TETRA TECH

2RP-251

RECEIVED
MAR 15 2010
NMOCD ARTESIA

nSEB0828956299

February 01, 2009

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

Re: Work Plan for the St. Mary Land & Exploration Co., Tuesday Federal #1, Flowline Leak, Unit M, Section 34, Township 19 South, Range 29 East, Eddy County, New Mexico. (2RP- #251)

Mr. Bratcher:

Tetra Tech Inc. (Tetra Tech) was contacted by St. Mary Land & Exploration Co. (St. Mary) to assess a flowline spill at the Tuesday Federal #1 located in Unit M, Section 34, Township 19 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.61543°, W 104.06412°. 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 September 17, 2008. Approximately 3 barrels of oil and 80 barrels of produced water were released from a 3-inch poly line. No free fluids were recovered. The 3-inch poly line was repaired with new connections. The initial C-141 is enclosed in Appendix A.

Hydrology

The New Mexico State Engineers Well Report listed one well in Section 34 with an average depth of 60' and wells in Sections 35 and 36, with reported depths of 110' and 115' , respectively. The Geology and Groundwater Resources of Eddy County New Mexico (Report 3) showed one well Section 3 of Township 20 South and Range 29 East, with a reported depth to water of 91' bgs. The well reports are shown in Appendix B.

According to the Geology and Groundwater Resources of Eddy County, New Mexico (Report 3), the Rustler and Castile formations (Ochoa Series) are present west and east of the Pecos River. The Rustler and Castile formations consist of anhydrite, gypsum, interbedded sandy clay and beds of dolomite. Groundwater from the Castile and Rustler formations west of the Pecos River is historically high in chloride and sulfate

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

concentrations which increase towards the river. The site is located on the east edge of the Rustler formation.

On March 11, 2009, Tetra Tech personnel supervised the installation of a temporary well (TMW-1) to establish groundwater quality and depth at the Site. The well construction log is shown in Appendix C. During the installation, the well drilled dry. The well was drilled through gray limestone and gypsum layers to a total depth of 72', to the top of a dense, gray and red clay formation. The well was measured two days later and showed a depth of 62' below surface. During the development of the well, the well purged dry and showed a slow recovery rate. On March 16, 2009, the well was purged dry and allowed to recover, prior to sampling. The groundwater quality showed a chloride of 280 mg/L and sulfate of 1,800 mg/L.

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 1,000 mg/kg.

Soil Assessment and Results

On October 30, 2008, Tetra Tech personnel supervised the installation of boreholes to assess the spill area. The main spill area measured approximately 20' x 150' south of the release, then migrated down a two track road (6" to 1.0' wide) to a plugged and abandoned well location, which measured approximately 30' x 140'. A total of five (5) boreholes were installed in the spill area to a total depth of 40' to 50' below surface. One borehole was installed for background soil concentrations. The borehole locations are shown on Figure 3. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0.

Referring to Table 1, all of the samples analyzed were below the RRAL for both BTEX and TPH, except for the samples at AH-4 and AH-5. These samples exceeded the TPH at 0-1' and declined below the RRAL at 2-3' below surface. Analytical results indicate the maximum extent of chloride impact greater than 1,000 mg/kg extending to 10' (BH-4), 20' (BH-3 and BH-5) and 30' (BH-1). Borehole (BH-2) showed a chloride of 1,250 mg/kg at 50-51' bgs. All samples had chloride concentrations that decreased with depth. Borehole logs are shown in Appendix C. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix D. The results of the sampling are summarized in Table 1. The borehole locations are shown on Figure 3.

TETRA TECH

Work Plan

On July 27, 2009, Tetra Tech personnel met with the NMOCD in Artesia to discuss the corrective action for the site. As discussed, the proposed excavation depths are shown in Table 1. The areas of BH-1 and BH-2 are proposed to be excavated to a depth of approximately 20' below surface. This area will be backfilled with clean soil to a depth of 4.0' below surface, where the 40 mil liner will be placed. A pipeline (DCP) is located immediately west of the spill area, which may hinder the excavation on the west side of the spill area. The remaining areas of BH-3, BH-4 and BH-5 are proposed to be excavated down to approximately 10' bgs. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil.

Once the remedial activities are performed a closure report will be submitted for the soils at the site. If you require any additional information or have any questions or comments concerning this work plan, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

Ike Tavarez, P.G.
Senior Project Manager

cc: Don Riggs – St. Mary Land & Exploration Co.
Mark Bondy – St. Mary Land & Exploration Co.
BLM – Jim Amos

FIGURES

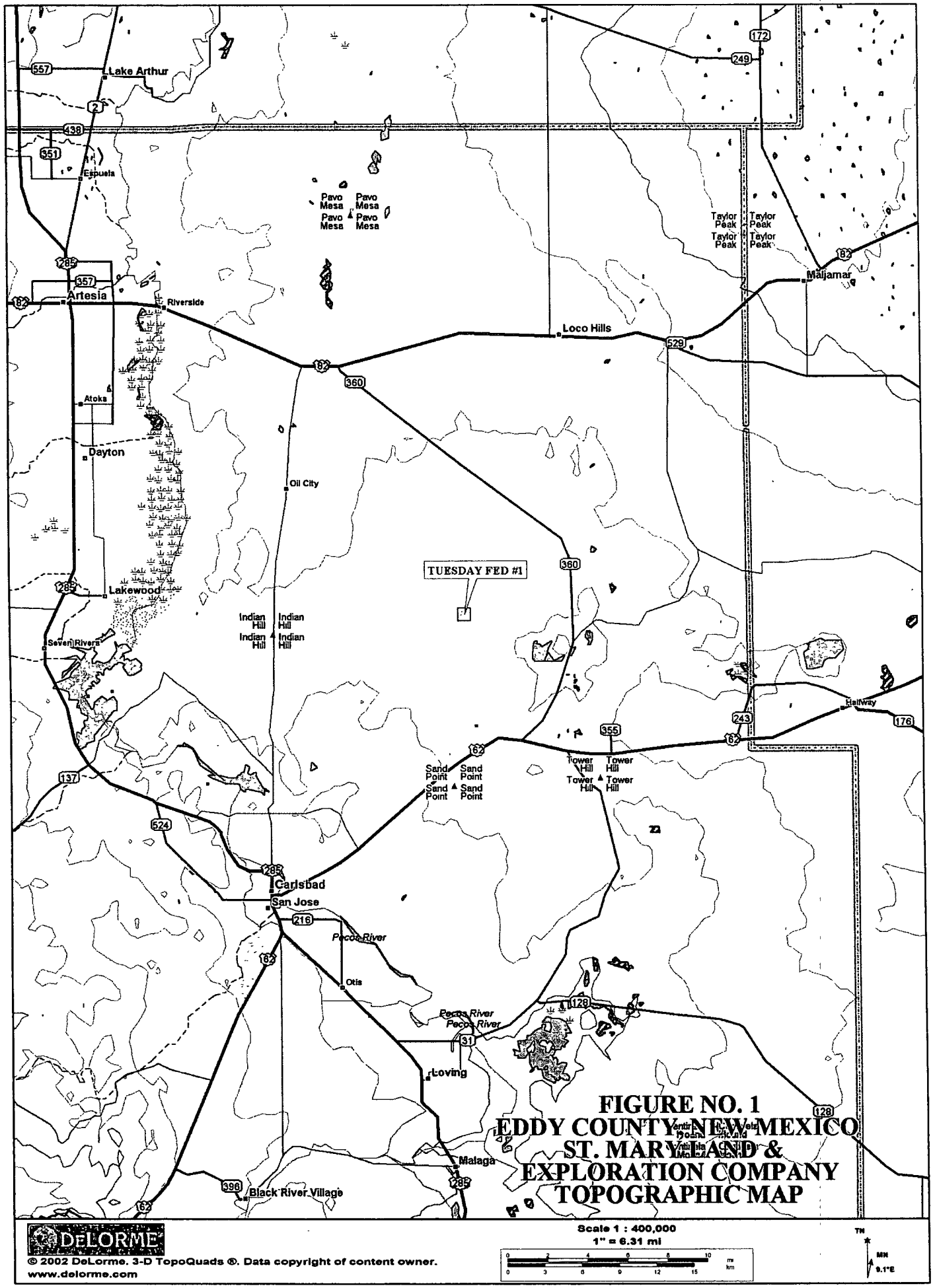


FIGURE NO. 1
EDDY COUNTY, NEW MEXICO
ST. MARY LAND & EXPLORATION COMPANY
TOPOGRAPHIC MAP

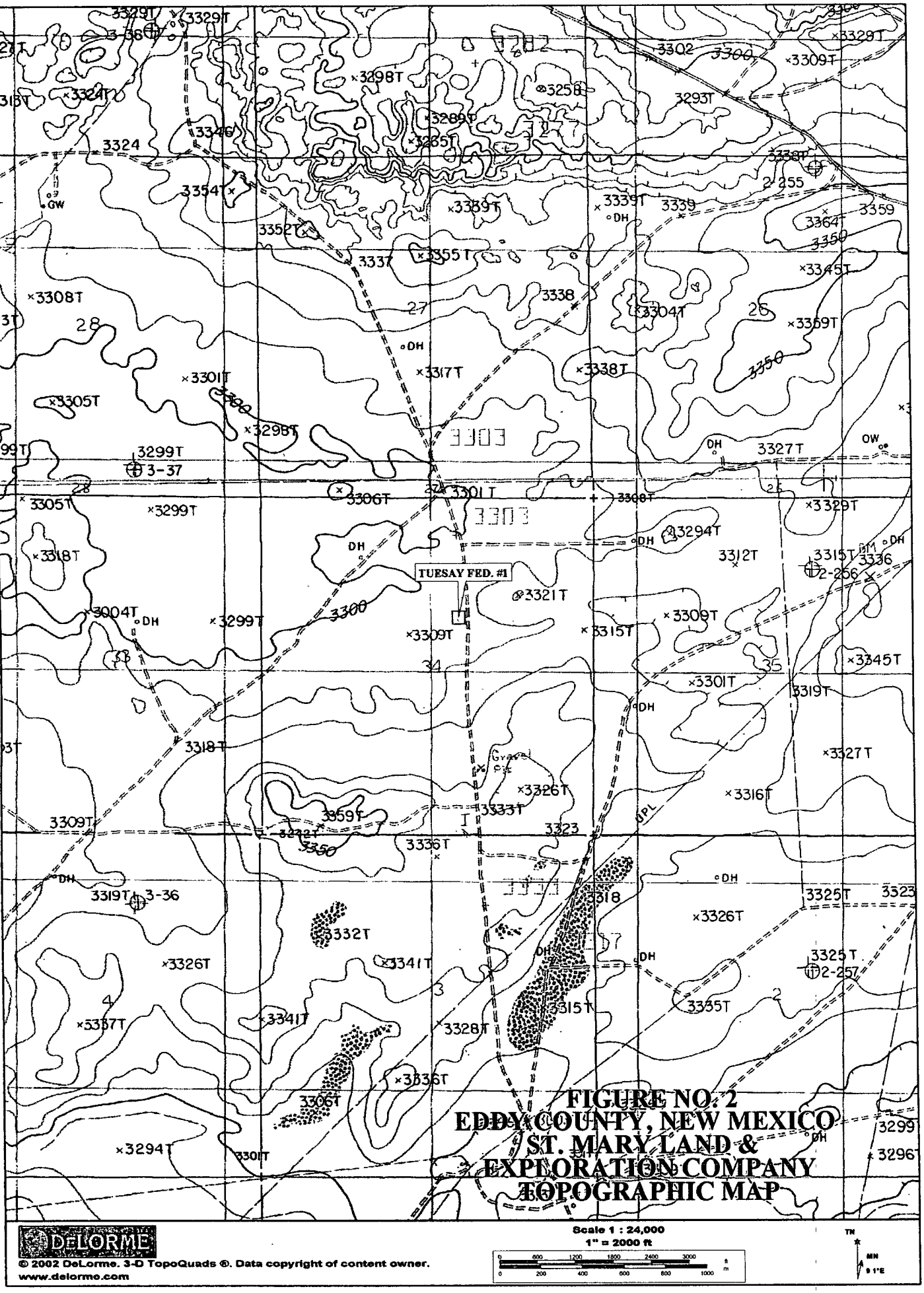
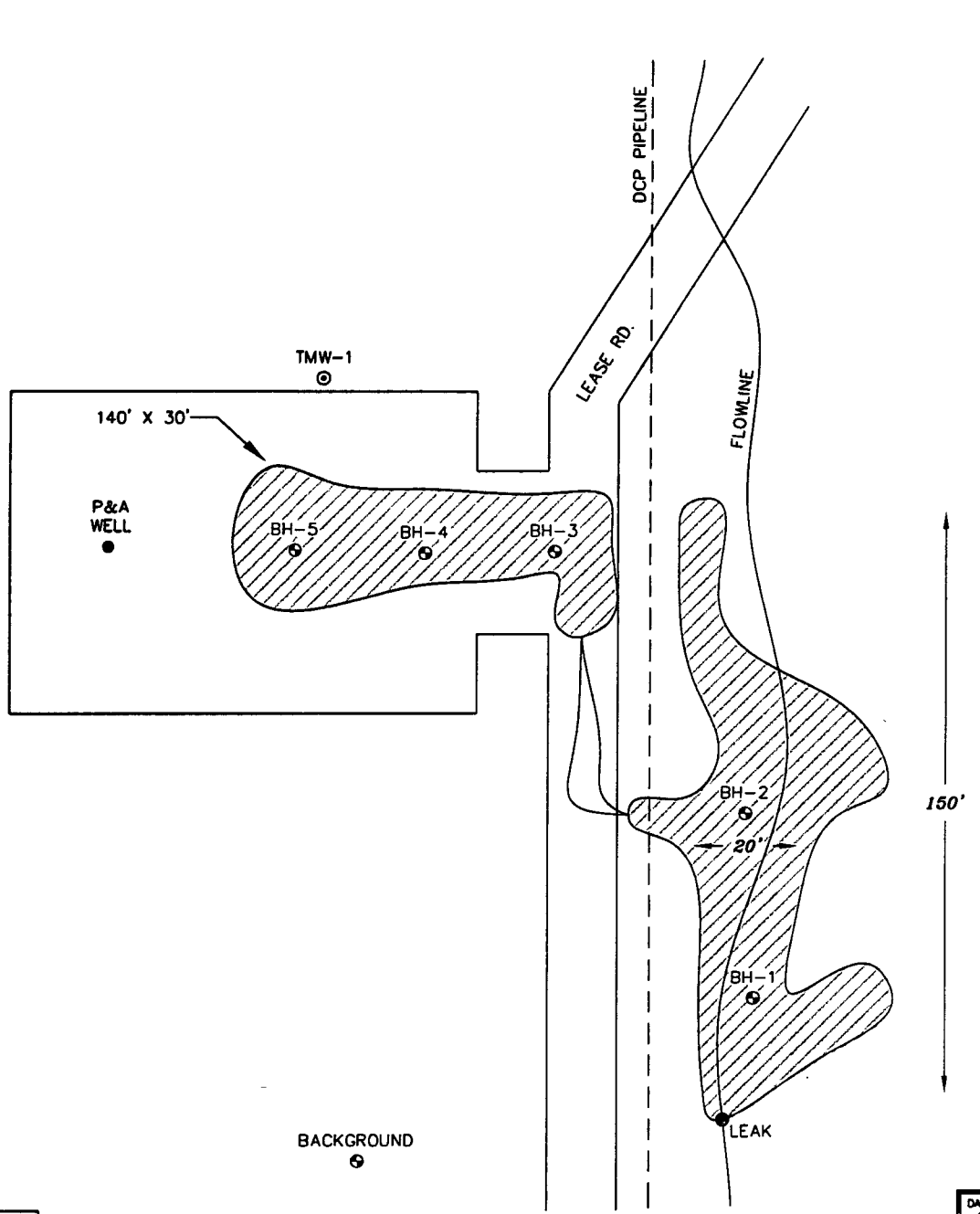


