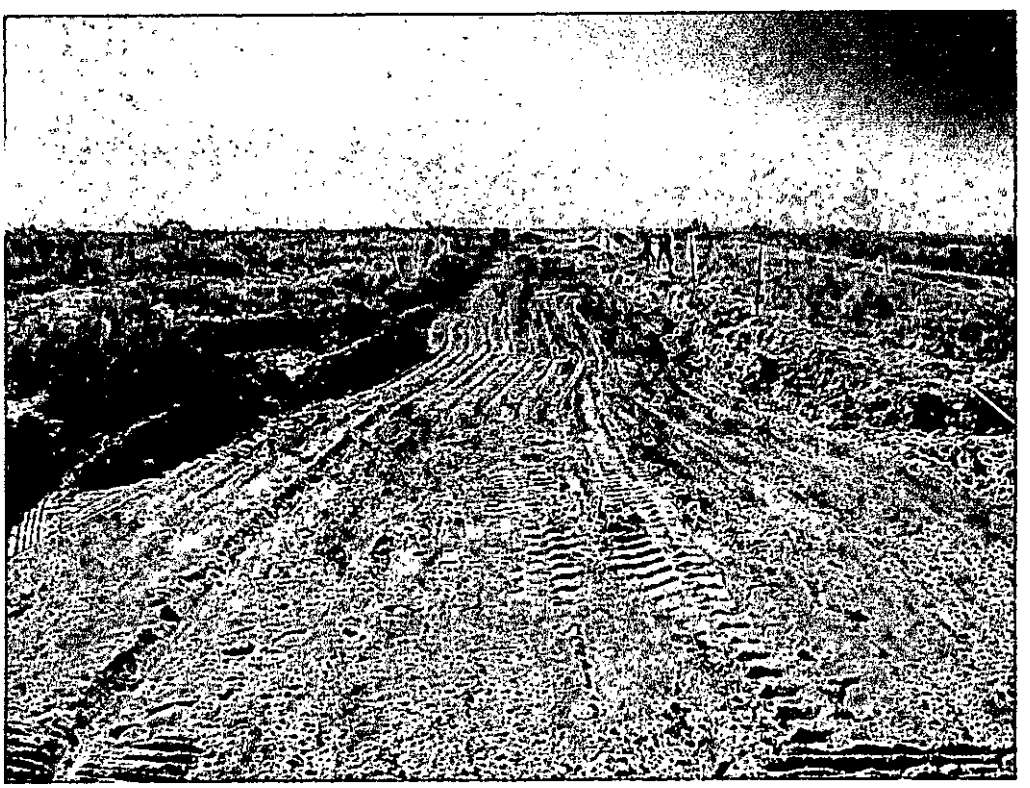
View North East – SB-4 through SB-6

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

TETRA TECH



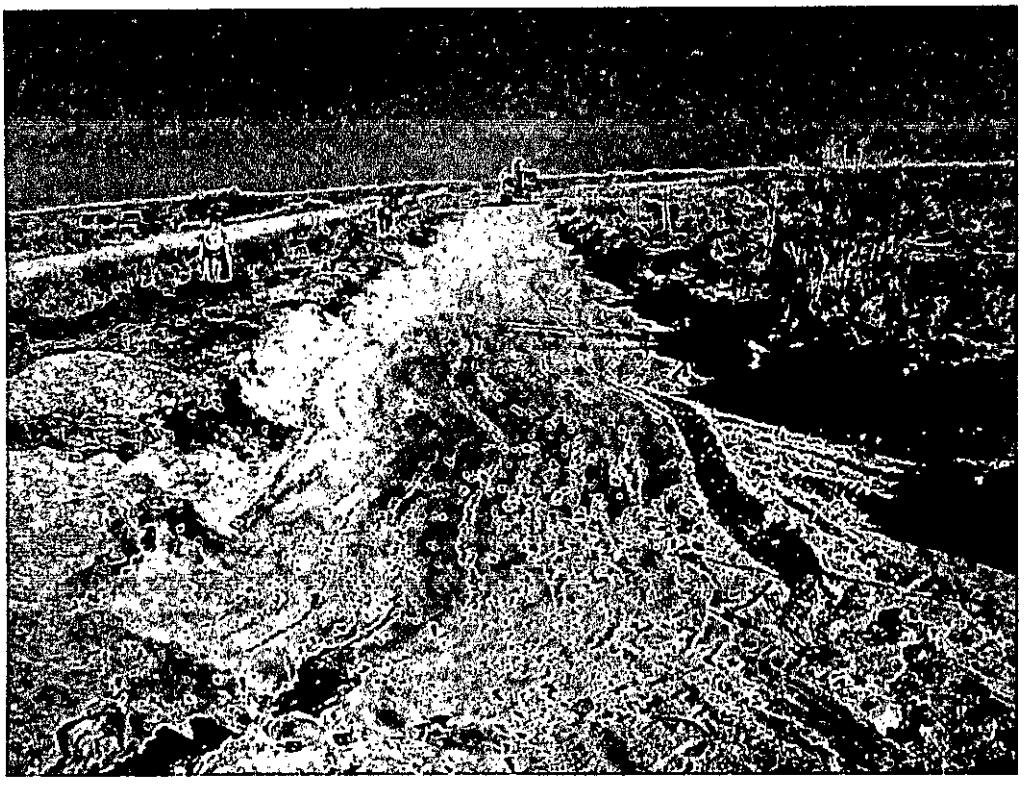
View North East – SB-5 and SB-6



View South - Backfill

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

TETRA TECH



View North - Backfill

Site info and picture details

Water Well Data
Average Depth to Groundwater (ft)
COG - Bates Federal #3

18 South 32 East

6	5	4 **65**	3	2	1
7 **460**	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 **100**	9	10 **62**	11	12 **143** **140**
18	17 **85**	16	15	14 **36**	13 **60**
19 **>140**	20	21	22	23	24 **195**
30 **35**	29	28	27	26	25
31	32	33	34 **177**	35	36

18 South 34 East

6 **130**	5 **105**	4	3 **87**	2 **102**	1 **107**
7 **83**	8 **148**	9	10 **148**	11 **110**	12 **115** **92**
18 **125**	17	16 **108**	15 **114** **110**	14 **103**	13 **96**
19 **105**	20 **125**	21	22	23	24
30	29	28	27 **112**	26	25 **117**
31	32	33	34	35 **118**	36

19 South 32 East

6	5	4	3	2	1
7	8 **365**	9	10	11	12
18	17	16	15	14	13
19 **102**	20 **345**	21	22	23	24
30	29	28	27	26	25
31	32	33	34 **250**	35	36

19 South 33 East

6	5	4	3	2	1
7	8	9	10	11	12
18 **340**	17 **116**	16	15	14	13
19	20	21	22	23	24
30	29 130' dry	28	27	26 **92** **85**	25
31	32 **185**	33	34	35	36

19 South 34 East

6 **244**	5	4	3	2 **100**	1
7	8	9 **29** **28.6**	10	11 **123**	12 **60**
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25 **28**
31 **65**	32	33	34	35	36

20 South 32 East

6	5	4	3	2	1 **21.8**
7	8	9	10	11	12
18 **89**	17	16	15	14	13
19	20	21	22	23	24
30 **9.9**	29	28	27 **12.3**	26	25
31	32	33	34	35	36 **46**

20 South 33 East

6	5 **278**	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 **+300**
30	29	28	27	26	25
31	32	33	34	35	36

20 South 34 East

6	5	4 **125**	3	2	1
7	8	9	10	11	12
18	17 **128** **140**	16	15	14 **150**	13
19	20	21	22	23	24 **270**
30	29	28	27	26	25
31	32	33	34 **82**	35	36

88 *New Mexico State Engineers Well Reports*

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed Temporay well to establish depth to groundwater

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: August 17, 2010

Work Order: 10080627

Project Location: Lea County, NM
Project Name: COG/Bates #3
Project Number: 114-6400561

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
240077	SB-7 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240078	SB-7 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240079	SB-7 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240080	SB-7 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240081	SB-7 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240082	SB-7 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240085	SB-8 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240086	SB-8 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240087	SB-8 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240088	SB-8 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240089	SB-8 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240090	SB-8 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240091	SB-8 20' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240092	SB-8 25' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240094	SB-9 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240095	SB-9 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240096	SB-9 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240097	SB-9 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240098	SB-9 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240099	SB-10 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240100	SB-10 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240101	SB-10 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240102	SB-10 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240103	SB-10 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240104	SB-10 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240105	SB-10 20' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240106	SB-10 25' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06