FIGURE NO. 2
EDDY COUNTY, NEW MEXICO
ST. MARY LAND & EXPLORATION COMPANY
TOPOGRAPHIC MAP



SPILL AREA
BORE HOLE LOCATIONS
TEMPORARY MONITOR WELL

NOT TO SCALE

FIGURE NO. 3

EDDY COUNTY, NEW MEXICO

ST. MARY LAND & EXPLORATION COMPANY

TUESDAY FED. #1

DATE: 12/18/08
DWN. BY JJ
FILE: H:\ST. MARY\3813 TUESDAY FED. #1

TETRA TECH, INC.
MIDLAND, TEXAS

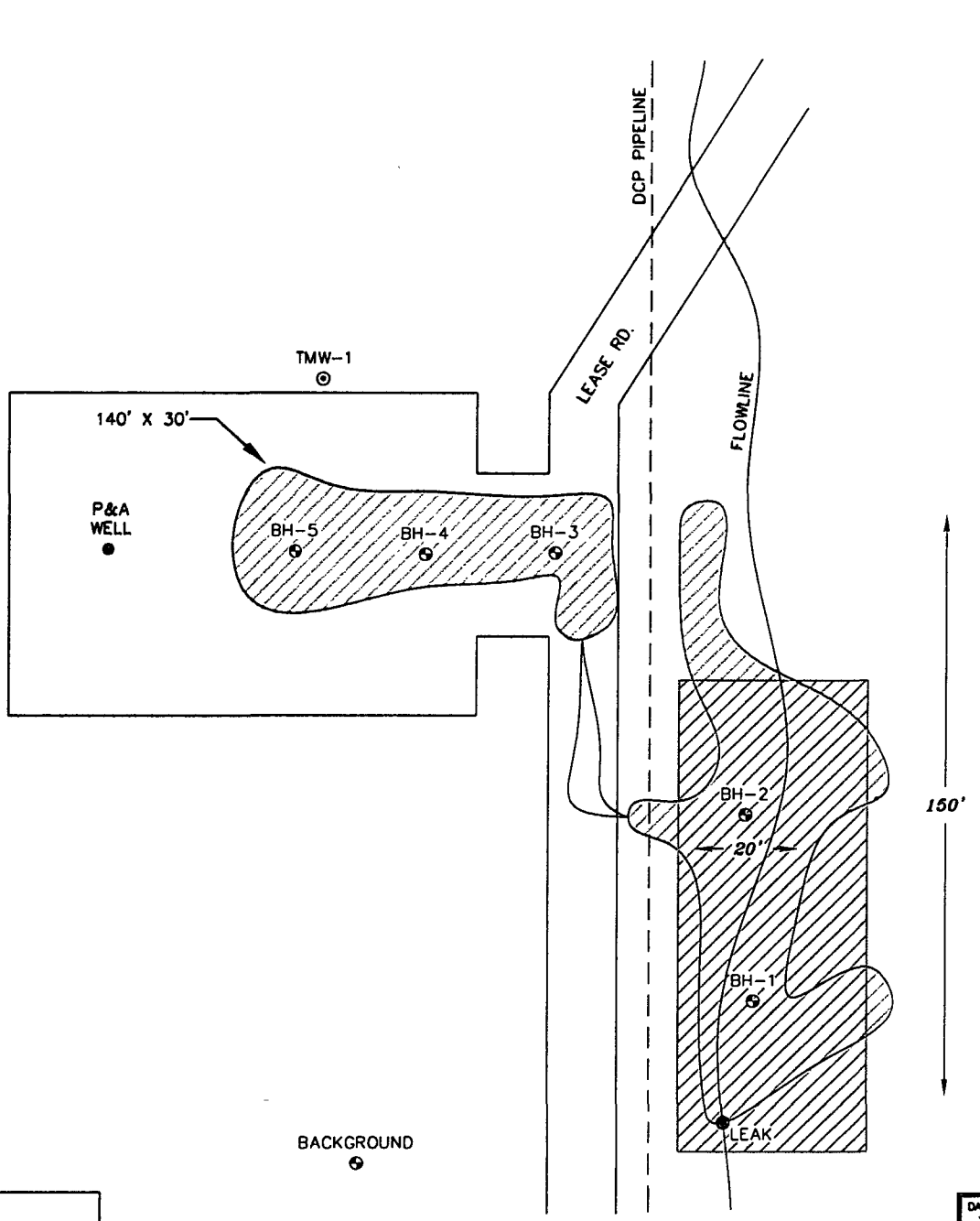


FIGURE NO. 4

EDDY COUNTY, NEW MEXICO

ST. MARY LAND & EXPLORATION COMPANY

TUESDAY FED. #1

DATE: 12/18/08
DWN. BY. JJ
FILE: H:\ST. MARY\3613 TUESDAY FED. #1

TETRA TECH, INC.
MIDLAND, TEXAS

TABLES

Table 1
St. Mary Land & Exploration
Tuesday Federal #1 Flowline
Eddy County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	DRO	GRO	Total					
BH-1	10/30/08	0-1	X		<50.0	8.41	8.41	-	-	-	-	19,500
	10/30/08	2-3	X		-	-	-	-	-	-	-	13,000
	10/30/08	4-5	X		-	-	-	-	-	-	-	10,100
	10/30/08	6-7	X		-	-	-	-	-	-	-	11,600
	10/30/08	8-9	X		-	-	-	-	-	-	-	11,100
	10/30/08	10-11	X		-	-	-	-	-	-	-	7,590
	10/30/08	20-21	X		-	-	-	-	-	-	-	13,300
	10/30/08	30-31	X		-	-	-	-	-	-	-	2,580
	10/30/08	40-41	X		-	-	-	-	-	-	-	903
	10/30/08	50-51	X		-	-	-	-	-	-	-	806
BH-2	10/30/08	0-1	X		51.2	4.49	55.69	<0.0100	<0.0100	<0.0100	0.0302	10,500
	10/30/08	2-3	X		-	-	-	-	-	-	-	8,420
	10/30/08	4-5	X		-	-	-	-	-	-	-	6,130
	10/30/08	6-7	X		-	-	-	-	-	-	-	8,200
	10/30/08	8-9	X		-	-	-	-	-	-	-	8,120
	10/30/08	10-11	X		-	-	-	-	-	-	-	12,800
	10/30/08	20-21	X		-	-	-	-	-	-	-	9,390
	10/30/08	30-31	X		-	-	-	-	-	-	-	3,230
	10/30/08	40-41	X		-	-	-	-	-	-	-	2,040
	10/30/08	50-51	X		-	-	-	-	-	-	-	1,250
BH-3	11/3/08	0-1	X		<50.0	2.04	2.04	-	-	-	-	2,470
	11/3/08	2-3	X		-	-	-	-	-	-	-	8,410
	11/3/08	4-5	X		-	-	-	-	-	-	-	8,320
	11/3/08	6-7	X		-	-	-	-	-	-	-	12,100
	11/3/08	8-9	X		-	-	-	-	-	-	-	8,660
	11/3/08	10-11	X		-	-	-	-	-	-	-	6,780
	11/3/08	20-21	X		-	-	-	-	-	-	-	6,170
	11/3/08	30-31	X		-	-	-	-	-	-	-	974
	11/3/08	40-41	X		-	-	-	-	-	-	-	545

(-) Not Analyzed

Liner Installation (4.0' below surface)

Proposed Excavation Depths

Table 1
St. Mary Land & Exploration
Tuesday Federal #1 Flowline
Eddy County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	DRO	GRO	Total					
BH-4	11/3/08	0-1	X		1,340	73.5	1,413.5	<0.0500	<0.0500	<0.0500	<0.0500	9,300
	11/3/08	2-3	X		168	13.2	181.2	-	-	-	-	9,820
	11/3/08	4-5	X		-	-	-	-	-	-	-	6,550
	11/3/08	6-7	X		-	-	-	-	-	-	-	8,980
	11/3/08	10-11	X		-	-	-	-	-	-	-	7,380
	11/3/08	20-21	X		-	-	-	-	-	-	-	156
	11/3/08	30-31	X		-	-	-	-	-	-	-	914
	11/3/08	40-41	X		-	-	-	-	-	-	-	326
BH-5	11/4/08	0-1	X		2,400	69.4	2,469.4	<0.0200	<0.0200	<0.0200	<0.0200	9,360
	11/4/08	2-3	X		<50.0	6.98	6.98	-	-	-	-	12,100
	11/4/08	4-5	X		<50.0	4.97	4.97	-	-	-	-	12,700
	11/4/08	6-7	X		-	-	-	-	-	-	-	12,400
	11/4/08	8-9	X		-	-	-	-	-	-	-	16,200
	11/4/08	10-11	X		-	-	-	-	-	-	-	9,680
	11/4/08	20-21	X		-	-	-	-	-	-	-	1,100
	11/4/08	30-31	X		-	-	-	-	-	-	-	176
Background	11/4/08	0-1	X		-	-	-	-	-	-	-	<100
	11/4/08	5-6	X		-	-	-	-	-	-	-	<100
	11/4/08	10-11	X		-	-	-	-	-	-	-	<100
	11/4/08	15-16	X		-	-	-	-	-	-	-	<100
	11/4/08	20-21	X		-	-	-	-	-	-	-	<100
	11/4/08	30-31	X		-	-	-	-	-	-	-	<100
	11/4/08	40-41	X		-	-	-	-	-	-	-	<100

(-) Not Analyzed

Liner Installation (4.0' below surface)

Proposed Excavation Depths

APPENDIX A

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

X Initial Report ☐ Final Report

Name of Company ST. Mary Land & Exploration Company	Contact Tom Morrow
Address 3300 N A Street Bldg 7, Ste 200, Midland,TX 79705	Telephone No. (432) 688-1773
Facility Name Tuesday Federal #1	Facility Type

Surface Owner BLM	Mineral Owner BLM	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	34	19S	29E					Eddy

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release Oil/Produced Wtr	Volume of Release 3BO/80BW	Volume Recovered -0-
Source of Release 3" Poly Transition	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 7:00 PM 9/16/08
Was Immediate Notice Given? X Yes ☐ No ☐ Not Required	If YES, To Whom? Jim Amos w/ BLM & Mike Bratcher w/ OCD	
By Whom? Bill Hearne	Date and Hour 9/17/08 9:58 AM	
Was a Watercourse Reached? ☐ Yes X No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Cause: 3" poly transition line was old and found to be split causing leaking of fluids.
Action Taken: This line is used to transport water from wells operated by Westall to St. Mary's Parkway Delaware Unit Injection station. Immediate action was taken by putting a clamp on the transition and contacting Westall to inform them that the line would be out of service pending repairs.