Sample - Field Code	BTEX Benzene (mg/Kg)	BTEX Toluene (mg/Kg)	BTEX Ethylbenzene (mg/Kg)	BTEX Xylene (mg/Kg)	TPH DRO - NEW DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
240077 - SB-7 1' (6 in. BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
240085 - SB-8 1' (6 in. BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
240094 - SB-9 1' (6 in. BEB)	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<2.00
240099 - SB-10 1' (6 in. BEB)					<50.0	<2.00

Sample: 240077 - SB-7 1' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**285**	mg/Kg	4.00

Sample: 240078 - SB-7 3' (6 in. BEB)

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

Sample: 240079 - SB-7 5' (6 in. BEB)

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

Sample: 240080 - SB-7 7' (6 in. BEB)

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

Sample: 240081 - SB-7 10' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**210**	mg/Kg	4.00

Sample: 240082 - SB-7 15' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**215**	mg/Kg	4.00

Sample: 240085 - SB-8 1' (6 in. BEB)

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

Sample: 240086 - SB-8 3' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**262**	mg/Kg	4.00

Sample: 240087 - SB-8 5' (6 in. BEB)

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

Sample: 240088 - SB-8 7' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**267**	mg/Kg	4.00

Sample: 240089 - SB-8 10' (6 in. BEB)

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

Sample: 240090 - SB-8 15' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**219**	mg/Kg	4.00

Sample: 240091 - SB-8 20' (6 in. BEB)

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

Sample: 240092 - SB-8 25' (6 in. BEB)

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

Sample: 240094 - SB-9 1' (6 in. BEB)

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

Sample: 240095 - SB-9 3' (6 in. BEB)

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

Sample: 240096 - SB-9 5' (6 in. BEB)

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

Sample: 240097 - SB-9 7' (6 in. BEB)

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

Sample: 240098 - SB-9 10' (6 in. BEB)

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

Sample: 240099 - SB-10 1' (6 in. BEB)

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

Sample: 240100 - SB-10 3' (6 in. BEB)

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

Sample: 240101 - SB-10 5' (6 in. BEB)

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

Sample: 240102 - SB-10 7' (6 in. BEB)

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

Sample: 240103 - SB-10 10' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**203**	mg/Kg	4.00

Sample: 240104 - SB-10 15' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**250**	mg/Kg	4.00

Sample: 240105 - SB-10 20' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**217**	mg/Kg	4.00

Sample: 240106 - SB-10 25' (6 in. BEB)

Param	Flag	Result	Units	RL
Chloride		**316**	mg/Kg	4.00

TRACEANALYSIS, INC.

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

Certifications

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

Report Date: August 17, 2010

Work Order: 10080627

Project Location: Lea County, NM
Project Name: COG/Bates #3
Project Number: 114-6400561

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
240077	SB-7 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240078	SB-7 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240079	SB-7 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240080	SB-7 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240081	SB-7 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240082	SB-7 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240085	SB-8 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240086	SB-8 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240087	SB-8 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240088	SB-8 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
240089	SB-8 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240090	SB-8 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240091	SB-8 20' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240092	SB-8 25' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240094	SB-9 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240095	SB-9 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240096	SB-9 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240097	SB-9 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240098	SB-9 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240099	SB-10 1' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240100	SB-10 3' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240101	SB-10 5' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240102	SB-10 7' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240103	SB-10 10' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240104	SB-10 15' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240105	SB-10 20' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06
240106	SB-10 25' (6 in. BEB)	soil	2010-08-04	00:00	2010-08-06

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

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

Standard Flags

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

Case Narrative

Samples for project COG/Bates #3 were received by TraceAnalysis, Inc. on 2010-08-06 and assigned to work order 10080627. Samples for work order 10080627 were received intact at a temperature of 2.1 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	62300	2010-08-12 at 08:30	72674	2010-08-12 at 09:58
Chloride (Titration)	SM 4500-Cl B	62100	2010-08-09 at 08:57	72481	2010-08-10 at 14:34
Chloride (Titration)	SM 4500-Cl B	62101	2010-08-09 at 08:57	72482	2010-08-10 at 14:35
Chloride (Titration)	SM 4500-Cl B	62102	2010-08-09 at 08:58	72483	2010-08-10 at 14:35
TPH DRO - NEW	S 8015 D	62266	2010-08-13 at 15:00	72633	2010-08-15 at 16:00
TPH GRO	S 8015 D	62300	2010-08-12 at 08:30	72675	2010-08-12 at 10:26