Describe Area Affected and Cleanup Action Taken.*
Affected Area: Pasture land on DCP Pipeline right of way. Spill area is 20' wide X 400' Long.
Cleanup Action: Contacted Tetra Tech Environmental Services for evaluation and recommendation for cleanup of affected area.

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: Donna Huddleston	OIL CONSERVATION DIVISION	
Printed Name: Donna Huddleston	Approved by District Supervisor:	
Title: Production Tech	Approval Date:	Expiration Date:
E-mail Address: dhuddleston@stmaryland.com	Conditions of Approval:	Attached ☐
Date: 09/17/08 Phone: (432) 688-1789		

* Attach Additional Sheets If Necessary

APPENDIX B

Water Well Data
Average Depth to Groundwater (ft)
St. Mary Land & Exploration Co. - Tueday Federal #1

16 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **61**	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 **110**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 30 East

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

17 South 28 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **79**	23	24
30	29	28	27	26	25
31	32	33	34 **53**	35	36

17 South 29 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 **80**	23	24
30	29 **210** **208'**	28	27	26	25
31	32	33	34 **62'**	35 **122'**	36

17 South 30 East

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

18 South 28 East

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

18 South 29 East

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

18 South 30 East

6	5	4	3	2	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

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 Field water level - Temporary Wells installed to establish depth to wat

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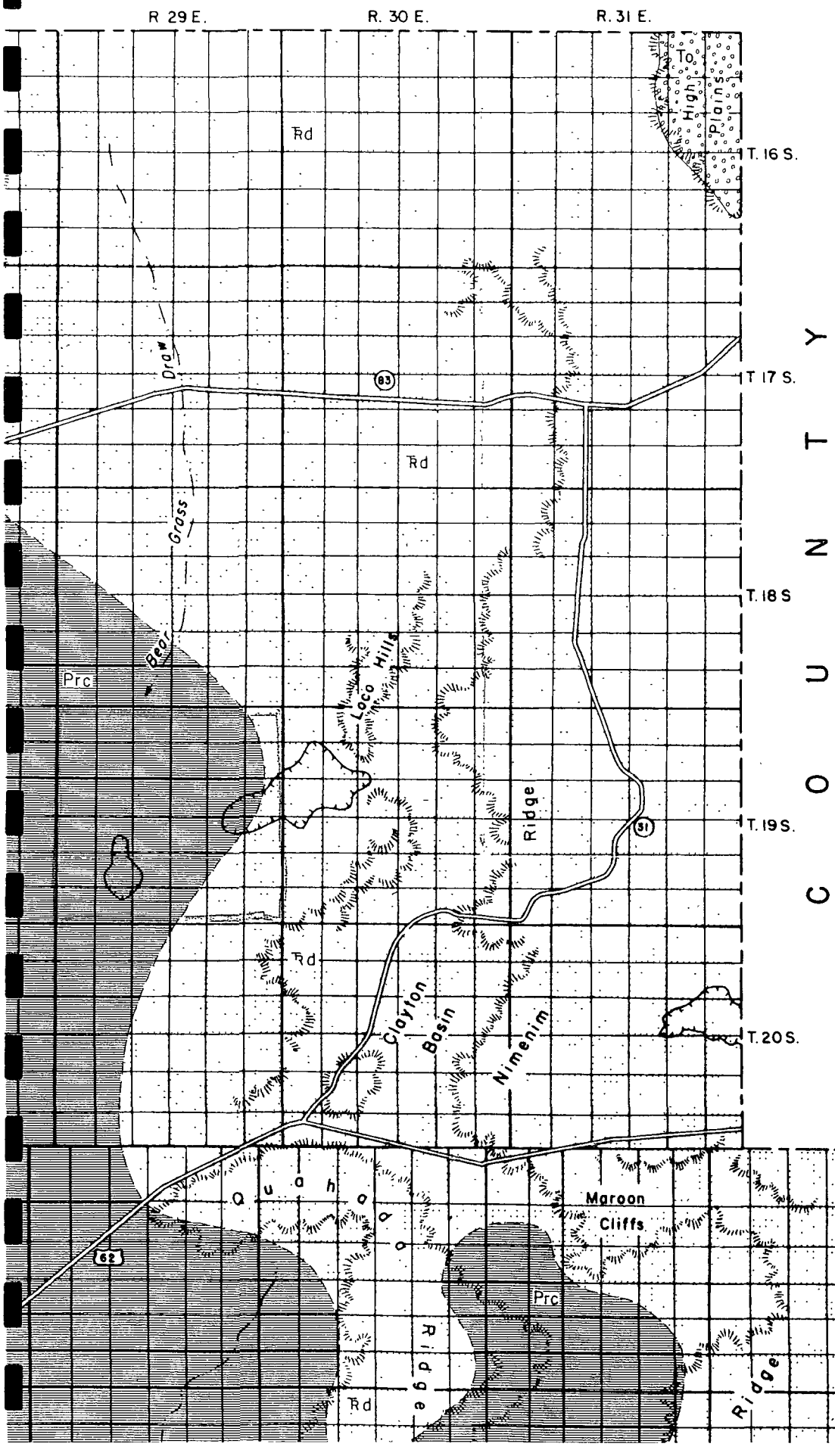


C O U N T Y

EXPLANATION

TRIASSIC TERTIARY QUAT.

- Qal — Alluvium
- To — Ogallala formation
- Rd — Dockum group

PERMIAN

Ochoa series

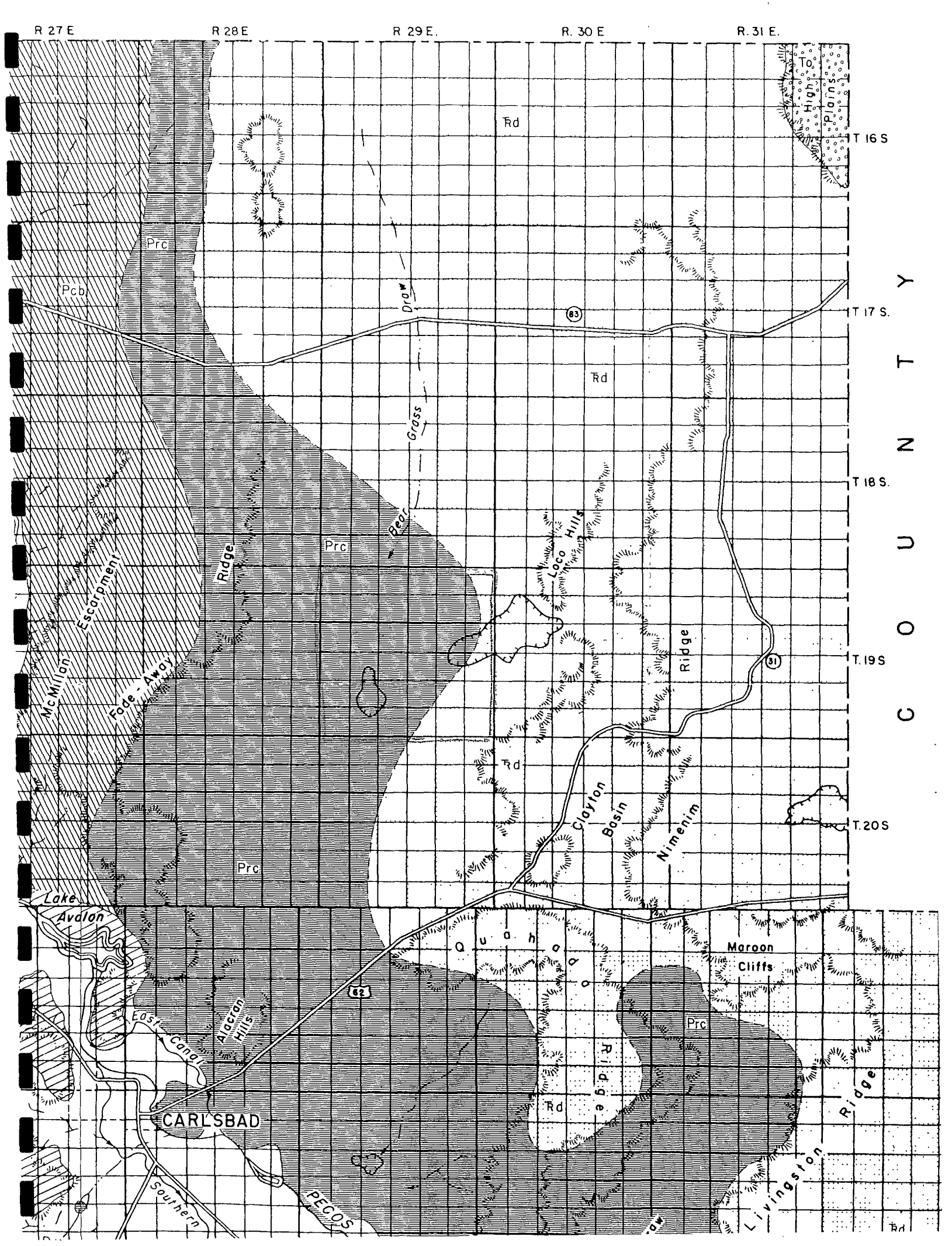
- Prc — Rustler formation east of the Pecos River Castile and Rustler formations west of the Pecos River.

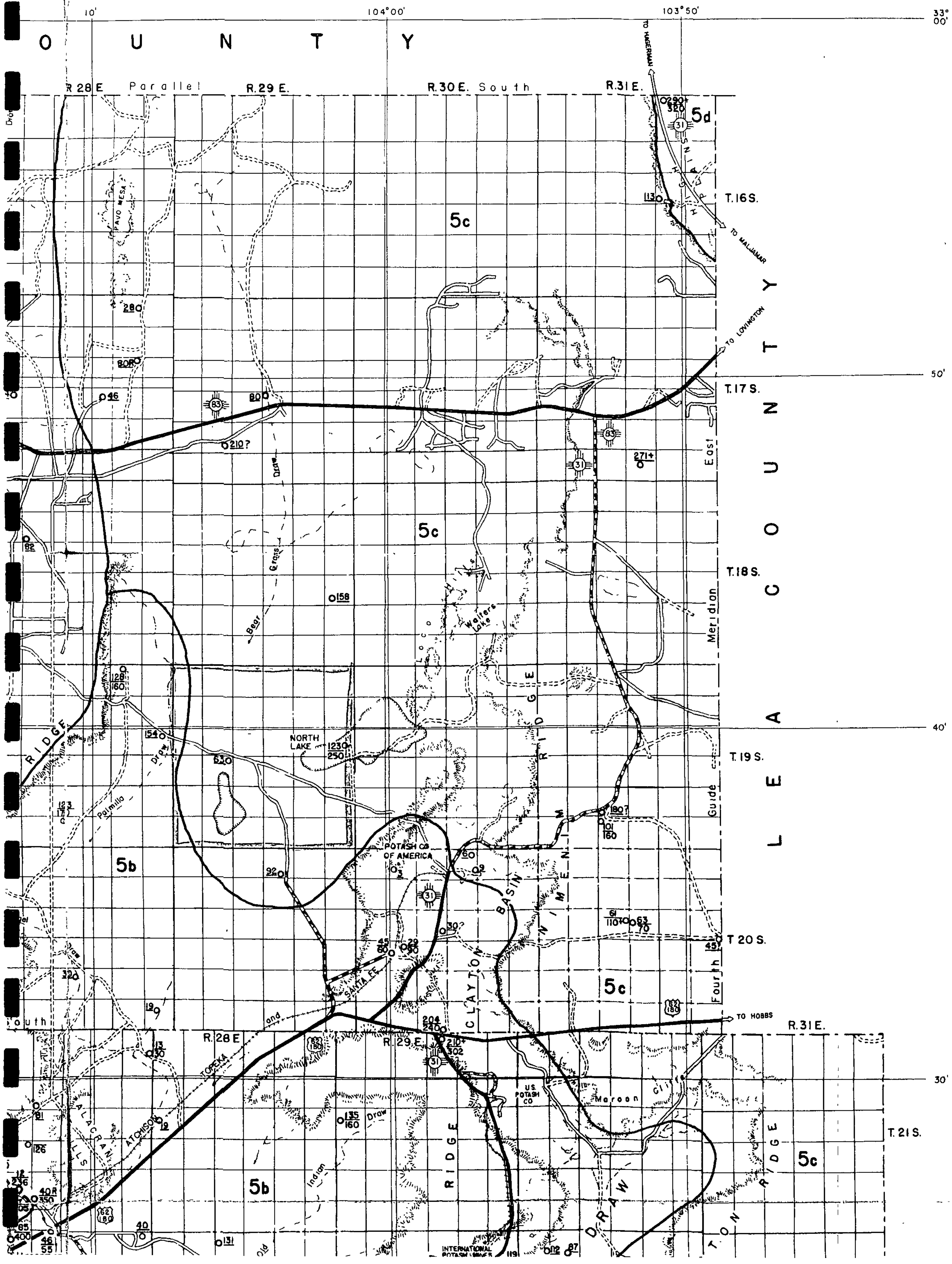
Guadalupe series

- Pcl — Carlsbad limestone (Capitan limestone and Bell Canyon formation along reef escarpment Goat Seep limestone along west escarpment of Guadalupe Mountains.)
- Pcb — Chalk Bluff formation (including upper part of Goat Seep formation in southwest part.)

Leonard series

- Ps — San Andres formation


R 27 E
R 28 E
R 29 E.
R. 30 E
R. 31 E.
T 16 S
T 17 S.
T 18 S.
T. 19 S
T. 20 S
EDDY COUNTY
To High Plains
Rd
Prc
Pcb
Draw
Grass
Bear
Ridge
Loco Hills
Ridge
McMillon Escarpment
Fade-Away
Clayton Basin
Nimenim
Lake Avalon
Quahada Ridge
Maroon Cliffs
East Canal
Algerian Hills
CARLSBAD
Southern
PECOS
Livingston Ridge
83
62
31


10'
104°00'
103°50'
33° 00'
50'
40'
30'
O U N T Y
LEA COUNTY
R.28 E.
R.29 E.
R.30 E.
R.31 E.
Parallel
South
T.16 S.
T.17 S.
T.18 S.
T.19 S.
T 20 S.
T. 21 S.
East
Meridian
Guide
Fourth
TO HAGERMAN
TO MALJAMAR
TO LOVINGTON
TO HOBBS
PAVO MESA
HIGH PLAINS
5c
5d
5b
Bear Grass Draw
Loco Hills
Walters Lake
NORTH LAKE
POTASH CO OF AMERICA
U.S. POTASH CO
INTERNATIONAL POTASH MINES
CLAYTON BASIN
NIMENIM RIDGE
RIDGE
Palmilla Draw
ALACRAN HILLS
ATCHISON
TOPEKA
and
SANTA FE
Indian Draw
Maroon Cliffs
DRAW
Old
Draw
South

AVAILABILITY OF GROUND WATER BY AREAS

AREA 1. GUADALUPE MOUNTAINS:

a. Azotea Mesa: Stock and domestic supplies generally available at depths of less than 300 feet in Carlsbad limestone; perched water available locally in arroyo gravels. Irrigation supplies obtainable from Carlsbad limestone and overlying alluvium in La Huerta and Happy Valley, but shallow water in these areas is generally impotable.

b. Guadalupe Ridge and Mountains proper: Potable but generally hard water in small quantities available at depths of several hundred feet in uplands; shallow water available locally in arroyo gravels. Small springs from perched water southeast of White City on Guadalupe Ridge.

c. Seven Rivers embayment: Depths to water cannot be predicted accurately. Shallow wells can be obtained locally along arroyos, but most produce from Queen Sandstone member of Goat Seep limestone at depths as great as 900 feet. Water generally potable. Quantity generally sufficient for stock and domestic supplies.

AREA 2. ALLUVIUM SOUTH OF CARLSBAD:

a. Irrigation supplies generally obtainable. Generally impotable.

b. Stock and domestic supplies generally available at depths ranging from 100 to 225 feet.

AREA 3. BETWEEN GUADALUPE MOUNTAINS AND PECOS RIVER AND SOUTH OF LATITUDE 32°15′:

a. Stock and domestic supplies and, locally, irrigation supplies, obtainable from alluvium at depths generally less than 200 feet.

b. Stock and domestic supplies generally available in gypsum of Castile formation. Impotable over most of eastern part of area but usable for stock.

AREA 4. ROSWELL BASIN:

a. Stock and domestic water available from alluvium or limestones of Chalk Bluff and San Andres formation at depths less than 50 feet on the east to 400 feet in west. Irrigation water available in eastern part.

b. Stock and domestic water available from limestone of San Andres formation at depths from 400 feet on the east to more than 800 feet on the west.

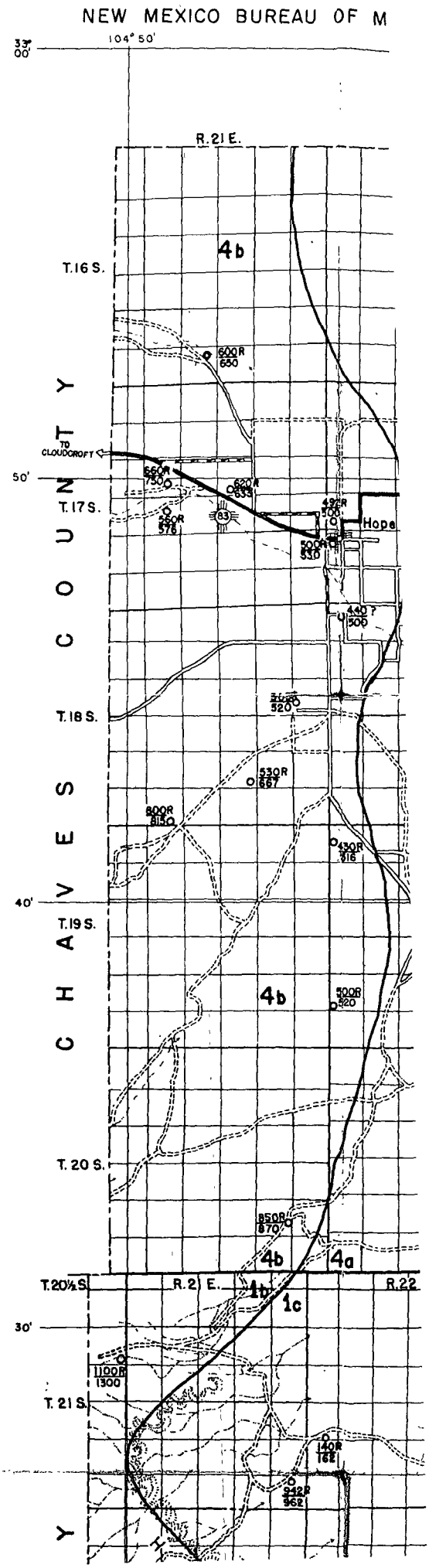
AREA 5. EAST OF PECOS RIVER:

a. Stock and domestic supplies available at depths less than 200 feet in Chalk Bluff formation or Whitehorse group; locally impotable.

b. Stock water generally obtainable at depths less than 250 feet in Rustler formation; generally impotable and locally unfit for livestock.

c. Stock and domestic supplies available at depths less than 300 feet in Triassic redbeds; quality generally fair but locally impotable.

d. Potable water obtainable from sand and gravel or from underlying redbeds at a depth of about 300 feet.



News: Recent changes

Ground-water levels for New Mexico

Search Results -- 1 sites found

Search Criteria

site_no list = • 323936104012601
Minimum number of levels = 1

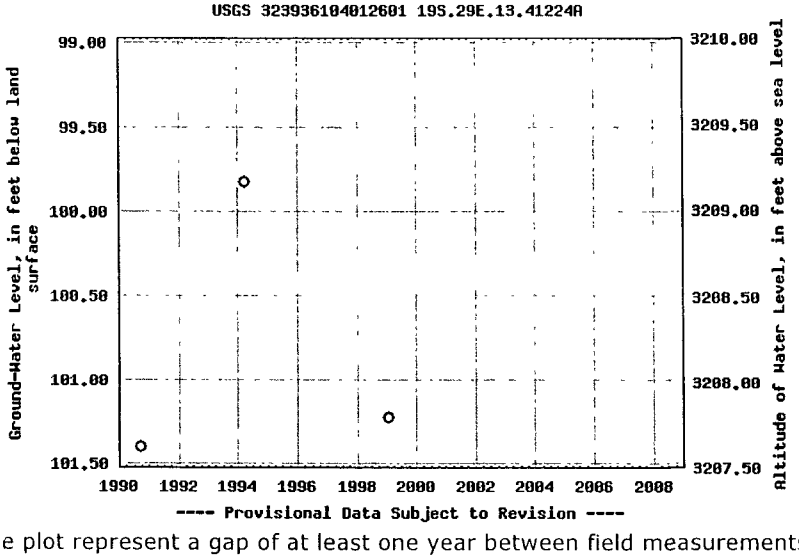
Save file of selected sites to local disk for future upload

USGS 323936104012601 19S.29E.13.41224A

Available data for this site: Ground-water | Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°39'36", Longitude 104°01'26" NAD27
Land-surface elevation 3,309 feet above sea level NGVD29
The depth of the well is 120.00 feet below land surface.
This well is completed in the RUSTLER FORMATION (312RSLR) local aquifer.

Output formats
- Table of data
- Tab-separated data
- Graph of data
- Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site

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U.S. Department of the Interior | U.S. Geological Survey
Title: Ground water for New Mexico: Water Levels
URL: http://waterdata.usgs.gov/nm/nwis/gwlevels?

Page Contact Information: New Mexico NWISWeb Maintainer
Page Last Modified: 2008-12-16 10:03:49 EST

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: Range: Sections:

NAD27 X: Y: Zone: Search Radius:

County: Basin: CP(Capitan) Number: 00741 Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 12/10/2008

* WW

(acre ft per annum) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest

DB File Nbr	Use	Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q	Zc
CP 00741	PRO	0	SIETE OIL & GAS	CP 00741	Shallow	19S	29E	34	2	3	1	

Record Count: 1

New Mexico Office of the State Engineer
Point of Diversion Summary

Back

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

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y
CP 00741	19S	29E	34	2	3	1			

Driller Licence: 1107 DUBOSE DRILLING, INC.
Driller Name:
Source: Shallow
Drill Start Date: 04/17/1989
Drill Finish Date: 04/20/1989
Log File Date: 04/24/1989
PCW Received Date:
Pump Type:
Pipe Discharge Size:
Casing Size:
Estimated Yield:
Depth Well: 230
Depth Water: 60

New Mexico Office of the State Engineer

Water Right Summary

Back

DB File Nbr: CP 00827
Primary Purpose: STK 72-12-1 LIVESTOCK WATERING
Primary Status: DCL Declaration
Total Acres: 0
Total Diversion: 0
Owner: SNYDER RANCHES
Contact: LARRY C SQUIRES

Documents on File

Doc	File/Act	Status 1 2 3	Trans_Desc		From/To		Acres	Diversion	Consumptive
72121	11/17/1993	DCL PRC CNV	CONVERSION	CP	008	T	0	0	

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

Point of Diversion (qtr are biggest to smallest) X Y are in Feet UTM are in Meters)

POD Number	Source	Tws	Rng	Sec	q	q	q	Zone	X	Y	UTM_Zone	Easting	Northing	Latit
CP 00827		19S	30E	35	3	3					13	598596	3608694	0

New Mexico Office of the State Engineer
Point of Diversion Summary

Back

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

POD Number	Tws	Rng	Sec	q q q	Zone	X	Y
CP 00827	19S	30E	35	3 3			

Driller Licence:
Driller Name:
Drill Start Date:
Log File Date:
Pump Type:
Casing Size:
Depth Well: 100

Source:
Drill Finish Date:
PCW Received Date:
Pipe Discharge Size:
Estimated Yield:
Depth Water:

New Mexico Office of the State Engineer

Water Right Summary

Back

DB File Nbr: CP 00828
Primary Purpose: STK 72-12-1 LIVESTOCK WATERING
Primary Status: DCL Declaration
Total Acres: 0
Total Diversion: 0
Owner: SNYDER RANCHES
Contact: LARRY C SQUIRES

Documents on File

Doc	File/Act	Status 1 2 3	Trans_Desc	From/To	Acres	Diversion	Consumptive
72121	11/17/1993	DCL PRC CNV	CONVERSION CP	008 T	0	0	

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

Point of Diversion	(qtr are biggest to smallest						X Y are in Feet			UTM are in Meters)			
POD Number	Source	Tws	Rng	Sec	q	q	q	Zone	X	Y	UTM_Zone	Easting	Northing	Latit
CP 00828		19S	30E	35	1	1					13	598585	3609900	0

New Mexico Office of the State Engineer

Point of Diversion Summary

Back

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

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y
CP 00828	19S	30E	35	1	1				

Driller Licence:
Driller Name:
Drill Start Date:
Log File Date:
Pump Type:
Casing Size:
Depth Well: 90