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 10080627 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Analytical Report

Sample: 240077 - SB-7 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72674	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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)		1.66	mg/Kg	1	2.00	83	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.59	mg/Kg	1	2.00	80	38.4 - 157

Sample: 240077 - SB-7 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240077 - SB-7 1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72633	Date Analyzed:	2010-08-15	Analyzed By:	AW
Prep Batch:	62266	Sample Preparation:	2010-08-13	Prepared By:	AW

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	55.5 - 151

Sample: 240077 - SB-7 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72675	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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)		1.82	mg/Kg	1	2.00	91	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.80	mg/Kg	1	2.00	90	42 - 159

Sample: 240078 - SB-7 3' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240079 - SB-7 5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240080 - SB-7 7' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240081 - SB-7 10' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**210**	mg/Kg	50	4.00

Sample: 240082 - SB-7 15' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**215**	mg/Kg	50	4.00

Sample: 240085 - SB-8 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72674	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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

continued ...

sample 240085 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
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)		1.42	mg/Kg	1	2.00	71	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.40	mg/Kg	1	2.00	70	38.4 - 157

Sample: 240085 - SB-8 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72481	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62100	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240085 - SB-8 1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72633	Date Analyzed:	2010-08-15	Analyzed By:	AW
Prep Batch:	62266	Sample Preparation:	2010-08-13	Prepared By:	AW

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		119	mg/Kg	1	100	119	55.5 - 151

Sample: 240085 - SB-8 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72675	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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)		1.55	mg/Kg	1	2.00	78	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.48	mg/Kg	1	2.00	74	42 - 159

Sample: 240086 - SB-8 3' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**262**	mg/Kg	50	4.00

Sample: 240087 - SB-8 5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240088 - SB-8 7' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**267**	mg/Kg	50	4.00

Sample: 240089 - SB-8 10' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240090 - SB-8 15' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**219**	mg/Kg	50	4.00

Sample: 240091 - SB-8 20' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240092 - SB-8 25' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240094 - SB-9 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	72674	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	Prepared By:	AG

Parameter	Flag	Result	RL	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)		1.57	mg/Kg	1	2.00	78	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.54	mg/Kg	1	2.00	77	38.4 - 157

Sample: 240094 - SB-9 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240094 - SB-9 1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72633	Date Analyzed:	2010-08-15	Analyzed By:	AW
Prep Batch:	62266	Sample Preparation:	2010-08-13	Prepared By:	AW

Parameter	Flag	Result	RL	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	55.5 - 151

Sample: 240094 - SB-9 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72675	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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)		1.73	mg/Kg	1	2.00	86	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.69	mg/Kg	1	2.00	84	42 - 159

Sample: 240095 - SB-9 3' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240096 - SB-9 5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72482	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62101	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240097 - SB-9 7' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240098 - SB-9 10' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240099 - SB-10 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240099 - SB-10 1' (6 in. BEB)

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	72633	Date Analyzed:	2010-08-15	Analyzed By:	AW
Prep Batch:	62266	Sample Preparation:	2010-08-13	Prepared By:	AW

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	55.5 - 151

Sample: 240099 - SB-10 1' (6 in. BEB)

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	72675	Date Analyzed:	2010-08-12	Analyzed By:	AG
Prep Batch:	62300	Sample Preparation:	2010-08-12	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)		1.45	mg/Kg	1	2.00	72	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.41	mg/Kg	1	2.00	70	42 - 159

Sample: 240100 - SB-10 3' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240101 - SB-10 5' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240102 - SB-10 7' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

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

Sample: 240103 - SB-10 10' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**203**	mg/Kg	50	4.00

Sample: 240104 - SB-10 15' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**250**	mg/Kg	50	4.00

Sample: 240105 - SB-10 20' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**217**	mg/Kg	50	4.00

Sample: 240106 - SB-10 25' (6 in. BEB)

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	72483	Date Analyzed:	2010-08-10	Analyzed By:	AR
Prep Batch:	62102	Sample Preparation:	2010-08-09	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**316**	mg/Kg	50	4.00

Method Blank (1) QC Batch: 72481

QC Batch: 72481 Date Analyzed: 2010-08-10 Analyzed By: AR
Prep Batch: 62100 QC Preparation: 2010-08-09 Prepared By: AR