Source:
Drill Finish Date:
PCW Received Date:
Pipe Discharge Size:
Estimated Yield:
Depth Water:

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00646		PRO	ED	1	1	4	07	19S	29E	583155	3615552*	199		
CP 00681		PRO	ED	1	1	3	34	19S	29E	587230	3609127*			
CP 00703		PRO	ED		4	1	36	19S	29E	590945	3609441*	200	115	85
CP 00739		PRO	ED	3	4	4	35	19S	29E	590046	3608532*	200	110	90
CP 00741		PRO	ED	1	3	2	34	19S	29E	588030	3609533*	230	60	170
CP 00820		STK	LE		2	4	13	19S	29E	591713	3613870*	120		
CP 00821		STK	LE		4	4	25	19S	29E	591743	3610248*	120		

Average Depth to Water: **95 feet**

Minimum Depth: **60 feet**

Maximum Depth: **115 feet**

Record Count: 7

PLSS Search:

Township: 19S Range: 29E

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00740		STK	ED	2	3	3	12	20S	29E	590669	3605509*	150		
CP 00745		PRO	ED	4	1	3	12	20S	29E	590666	3605711*	232		
CP 00830		STK	LE		2	1	04	20S	29E	586118	3608193*	120		
CP 00831		STK	LE		2	2	10	20S	29E	588548	3606605*	100		
CP 00832		STK	LE		2	3	12	20S	29E	590971	3605815*	200		
CP 00833		STK	LE		1	2	16	20S	29E	586548	3604978*	100		
CP 00924		STK	ED	3	3	2	30	20S	29E	583259	3601235*	70		
CP 00936 POD1		PLS	ED	3	4	2	30	20S	29E	583661	3601238*	70	52	18

Average Depth to Water: **52 feet**

Minimum Depth: **52 feet**

Maximum Depth: **52 feet**

Record Count: 8

PLSS Search:

Township: 20S Range: 29E

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00522		STK	LE			3	30	19S	30E	592347	3610451*	120	90	30
CP 00742		PRO	ED	3	1	3	31	19S	30E	592054	3608940*	223	115	108
CP 00822		STK	LE			4	4	15	19S	30E	598148	3613516*	90		
CP 00823		STK	LE			1	3	17	19S	30E	593715	3613885*	120		
CP 00824		DOM	LE			4	1	20	19S	30E	594129	3612680*	70		
CP 00825		STK	LE			3	4	28	19S	30E	596164	3610282*	100		
CP 00827		STK	LE			3	3	35	19S	30E	598596	3608694*	100		
CP 00828		STK	LE			1	1	35	19S	30E	598585	3609900*	90		

Average Depth to Water: **102 feet**

Minimum Depth: **90 feet**

Maximum Depth: **115 feet**

Record Count: 8

PLSS Search:

Township: 19S Range: 30E

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

POD Number	Sub basin	Use	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00419		PRO	ED		4	3	32	20S	30E	594250	3599003*	262	170	92
CP 00431		PRO	ED		2	3	33	20S	30E	595857	3599419*	235	195	40
CP 00532		PRO	XX	4	3	4	21	20S	30E	596328	3602138*	335	150	185
CP 00551		PRO	ED	1	1	1	33	20S	30E	595343	3600320*	286	187	99
CP 00834		STK	LE		2	3	06	20S	30E	592566	3607436*	120		

Average Depth to Water: **175 feet**

Minimum Depth: **150 feet**

Maximum Depth: **195 feet**

Record Count: 5

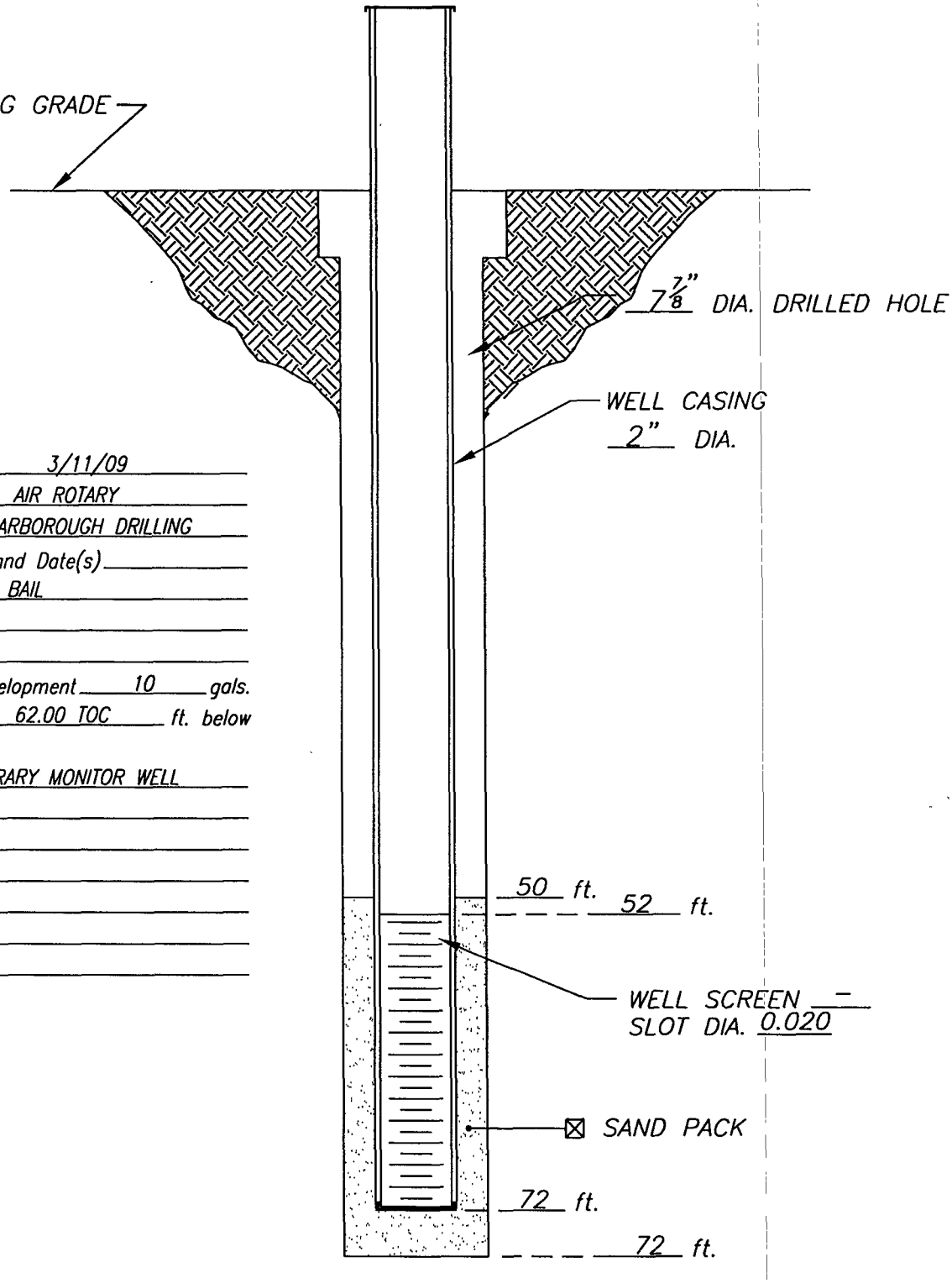
PLSS Search:

Township: 20S Range: 30E

***UTM location was derived from PLSS - see Help**

APPENDIX C

TEMPORARY WELL CONSTRUCTION LOG



Installation Date(s) 3/11/09
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HAND BAIL

Water Removed During Development 10 gals.
Static Depth to Water 62.00 TOC ft. below Ground Level
Well Purpose TEMPORARY MONITOR WELL

Remarks

DATE: 3/11/09	CLIENT: ST. MARY LAND & EXPLRATION	WELL NO.
TETRA TECH, INC. MIDLAND, TEXAS	PROJECT: TUESDAY FED. #1 FLOWLINE LEAK	TMW-1
	LOCATION: EDDY COUNTY, NEW MEXICO	

SOIL BORING LOG

Boring/Well: TW-1
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 72'
Date Installed: 3/11/09

DEPTH (ft)	SAMPLE DESCRIPTION
0-1	Tan, fine grain sand and gypsum
5-6	White gypsum and tan silty sand, clean, loose
10-11	White gypsum and tan silty sand, clean, loose
15-16	Lt. brown fine grain sand, trace of clay
20-21	White, gypsum, clean, friable
25-26	White, gypsum, clean, friable
30-31	White, gypsum, clean, friable
35-38	Yellow and greenish shale and fine grain sand
38-40	Red and yellow shale, sandy clay @ 39'-40'
40-43	Brown, sandy clay, clean
43-50	Gray, limestone, dense layer
50-55	Gray, limestone, dense layer, streaks of shale layers
55-60	Gray, limestone, dense layer, streaks of gypsum layers
60-65	Gray, limestone, dense layer, streaks of gypsum layers
65-70	Gray, limestone, dense layer, streaks of gypsum layers
70-72	Gray and red clay, dense

SOIL BORING LOG

Boring/Well: BH-1
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 61'
Date Installed: 10/30/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-1	Light tan sand with some caliche, Staining on top with odor
2-3	Light tan caliche, with no stain or odor
4-5	Light tan caliche
6-9	Tan sandy clay
10-16	Light tan caliche
20-26	Tan sand and caliche
30-31	Light Tan Sandstone
35-36	Yellowish Tan Sandstone
40-41	Tan Sandstone
45-61	White to tan gypsum some dense
TD - 61 BGS	

SOIL BORING LOG

Boring/Well: BH-2
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 61'
Date Installed: 10/30/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-1	Light tan sand with some caliche, stained on top with odor
2-3	Light tan sand, with no stain or odor
4-5	Light tan sand and caliche
6-9	Tan sandy clay
10-16	Light tan sandstone
20-26	Tan sandy clay and caliche
30-40	Light tan sandstone
41-50	Tan sandstone with clay
51-61	White to tan gypsum some dense
TD - 61 BGS	

SOIL BORING LOG

Boring/Well: BH-3
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 51'
Date Installed: 11/3/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-1	Light tan sand with some caliche, stained on top with odor
2-5	Light tan sand and caliche
6-15	Light tan cementd sandstone
16-20	Light tan silt with some clay
21-30	Redish tan clay with some gypsum
30-50	White to tan gypsum some dense
50-51	Silicated sandstone
TD - 51 BGS	

SOIL BORING LOG

Boring/Well: BH-4
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 51'
Date Installed: 11/3/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-1	Brown silty clay with staining and odor
2-3	Tan silt
4-25	Tan silt with some clay
25-40	Redish tan silty clay with some gypsum
41-50	Tan silty clay with mixed with gypsum
50-51	Silicated sandstone
TD - 51 BGS	

SOIL BORING LOG

Boring/Well: BH-5
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 31'
Date Installed: 11/4/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-1	Brown silty clay with staining and odor
2-8	Brown silty clay
9-20	Tan silty clay
20-25	Light tan gypsum
25-31	White to tan gypsum
TD - 31 BGS	

SOIL BORING LOG

Boring/Well: Background
Project Number: 3613
Client: St.Mary Land & Exploration
Site Location: Tuesday Federal #1 Flowline Leak
Location: Eddy County, New Mexico
Total Depth - 41'
Date Installed: 11/3/08

DEPTH (in feet)	SAMPLE DESCRIPTION
0-5	Light tan fine grain sand
5-15	Tan sand with caliche
16-30	Light tan fine grain sand and silt
31-40	Tan sandy clay with some sandstone
40-41	Light tan cemented sandstone
TD - 41 BGS	

APPENDIX D

Summary Report

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

Report Date: November 14, 2008

Work Order: 8110630

Project Location: Eddy County, NM
Project Name: St. Mary/Tuesday Federal #1
Project Number: 115-6403613

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
178542	BH-1 0-1'	soil	2008-10-30	00:00	2008-11-06
178543	BH-1 2-3'	soil	2008-10-30	00:00	2008-11-06
178544	BH-1 4-5'	soil	2008-10-30	00:00	2008-11-06
178545	BH-1 6-7'	soil	2008-10-30	00:00	2008-11-06
178546	BH-1 8-9'	soil	2008-10-30	00:00	2008-11-06
178547	BH-1 10-11'	soil	2008-10-30	00:00	2008-11-06
178549	BH-1 20-21'	soil	2008-10-30	00:00	2008-11-06
178551	BH-1 30-31'	soil	2008-10-30	00:00	2008-11-06
178553	BH-1 40-41'	soil	2008-10-30	00:00	2008-11-06
178555	BH-1 50-51'	soil	2008-10-30	00:00	2008-11-06
178558	BH-2 0-1'	soil	2008-10-30	00:00	2008-11-06
178559	BH-2 2-3'	soil	2008-10-30	00:00	2008-11-06
178560	BH-2 4-5'	soil	2008-10-30	00:00	2008-11-06
178561	BH-2 6-7'	soil	2008-10-30	00:00	2008-11-06
178562	BH-2 8-9'	soil	2008-10-30	00:00	2008-11-06
178563	BH-2 10-11'	soil	2008-10-30	00:00	2008-11-06
178565	BH-2 20-21'	soil	2008-10-30	00:00	2008-11-06
178567	BH-2 30-31'	soil	2008-10-30	00:00	2008-11-06
178568	BH-2 40-41'	soil	2008-10-30	00:00	2008-11-06
178569	BH-2 50-51'	soil	2008-10-30	00:00	2008-11-06
178571	BH-3 0-1'	soil	2008-11-03	00:00	2008-11-06
178572	BH-3 2-3'	soil	2008-11-03	00:00	2008-11-06
178573	BH-3 4-5'	soil	2008-11-03	00:00	2008-11-06
178574	BH-3 6-7'	soil	2008-11-03	00:00	2008-11-06
178575	BH-3 8-9'	soil	2008-11-03	00:00	2008-11-06
178576	BH-3 10-11'	soil	2008-11-03	00:00	2008-11-06
178578	BH-3 20-21'	soil	2008-11-03	00:00	2008-11-06
178580	BH-3 30-31'	soil	2008-11-03	00:00	2008-11-06
178582	BH-3 40-41'	soil	2008-11-03	00:00	2008-11-06
178584	BH-4 0-1'	soil	2008-11-03	00:00	2008-11-06

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
178585	BH-4 2-3'	soil	2008-11-03	00:00	2008-11-06
178586	BH-4 4-5'	soil	2008-11-03	00:00	2008-11-06
178587	BH-4 6-7'	soil	2008-11-03	00:00	2008-11-06
178588	BH-4 10-11'	soil	2008-11-03	00:00	2008-11-06
178590	BH-4 20-21'	soil	2008-11-03	00:00	2008-11-06
178592	BH-4 30-31'	soil	2008-11-03	00:00	2008-11-06
178594	BH-4 40-41'	soil	2008-11-03	00:00	2008-11-06
178596	BH-5 0-1'	soil	2008-11-04	00:00	2008-11-06
178597	BH-5 2-3'	soil	2008-11-04	00:00	2008-11-06
178598	BH-5 4-5'	soil	2008-11-04	00:00	2008-11-06
178599	BH-5 6-7'	soil	2008-11-04	00:00	2008-11-06
178600	BH-5 8-9'	soil	2008-11-04	00:00	2008-11-06
178601	BH-5 10-11'	soil	2008-11-04	00:00	2008-11-06
178603	BH-5 20-21'	soil	2008-11-04	00:00	2008-11-06
178605	BH-5 30-31'	soil	2008-11-04	00:00	2008-11-06
178606	Background 0-1'	soil	2008-11-03	00:00	2008-11-06
178607	Background 5-6'	soil	2008-11-03	00:00	2008-11-06
178608	Background 10-11'	soil	2008-11-03	00:00	2008-11-06
178609	Background 15-16'	soil	2008-11-03	00:00	2008-11-06
178610	Background 20-21'	soil	2008-11-03	00:00	2008-11-06
178611	Background 30-31'	soil	2008-11-03	00:00	2008-11-06
178612	Background 40-41'	soil	2008-11-03	00:00	2008-11-06

	BTEX				TPH DRO	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
178542 - BH-1 0-1'					<50.0	**8.41**
178558 - BH-2 0-1'	<0.0100	<0.0100	<0.0100	**0.0302**	**51.2**	**4.49**
178571 - BH-3 0-1'					<50.0	**2.04**
178584 - BH-4 0-1'	<0.0500	<0.0500	<0.0500	<0.0500	**1340**	**73.5**
178585 - BH-4 2-3'					**168**	**13.2**
178596 - BH-5 0-1'	<0.0200	<0.0200	<0.0200	<0.0200	**2400**	**69.4**
178597 - BH-5 2-3'					<50.0	**6.98**
178598 - BH-5 4-5'					<50.0	**4.97**

Sample: 178542 - BH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		**19500**	mg/Kg	2.00

Sample: 178543 - BH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		**13000**	mg/Kg	2.00

Sample: 178544 - BH-1 4-5'

Param	Flag	Result	Units	RL
Chloride		**10100**	mg/Kg	2.00

Sample: 178545 - BH-1 6-7'

Param	Flag	Result	Units	RL
Chloride		**11600**	mg/Kg	2.00

Sample: 178546 - BH-1 8-9'

Param	Flag	Result	Units	RL
Chloride		**11100**	mg/Kg	2.00

Sample: 178547 - BH-1 10-11'

Param	Flag	Result	Units	RL
Chloride		**7590**	mg/Kg	2.00

Sample: 178549 - BH-1 20-21'

Param	Flag	Result	Units	RL
Chloride		**13300**	mg/Kg	2.00

Sample: 178551 - BH-1 30-31'

Param	Flag	Result	Units	RL
Chloride		**2580**	mg/Kg	2.00

Sample: 178553 - BH-1 40-41'

Param	Flag	Result	Units	RL
Chloride		**903**	mg/Kg	2.00

Sample: 178555 - BH-1 50-51'

Param	Flag	Result	Units	RL
Chloride		**806**	mg/Kg	2.00

Sample: 178558 - BH-2 0-1'

Param	Flag	Result	Units	RL
Chloride		**10500**	mg/Kg	2.00

Sample: 178559 - BH-2 2-3'

Param	Flag	Result	Units	RL
Chloride		**8420**	mg/Kg	2.00

Sample: 178560 - BH-2 4-5'

Param	Flag	Result	Units	RL
Chloride		**6130**	mg/Kg	2.00

Sample: 178561 - BH-2 6-7'

Param	Flag	Result	Units	RL
Chloride		**8200**	mg/Kg	2.00

Sample: 178562 - BH-2 8-9'

Param	Flag	Result	Units	RL
Chloride		**8120**	mg/Kg	2.00

Sample: 178563 - BH-2 10-11'

Param	Flag	Result	Units	RL
Chloride		**12800**	mg/Kg	2.00

Sample: 178565 - BH-2 20-21'

Param	Flag	Result	Units	RL
Chloride		**9390**	mg/Kg	2.00

Sample: 178567 - BH-2 30-31'

Param	Flag	Result	Units	RL
Chloride		**3230**	mg/Kg	2.00

Sample: 178568 - BH-2 40-41'

Param	Flag	Result	Units	RL
Chloride		**2040**	mg/Kg	2.00

Sample: 178569 - BH-2 50-51'

Param	Flag	Result	Units	RL
Chloride		**1250**	mg/Kg	2.00

Sample: 178571 - BH-3 0-1'

Param	Flag	Result	Units	RL
Chloride		**2470**	mg/Kg	2.00

Sample: 178572 - BH-3 2-3'

Param	Flag	Result	Units	RL
Chloride		**8410**	mg/Kg	2.00

Sample: 178573 - BH-3 4-5'

Param	Flag	Result	Units	RL
Chloride		**8320**	mg/Kg	2.00

Sample: 178574 - BH-3 6-7'

Param	Flag	Result	Units	RL
Chloride		**12100**	mg/Kg	2.00

Sample: 178575 - BH-3 8-9'

Param	Flag	Result	Units	RL
Chloride		**8660**	mg/Kg	2.00

Sample: 178576 - BH-3 10-11'

Param	Flag	Result	Units	RL
Chloride		**6780**	mg/Kg	2.00

Sample: 178578 - BH-3 20-21'

Param	Flag	Result	Units	RL
Chloride		**6170**	mg/Kg	2.00

Sample: 178580 - BH-3 30-31'

Param	Flag	Result	Units	RL
Chloride		**974**	mg/Kg	2.00

Sample: 178582 - BH-3 40-41'

Param	Flag	Result	Units	RL
Chloride		**545**	mg/Kg	2.00

Sample: 178584 - BH-4 0-1'

Param	Flag	Result	Units	RL
Chloride		**9300**	mg/Kg	2.00

Sample: 178585 - BH-4 2-3'

Param	Flag	Result	Units	RL
Chloride		**9820**	mg/Kg	2.00

Sample: 178586 - BH-4 4-5'

Param	Flag	Result	Units	RL
Chloride		**6550**	mg/Kg	2.00

Sample: 178587 - BH-4 6-7'

Param	Flag	Result	Units	RL
Chloride		**8980**	mg/Kg	2.00

Sample: 178588 - BH-4 10-11'

Param	Flag	Result	Units	RL
Chloride		**7380**	mg/Kg	2.00

Sample: 178590 - BH-4 20-21'

Param	Flag	Result	Units	RL
Chloride		**156**	mg/Kg	2.00

Sample: 178592 - BH-4 30-31'

Param	Flag	Result	Units	RL
Chloride		**914**	mg/Kg	2.00

Sample: 178594 - BH-4 40-41'

Param	Flag	Result	Units	RL
Chloride		**326**	mg/Kg	2.00

Sample: 178596 - BH-5 0-1'

Param	Flag	Result	Units	RL
Chloride		**9360**	mg/Kg	2.00

Sample: 178597 - BH-5 2-3'

Param	Flag	Result	Units	RL
Chloride		**12100**	mg/Kg	2.00

Sample: 178598 - BH-5 4-5'

Param	Flag	Result	Units	RL
Chloride		**12700**	mg/Kg	2.00

Sample: 178599 - BH-5 6-7'

Param	Flag	Result	Units	RL
Chloride		**12400**	mg/Kg	2.00

Sample: 178600 - BH-5 8-9'

Param	Flag	Result	Units	RL
Chloride		**16200**	mg/Kg	2.00

Sample: 178601 - BH-5 10-11'

Param	Flag	Result	Units	RL
Chloride		**9680**	mg/Kg	2.00

Sample: 178603 - BH-5 20-21'

Param	Flag	Result	Units	RL
Chloride		**1100**	mg/Kg	2.00

Sample: 178605 - BH-5 30-31'

Param	Flag	Result	Units	RL
Chloride		**176**	mg/Kg	2.00

Sample: 178606 - Background 0-1'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178607 - Background 5-6'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178608 - Background 10-11'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178609 - Background 15-16'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178610 - Background 20-21'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178611 - Background 30-31'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

Sample: 178612 - Background 40-41'

Param	Flag	Result	Units	RL
Chloride		<100	mg/Kg	2.00

TRACEANALYSIS, INC.

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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: November 14, 2008

Work Order: 8110630

Project Location: Eddy County, NM
Project Name: St. Mary/Tuesday Federal #1
Project Number: 115-6403613

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
178542	BH-1 0-1'	soil	2008-10-30	00:00	2008-11-06
178543	BH-1 2-3'	soil	2008-10-30	00:00	2008-11-06
178544	BH-1 4-5'	soil	2008-10-30	00:00	2008-11-06
178545	BH-1 6-7'	soil	2008-10-30	00:00	2008-11-06
178546	BH-1 8-9'	soil	2008-10-30	00:00	2008-11-06
178547	BH-1 10-11'	soil	2008-10-30	00:00	2008-11-06
178549	BH-1 20-21'	soil	2008-10-30	00:00	2008-11-06
178551	BH-1 30-31'	soil	2008-10-30	00:00	2008-11-06
178553	BH-1 40-41'	soil	2008-10-30	00:00	2008-11-06
178555	BH-1 50-51'	soil	2008-10-30	00:00	2008-11-06