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

Method Blank (1) QC Batch: 72482

QC Batch: 72482 Date Analyzed: 2010-08-10 Analyzed By: AR
Prep Batch: 62101 QC Preparation: 2010-08-09 Prepared By: AR

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

Method Blank (1) QC Batch: 72483

QC Batch: 72483 Date Analyzed: 2010-08-10 Analyzed By: AR
Prep Batch: 62102 QC Preparation: 2010-08-09 Prepared By: AR

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

Method Blank (1) QC Batch: 72633

QC Batch: 72633 Date Analyzed: 2010-08-15 Analyzed By: AW
Prep Batch: 62266 QC Preparation: 2010-08-13 Prepared By: AW

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method blank continued ...

Parameter	Flag	MDL Result	Units	RL

Parameter	Flag	MDL Result	Units	RL
DRO		7.90	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		122	mg/Kg	1	100	122	55.5 - 151

Method Blank (1) QC Batch: 72674

QC Batch: 72674 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.89	mg/Kg	1	2.00	94	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.29	mg/Kg	1	2.00	64	55.4 - 132

Method Blank (1) QC Batch: 72675

QC Batch: 72675 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

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

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.12	mg/Kg	1	2.00	106	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.36	mg/Kg	1	2.00	68	52.4 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 72481 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62100 | QC Preparation: 2010-08-09 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.4	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: 72482 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62101 | QC Preparation: 2010-08-09 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.3	mg/Kg	1	100	<2.18	97	85 - 115

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

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

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

Laboratory Control Spike (LCS-1)

QC Batch: 72483 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62102 | QC Preparation: 2010-08-09 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	94.3	mg/Kg	1	100	<2.18	94	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	10	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: 72633 | Date Analyzed: 2010-08-15 | Analyzed By: AW
Prep Batch: 62266 | QC Preparation: 2010-08-13 | Prepared By: AW

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	268	mg/Kg	1	250	7.9	104	76 - 157

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	263	mg/Kg	1	250	7.9	102	76 - 157	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	113	109	mg/Kg	1	100	113	109	55.5 - 151

Laboratory Control Spike (LCS-1)

QC Batch: 72674 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.06	mg/Kg	1	2.00	<0.0150	103	81.9 - 108
Toluene	2.04	mg/Kg	1	2.00	<0.00950	102	81.9 - 107
Ethylbenzene	1.97	mg/Kg	1	2.00	<0.0106	98	78.4 - 107
Xylene	5.93	mg/Kg	1	6.00	<0.00930	99	79.1 - 107

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	1.97	mg/Kg	1	2.00	<0.0150	98	81.9 - 108	4	20
Toluene	1.95	mg/Kg	1	2.00	<0.00950	98	81.9 - 107	4	20
Ethylbenzene	1.90	mg/Kg	1	2.00	<0.0106	95	78.4 - 107	4	20
Xylene	5.74	mg/Kg	1	6.00	<0.00930	96	79.1 - 107	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.70	1.78	mg/Kg	1	2.00	85	89	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.58	1.67	mg/Kg	1	2.00	79	84	69.8 - 121

Laboratory Control Spike (LCS-1)

QC Batch: 72675 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.8	mg/Kg	1	20.0	<1.65	74	69.9 - 95.4

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

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.0	mg/Kg	1	20.0	<1.65	75	69.9 - 95.4	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.82	2.03	mg/Kg	1	2.00	91	102	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.80	1.63	mg/Kg	1	2.00	90	82	68.2 - 132

Matrix Spike (MS-1) Spiked Sample: 240085

QC Batch: 72481 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62100 | QC Preparation: 2010-08-09 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	10100	mg/Kg	100	10000	<218	100	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10400	mg/Kg	100	10000	<218	102	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: 240096

QC Batch: 72482 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62101 | QC Preparation: 2010-08-09 | Prepared By: AR

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

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	10300	mg/Kg	100	10000	<218	103	85 - 115	3	20

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

Matrix Spike (MS-1) Spiked Sample: 240106

QC Batch: 72483 | Date Analyzed: 2010-08-10 | Analyzed By: AR
Prep Batch: 62102 | QC Preparation: 2010-08-09 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	9460	mg/Kg	100	10000	316	91	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	9710	mg/Kg	100	10000	316	94	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: 240907

QC Batch: 72633 | Date Analyzed: 2010-08-15 | Analyzed By: AW
Prep Batch: 62266 | QC Preparation: 2010-08-13 | Prepared By: AW

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	259	mg/Kg	1	250	<7.46	104	76 - 157

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	256	mg/Kg	1	250	<7.46	102	76 - 157	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	109	107	mg/Kg	1	100	109	107	55.1 - 151

Matrix Spike (MS-1) Spiked Sample: 240075

QC Batch: 72674 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		2.20	mg/Kg	1	2.00	<0.0150	110	80.5 - 112
Toluene		2.35	mg/Kg	1	2.00	0.1544	110	82.4 - 113
Ethylbenzene	[1]	2.60	mg/Kg	1	2.00	0.2893	116	83.9 - 114
Xylene	[2]	8.22	mg/Kg	1	6.00	1.0291	120	84 - 114

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

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		2.16	mg/Kg	1	2.00	<0.0150	108	80.5 - 112	2	20
Toluene		2.32	mg/Kg	1	2.00	0.1544	108	82.4 - 113	1	20
Ethylbenzene	[3]	2.67	mg/Kg	1	2.00	0.2893	119	83.9 - 114	3	20
Xylene	[4]	8.39	mg/Kg	1	6.00	1.0291	123	84 - 114	2	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)		1.31	2.12	mg/Kg	1	2	66	106	41.3 - 117
4-Bromofluorobenzene (4-BFB)	[5]	1.91	2.87	mg/Kg	1	2	96	144	35.5 - 129

Matrix Spike (MS-1) Spiked Sample: 240248

QC Batch: 72675 | Date Analyzed: 2010-08-12 | Analyzed By: AG
Prep Batch: 62300 | QC Preparation: 2010-08-12 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.5	mg/Kg	1	20.0	<1.65	72	61.8 - 114

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.3	mg/Kg	1	20.0	<1.65	76	61.8 - 114	5	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)	1.82	1.69	mg/Kg	1	2	91	84	50 - 162
4-Bromofluorobenzene (4-BFB)	1.81	1.70	mg/Kg	1	2	90	85	50 - 162

[1] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[2] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[3] MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.
[4] MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.
[5] High surrogate recovery due to peak interference.

Standard (ICV-1)

QC Batch: 72481 | Date Analyzed: 2010-08-10 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2010-08-10

Standard (CCV-1)

QC Batch: 72481 | Date Analyzed: 2010-08-10 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.5	98	85 - 115	2010-08-10

Standard (ICV-1)

QC Batch: 72482 | Date Analyzed: 2010-08-10 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.4	98	85 - 115	2010-08-10

Standard (CCV-1)

QC Batch: 72482 | Date Analyzed: 2010-08-10 | 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	2010-08-10

Standard (ICV-1)

QC Batch: 72483 | Date Analyzed: 2010-08-10 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	110	110	85 - 115	2010-08-10

Standard (CCV-1)

QC Batch: 72483 | Date Analyzed: 2010-08-10 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	90.3	90	85 - 115	2010-08-10

Standard (CCV-1)

QC Batch: 72633 | Date Analyzed: 2010-08-15 | Analyzed By: AW

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	267	107	80 - 120	2010-08-15

Standard (CCV-2)

QC Batch: 72633 | Date Analyzed: 2010-08-15 | Analyzed By: AW

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	260	104	80 - 120	2010-08-15

Standard (CCV-1)

QC Batch: 72674 | Date Analyzed: 2010-08-12 | 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	0.0944	94	80 - 120	2010-08-12
Toluene		mg/Kg	0.100	0.0921	92	80 - 120	2010-08-12
Ethylbenzene		mg/Kg	0.100	0.0861	86	80 - 120	2010-08-12
Xylene		mg/Kg	0.300	0.260	87	80 - 120	2010-08-12

Standard (CCV-2)

QC Batch: 72674 | Date Analyzed: 2010-08-12 | 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	0.0968	97	80 - 120	2010-08-12
Toluene		mg/Kg	0.100	0.0944	94	80 - 120	2010-08-12
Ethylbenzene		mg/Kg	0.100	0.0881	88	80 - 120	2010-08-12
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-08-12

Standard (CCV-1)

QC Batch: 72675 Date Analyzed: 2010-08-12 Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.835	84	80 - 120	2010-08-12

Standard (CCV-2)

QC Batch: 72675 Date Analyzed: 2010-08-12 Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.828	83	80 - 120	2010-08-12