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
178558	BH-2 0-1'	soil	2008-10-30	00:00	2008-11-06
178559	BH-2 2-3'	soil	2008-10-30	00:00	2008-11-06
178560	BH-2 4-5'	soil	2008-10-30	00:00	2008-11-06
178561	BH-2 6-7'	soil	2008-10-30	00:00	2008-11-06
178562	BH-2 8-9'	soil	2008-10-30	00:00	2008-11-06
178563	BH-2 10-11'	soil	2008-10-30	00:00	2008-11-06
178565	BH-2 20-21'	soil	2008-10-30	00:00	2008-11-06
178567	BH-2 30-31'	soil	2008-10-30	00:00	2008-11-06
178568	BH-2 40-41'	soil	2008-10-30	00:00	2008-11-06
178569	BH-2 50-51'	soil	2008-10-30	00:00	2008-11-06
178571	BH-3 0-1'	soil	2008-11-03	00:00	2008-11-06
178572	BH-3 2-3'	soil	2008-11-03	00:00	2008-11-06
178573	BH-3 4-5'	soil	2008-11-03	00:00	2008-11-06
178574	BH-3 6-7'	soil	2008-11-03	00:00	2008-11-06
178575	BH-3 8-9'	soil	2008-11-03	00:00	2008-11-06
178576	BH-3 10-11'	soil	2008-11-03	00:00	2008-11-06
178578	BH-3 20-21'	soil	2008-11-03	00:00	2008-11-06
178580	BH-3 30-31'	soil	2008-11-03	00:00	2008-11-06
178582	BH-3 40-41'	soil	2008-11-03	00:00	2008-11-06
178584	BH-4 0-1'	soil	2008-11-03	00:00	2008-11-06
178585	BH-4 2-3'	soil	2008-11-03	00:00	2008-11-06
178586	BH-4 4-5'	soil	2008-11-03	00:00	2008-11-06
178587	BH-4 6-7'	soil	2008-11-03	00:00	2008-11-06
178588	BH-4 10-11'	soil	2008-11-03	00:00	2008-11-06
178590	BH-4 20-21'	soil	2008-11-03	00:00	2008-11-06
178592	BH-4 30-31'	soil	2008-11-03	00:00	2008-11-06
178594	BH-4 40-41'	soil	2008-11-03	00:00	2008-11-06
178596	BH-5 0-1'	soil	2008-11-04	00:00	2008-11-06
178597	BH-5 2-3'	soil	2008-11-04	00:00	2008-11-06
178598	BH-5 4-5'	soil	2008-11-04	00:00	2008-11-06
178599	BH-5 6-7'	soil	2008-11-04	00:00	2008-11-06
178600	BH-5 8-9'	soil	2008-11-04	00:00	2008-11-06
178601	BH-5 10-11'	soil	2008-11-04	00:00	2008-11-06
178603	BH-5 20-21'	soil	2008-11-04	00:00	2008-11-06
178605	BH-5 30-31'	soil	2008-11-04	00:00	2008-11-06
178606	Background 0-1'	soil	2008-11-03	00:00	2008-11-06
178607	Background 5-6'	soil	2008-11-03	00:00	2008-11-06
178608	Background 10-11'	soil	2008-11-03	00:00	2008-11-06
178609	Background 15-16'	soil	2008-11-03	00:00	2008-11-06
178610	Background 20-21'	soil	2008-11-03	00:00	2008-11-06
178611	Background 30-31'	soil	2008-11-03	00:00	2008-11-06
178612	Background 40-41'	soil	2008-11-03	00:00	2008-11-06

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.

TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

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

Case Narrative

Samples for project St. Mary/Tuesday Federal #1 were received by TraceAnalysis, Inc. on 2008-11-06 and assigned to work order 8110630. Samples for work order 8110630 were received intact at a temperature of 3.2 deg. C.

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

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
TPH DRO	Mod. 8015B
TPH GRO	S 8015B

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 8110630 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: 178542 - BH-1 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**19500**	mg/Kg	50	2.00

Sample: 178542 - BH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	Sample Preparation:	2008-11-07	Prepared By:	LD

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-Triacontane		90.0	mg/Kg	1	100	90	10 - 250.4

Sample: 178542 - BH-1 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54090	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**8.41**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.842	mg/Kg	1	1.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.669	mg/Kg	1	1.00	67	66 - 142.8

Sample: 178543 - BH-1 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**13000**	mg/Kg	50	2.00

Sample: 178544 - BH-1 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**10100**	mg/Kg	50	2.00

Sample: 178545 - BH-1 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**11600**	mg/Kg	50	2.00

Sample: 178546 - BH-1 8-9'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**11100**	mg/Kg	50	2.00

Sample: 178547 - BH-1 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54208	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46323	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**7590**	mg/Kg	50	2.00

Sample: 178549 - BH-1 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**13300**	mg/Kg	50	2.00

Sample: 178551 - BH-1 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**2580**	mg/Kg	50	2.00

Sample: 178553 - BH-1 40-41'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**903**	mg/Kg	50	2.00

Sample: 178555 - BH-1 50-51'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**806**	mg/Kg	50	2.00

Sample: 178558 - BH-2 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	54089	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0100	mg/Kg	1	0.0100
Toluene		<0.0100	mg/Kg	1	0.0100
Ethylbenzene		<0.0100	mg/Kg	1	0.0100
Xylene		**0.0302**	mg/Kg	1	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.949	mg/Kg	1	1.00	95	49 - 129.7
4-Bromofluorobenzene (4-BFB)		0.622	mg/Kg	1	1.00	62	45.2 - 144.3

Sample: 178558 - BH-2 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**10500**	mg/Kg	50	2.00

Sample: 178558 - BH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	Sample Preparation:	2008-11-07	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**51.2**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		100	mg/Kg	1	100	100	10 - 250.4

Sample: 178558 - BH-2 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54090	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**4.49**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.884	mg/Kg	1	1.00	88	75 - 117.2
4-Bromofluorobenzene (4-BFB)	[1]	0.537	mg/Kg	1	1.00	54	66 - 142.8

Sample: 178559 - BH-2 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**8420**	mg/Kg	50	2.00

[1] Surrogate out due to peak interference.

Sample: 178560 - BH-2 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**6130**	mg/Kg	50	2.00

Sample: 178561 - BH-2 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**8200**	mg/Kg	50	2.00

Sample: 178562 - BH-2 8-9'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**8120**	mg/Kg	50	2.00

Sample: 178563 - BH-2 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54209	Date Analyzed:	2008-11-12	Analyzed By:	AR
Prep Batch:	46324	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		**12800**	mg/Kg	50	2.00

Sample: 178565 - BH-2 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**9390**	mg/Kg	50	2.00

Sample: 178567 - BH-2 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**3230**	mg/Kg	50	2.00

Sample: 178568 - BH-2 40-41'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2040**	mg/Kg	50	2.00

Sample: 178569 - BH-2 50-51'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1250**	mg/Kg	50	2.00

Sample: 178571 - BH-3 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**2470**	mg/Kg	50	2.00

Sample: 178571 - BH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	Sample Preparation:	2008-11-07	Prepared By:	LD

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-Triacontane		94.5	mg/Kg	1	100	94	10 - 250.4

Sample: 178571 - BH-3 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54090	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**2.04**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.820	mg/Kg	1	1.00	82	75 - 117.2
4-Bromofluorobenzene (4-BFB)	[2]	0.556	mg/Kg	1	1.00	56	66 - 142.8

[2]Surrogate out due to peak interference.

Sample: 178572 - BH-3 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**8410**	mg/Kg	50	2.00

Sample: 178573 - BH-3 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**8320**	mg/Kg	50	2.00

Sample: 178574 - BH-3 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**12100**	mg/Kg	50	2.00

Sample: 178575 - BH-3 8-9'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**8660**	mg/Kg	50	2.00

Sample: 178576 - BH-3 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54210	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46325	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**6780**	mg/Kg	50	2.00

Sample: 178578 - BH-3 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**6170**	mg/Kg	50	2.00

Sample: 178580 - BH-3 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**974**	mg/Kg	50	2.00

Sample: 178582 - BH-3 40-41'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**545**	mg/Kg	50	2.00

Sample: 178584 - BH-4 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	54089	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.0500		mg/Kg	5	0.0100
Toluene		<0.0500		mg/Kg	5	0.0100
Ethylbenzene		<0.0500		mg/Kg	5	0.0100
Xylene		<0.0500		mg/Kg	5	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.77	mg/Kg	5	5.00	95	49 - 129.7
4-Bromofluorobenzene (4-BFB)		4.13	mg/Kg	5	5.00	83	45.2 - 144.3

Sample: 178584 - BH-4 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**9300**		mg/Kg	50	2.00

Sample: 178584 - BH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	Sample Preparation:	2008-11-07	Prepared By:	LD

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		**1340**		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[3]	1270	mg/Kg	1	100	1270	10 - 250.4

[3]High surrogate recovery due to peak interference.

Sample: 178584 - BH-4 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54090	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**73.5**	mg/Kg	5	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.19	mg/Kg	5	5.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		3.62	mg/Kg	5	5.00	72	66 - 142.8

Sample: 178585 - BH-4 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**9820**	mg/Kg	50	2.00

Sample: 178585 - BH-4 2-3'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54109	Date Analyzed:	2008-11-10	Analyzed By:	LD
Prep Batch:	46288	Sample Preparation:	2008-11-10	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**168**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		128	mg/Kg	1	100	128	10 - 250.4

Sample: 178585 - BH-4 2-3'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54122	Date Analyzed:	2008-11-10	Analyzed By:	AG
Prep Batch:	46299	Sample Preparation:	2008-11-10	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**13.2**	mg/Kg	2	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.68	mg/Kg	2	2.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		1.64	mg/Kg	2	2.00	82	66 - 142.8

Sample: 178586 - BH-4 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**6550**	mg/Kg	50	2.00

Sample: 178587 - BH-4 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**8980**	mg/Kg	50	2.00

Sample: 178588 - BH-4 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**7380**	mg/Kg	50	2.00

Sample: 178590 - BH-4 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**156**	mg/Kg	50	2.00

Sample: 178592 - BH-4 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54211	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46326	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**914**	mg/Kg	50	2.00

Sample: 178594 - BH-4 40-41'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**326**	mg/Kg	50	2.00

Sample: 178596 - BH-5 0-1'

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	54089	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.0200	mg/Kg	2	0.0100
Toluene		<0.0200	mg/Kg	2	0.0100
Ethylbenzene		<0.0200	mg/Kg	2	0.0100
Xylene		<0.0200	mg/Kg	2	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.92	mg/Kg	2	2.00	96	49 - 129.7
4-Bromofluorobenzene (4-BFB)		1.80	mg/Kg	2	2.00	90	45.2 - 144.3

Sample: 178596 - BH-5 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**9360**	mg/Kg	50	2.00

Sample: 178596 - BH-5 0-1'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	Sample Preparation:	2008-11-07	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		**2400**	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[4]	411	mg/Kg	1	100	411	10 - 250.4

Sample: 178596 - BH-5 0-1'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54090	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	Sample Preparation:	2008-11-08	Prepared By:	AG

[4]High surrogate recovery due to peak interference.

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**69.4**	mg/Kg	2	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.68	mg/Kg	2	2.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		1.60	mg/Kg	2	2.00	80	66 - 142.8

Sample: 178597 - BH-5 2-3'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**12100**	mg/Kg	50	2.00

Sample: 178597 - BH-5 2-3'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54109	Date Analyzed:	2008-11-10	Analyzed By:	LD
Prep Batch:	46288	Sample Preparation:	2008-11-10	Prepared By:	LD

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-Triacontane		99.1	mg/Kg	1	100	99	10 - 250.4

Sample: 178597 - BH-5 2-3'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54122	Date Analyzed:	2008-11-10	Analyzed By:	AG
Prep Batch:	46299	Sample Preparation:	2008-11-10	Prepared By:	AG

continued ...

sample 178597 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**6.98**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.979	mg/Kg	1	1.00	98	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.808	mg/Kg	1	1.00	81	66 - 142.8

Sample: 178598 - BH-5 4-5'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**12700**	mg/Kg	50	2.00

Sample: 178598 - BH-5 4-5'

Laboratory:	Midland				
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54109	Date Analyzed:	2008-11-10	Analyzed By:	LD
Prep Batch:	46288	Sample Preparation:	2008-11-10	Prepared By:	LD

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-Triacontane		93.4	mg/Kg	1	100	93	10 - 250.4

Sample: 178598 - BH-5 4-5'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	54122	Date Analyzed:	2008-11-10	Analyzed By:	AG
Prep Batch:	46299	Sample Preparation:	2008-11-10	Prepared By:	AG

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		**4.97**	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.938	mg/Kg	1	1.00	94	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.796	mg/Kg	1	1.00	80	66 - 142.8

Sample: 178599 - BH-5 6-7'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**12400**	mg/Kg	50	2.00

Sample: 178600 - BH-5 8-9'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**16200**	mg/Kg	50	2.00

Sample: 178601 - BH-5 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**9680**	mg/Kg	50	2.00

Sample: 178603 - BH-5 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**1100**	mg/Kg	50	2.00

Sample: 178605 - BH-5 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**176**	mg/Kg	50	2.00

Sample: 178606 - Background 0-1'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54212	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46327	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178607 - Background 5-6'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178608 - Background 10-11'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178609 - Background 15-16'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178610 - Background 20-21'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178611 - Background 30-31'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178612 - Background 40-41'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54213	Date Analyzed:	2008-11-13	Analyzed By:	AR
Prep Batch:	46328	Sample Preparation:	2008-11-11	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Method Blank (1) QC Batch: 54063

QC Batch:	54063	Date Analyzed:	2008-11-07	Analyzed By:	LD
Prep Batch:	46243	QC Preparation:	2008-11-07	Prepared By:	LD

Parameter	Flag	MDL Result	Units	RL
DRO		<15.8	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		90.8	mg/Kg	1	100	91	30.9 - 146.4

Method Blank (1) QC Batch: 54089

QC Batch:	54089	Date Analyzed:	2008-11-08	Analyzed By:	AG
Prep Batch:	46277	QC Preparation:	2008-11-08	Prepared By:	AG

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00800	mg/Kg	0.01
Toluene		<0.00800	mg/Kg	0.01
Ethylbenzene		<0.00820	mg/Kg	0.01
Xylene		<0.00960	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.942	mg/Kg	1	1.00	94	65.6 - 130.6

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)		0.802	mg/Kg	1	1.00	80	51.9 - 128.1

Method Blank (1) QC Batch: 54090

QC Batch: 54090 | Date Analyzed: 2008-11-08 | Analyzed By: AG
Prep Batch: 46277 | QC Preparation: 2008-11-08 | Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		0.749	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.837	mg/Kg	1	1.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)		0.697	mg/Kg	1	1.00	70	70 - 130

Method Blank (1) QC Batch: 54109

QC Batch: 54109 | Date Analyzed: 2008-11-10 | Analyzed By: LD
Prep Batch: 46288 | QC Preparation: 2008-11-10 | Prepared By: LD

Parameter	Flag	MDL Result	Units	RL
DRO		<15.8	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		108	mg/Kg	1	100	108	30.9 - 146.4

Method Blank (1) QC Batch: 54122

QC Batch: 54122 | Date Analyzed: 2008-11-10 | Analyzed By: AG
Prep Batch: 46299 | QC Preparation: 2008-11-10 | Prepared By: AG

Parameter	Flag	MDL Result	Units	RL
GRO		0.810	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.835	mg/Kg	1	1.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)		0.824	mg/Kg	1	1.00	82	70 - 130

Method Blank (1) QC Batch: 54208

QC Batch: 54208 Date Analyzed: 2008-11-12 Analyzed By: AR
Prep Batch: 46323 QC Preparation: 2008-11-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Method Blank (1) QC Batch: 54209

QC Batch: 54209 Date Analyzed: 2008-11-12 Analyzed By: AR
Prep Batch: 46324 QC Preparation: 2008-11-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Method Blank (1) QC Batch: 54210

QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR
Prep Batch: 46325 QC Preparation: 2008-11-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Method Blank (1) QC Batch: 54211

QC Batch: 54211 Date Analyzed: 2008-11-13 Analyzed By: AR
Prep Batch: 46326 QC Preparation: 2008-11-11 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Method Blank (1) QC Batch: 54212

QC Batch: 54212 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46327 | QC Preparation: 2008-11-11 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Method Blank (1) QC Batch: 54213

QC Batch: 54213 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46328 | QC Preparation: 2008-11-11 | Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.500	mg/Kg	2

Laboratory Control Spike (LCS-1)

QC Batch: 54063 | Date Analyzed: 2008-11-07 | Analyzed By: LD
Prep Batch: 46243 | QC Preparation: 2008-11-07 | Prepared By: LD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	235	mg/Kg	1	250	<15.8	94	27.8 - 152.1

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	241	mg/Kg	1	250	<15.8	96	27.8 - 152.1	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-Triacontane	106	103	mg/Kg	1	100	106	103	38 - 130.4

Laboratory Control Spike (LCS-1)

QC Batch: 54089 | Date Analyzed: 2008-11-08 | Analyzed By: AG
Prep Batch: 46277 | QC Preparation: 2008-11-08 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	0.953	mg/Kg	1	1.00	<0.00800	95	72.7 - 129.8
Toluene	0.960	mg/Kg	1	1.00	<0.00800	96	71.6 - 129.6
Ethylbenzene	0.958	mg/Kg	1	1.00	<0.00820	96	70.8 - 129.7
Xylene	2.83	mg/Kg	1	3.00	<0.00960	94	70.9 - 129.4

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
Benzene	0.991	mg/Kg	1	1.00	<0.00800	99	72.7 - 129.8	4	20
Toluene	0.998	mg/Kg	1	1.00	<0.00800	100	71.6 - 129.6	4	20
Ethylbenzene	0.999	mg/Kg	1	1.00	<0.00820	100	70.8 - 129.7	4	20
Xylene	2.95	mg/Kg	1	3.00	<0.00960	98	70.9 - 129.4	4	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)	0.945	0.952	mg/Kg	1	1.00	94	95	65.9 - 132
4-Bromofluorobenzene (4-BFB)	0.840	0.850	mg/Kg	1	1.00	84	85	55.2 - 128.9

Laboratory Control Spike (LCS-1)

QC Batch: 54090 | Date Analyzed: 2008-11-08 | Analyzed By: AG
Prep Batch: 46277 | QC Preparation: 2008-11-08 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	7.30	mg/Kg	1	10.0	<0.171	73	70 - 130

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	8.10	mg/Kg	1	10.0	<0.171	81	70 - 130	10	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)	0.875	0.868	mg/Kg	1	1.00	88	87	70 - 130
4-Bromofluorobenzene (4-BFB)	0.748	0.750	mg/Kg	1	1.00	75	75	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 54109 | Date Analyzed: 2008-11-10 | Analyzed By: LD
Prep Batch: 46288 | QC Preparation: 2008-11-10 | Prepared By: LD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	219	mg/Kg	1	250	<15.8	88	27.8 - 152.1

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	231	mg/Kg	1	250	<15.8	92	27.8 - 152.1	5	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	95.8	99.8	mg/Kg	1	100	96	100	38 - 130.4

Laboratory Control Spike (LCS-1)

QC Batch: 54122 | Date Analyzed: 2008-11-10 | Analyzed By: AG
Prep Batch: 46299 | QC Preparation: 2008-11-10 | Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	8.11	mg/Kg	1	10.0	<0.171	81	70 - 130

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	8.34	mg/Kg	1	10.0	<0.171	83	70 - 130	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)	0.865	0.921	mg/Kg	1	1.00	86	92	70 - 130
4-Bromofluorobenzene (4-BFB)	0.850	0.849	mg/Kg	1	1.00	85	85	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 54208 | Date Analyzed: 2008-11-12 | Analyzed By: AR
Prep Batch: 46323 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.1	mg/Kg	1	100	<0.500	99	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	<0.500	101	85 - 115	2	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: 54209 | Date Analyzed: 2008-11-12 | Analyzed By: AR
Prep Batch: 46324 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	102	mg/Kg	1	100	<0.500	102	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	100	mg/Kg	1	100	<0.500	100	85 - 115	1	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: 54210 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46325 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	99.8	mg/Kg	1	100	<0.500	100	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	<0.500	101	85 - 115	1	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: 54211 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46326 | QC Preparation: 2008-11-11 | Prepared By: AR

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control spikes continued ...

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.9	mg/Kg	1	100	<0.500	99	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	99.6	mg/Kg	1	100	<0.500	100	85 - 115	1	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: 54212 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46327 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	98.9	mg/Kg	1	100	<0.500	99	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	100	mg/Kg	1	100	<0.500	100	85 - 115	2	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: 54213 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46328 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	97.8	mg/Kg	1	100	<0.500	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	100	mg/Kg	1	100	<0.500	100	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: 178533

QC Batch: 54063 | Date Analyzed: 2008-11-07 | Analyzed By: LD
Prep Batch: 46243 | QC Preparation: 2008-11-07 | Prepared By: LD

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	244	mg/Kg	1	250	31.58	85	18 - 179.5

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	249	mg/Kg	1	250	31.58	87	18 - 179.5	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
n-Triacontane	95.6	93.1	mg/Kg	1	100	96	93	34.1 - 158

Matrix Spike (MS-1) Spiked Sample: 178532

QC Batch: 54089 | Date Analyzed: 2008-11-08 | Analyzed By: AG
Prep Batch: 46277 | QC Preparation: 2008-11-08 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	5.07	mg/Kg	5	5.00	0.1665	98	58.6 - 165.2
Toluene	6.46	mg/Kg	5	5.00	0.4335	120	64.2 - 153.8
Ethylbenzene	5.95	mg/Kg	5	5.00	0.5518	108	61.6 - 159.4
Xylene	19.0	mg/Kg	5	15.0	3.5197	103	64.4 - 155.3

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
Benzene	5.01	mg/Kg	5	5.00	0.1665	97	58.6 - 165.2	1	20
Toluene	6.23	mg/Kg	5	5.00	0.4335	116	64.2 - 153.8	4	20
Ethylbenzene	5.84	mg/Kg	5	5.00	0.5518	106	61.6 - 159.4	2	20
Xylene	18.5	mg/Kg	5	15.0	3.5197	100	64.4 - 155.3	3	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	4.70	4.66	mg/Kg	5	5	94	93	76 - 127.9
4-Bromofluorobenzene (4-BFB)	4.79	4.78	mg/Kg	5	5	96	96	72 - 127.8

Matrix Spike (MS-1) Spiked Sample: 178793

QC Batch: 54090 | Date Analyzed: 2008-11-08 | Analyzed By: AG
Prep Batch: 46277 | QC Preparation: 2008-11-08 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	13.2	mg/Kg	1	10.0	6	72	22.3 - 134.6

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	13.2	mg/Kg	1	10.0	6	72	22.3 - 134.6	0	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) [5]	1.05	1.22	mg/Kg	1	1	105	122	68.4 - 113.1
4-Bromofluorobenzene (4-BFB)	0.878	0.819	mg/Kg	1	1	88	82	66.7 - 134.3

Matrix Spike (MS-1) Spiked Sample: 178793

QC Batch: 54109 | Date Analyzed: 2008-11-10 | Analyzed By: LD
Prep Batch: 46288 | QC Preparation: 2008-11-10 | Prepared By: LD

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO [6]	288	mg/Kg	1	250	249.44	15	18 - 179.5

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 [7]	276	mg/Kg	1	250	249.44	11	18 - 179.5	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Triacontane	132	119	mg/Kg	1	100	132	119	34.1 - 158

[5] High surrogate recovery due to peak interference.
[6] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.
[7] Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Matrix Spike (MS-1) Spiked Sample: 178598

QC Batch: 54122 | Date Analyzed: 2008-11-10 | Analyzed By: AG
Prep Batch: 46299 | QC Preparation: 2008-11-10 | Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	9.42	mg/Kg	1	10.0	4.97	44	22.3 - 134.6

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	9.48	mg/Kg	1	10.0	4.97	45	22.3 - 134.6	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
Trifluorotoluene (TFT)	0.737	0.741	mg/Kg	1	1	74	74	68.4 - 113.1
4-Bromofluorobenzene (4-BFB)	0.832	0.828	mg/Kg	1	1	83	83	66.7 - 134.3

Matrix Spike (MS-1) Spiked Sample: 178547

QC Batch: 54208 | Date Analyzed: 2008-11-12 | Analyzed By: AR
Prep Batch: 46323 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12600	mg/Kg	50	5000	7590	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	12600	mg/Kg	50	5000	7590	100	85 - 115	0	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: 178563

QC Batch: 54209 | Date Analyzed: 2008-11-12 | Analyzed By: AR
Prep Batch: 46324 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	17700	mg/Kg	50	5000	12800	98	85 - 115

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

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	18000	mg/Kg	50	5000	12800	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: 178576

QC Batch: 54210 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46325 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	11400	mg/Kg	50	5000	6780	92	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	11900	mg/Kg	50	5000	6780	102	85 - 115	4	20

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

Matrix Spike (MS-1) Spiked Sample: 178592

QC Batch: 54211 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46326 | QC Preparation: 2008-11-11 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	5910	mg/Kg	50	5000	914	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	5990	mg/Kg	50	5000	914	102	85 - 115	1	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: 178606

QC Batch: 54212 | Date Analyzed: 2008-11-13 | Analyzed By: AR
Prep Batch: 46327 | QC Preparation: 2008-11-11 | Prepared By: AR

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matrix spikes continued ...

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	4930	mg/Kg	50	5000	<25.0	99	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	4980	mg/Kg	50	5000	<25.0	100	85 - 115	1	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: 178793

QC Batch: 54213 Date Analyzed: 2008-11-13 Analyzed By: AR
Prep Batch: 46328 QC Preparation: 2008-11-11 Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	5010	mg/Kg	50	5000	65.2	99	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	5100	mg/Kg	50	5000	65.2	101	85 - 115	2	20

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

Standard (CCV-1)

QC Batch: 54063 Date Analyzed: 2008-11-07 Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	240	96	85 - 115	2008-11-07

Standard (CCV-2)

QC Batch: 54063 Date Analyzed: 2008-11-07 Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	235	94	85 - 115	2008-11-07

Standard (ICV-1)

QC Batch: 54089 Date Analyzed: 2008-11-08 Analyzed By: AG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.0927	93	85 - 115	2008-11-08
Toluene		mg/Kg	0.100	0.0935	94	85 - 115	2008-11-08
Ethylbenzene		mg/Kg	0.100	0.0930	93	85 - 115	2008-11-08
Xylene		mg/Kg	0.300	0.268	89	85 - 115	2008-11-08

Standard (CCV-1)

QC Batch: 54089 Date Analyzed: 2008-11-08 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	0.0921	92	85 - 115	2008-11-08
Toluene		mg/Kg	0.100	0.0916	92	85 - 115	2008-11-08
Ethylbenzene		mg/Kg	0.100	0.0872	87	85 - 115	2008-11-08
Xylene		mg/Kg	0.300	0.256	85	85 - 115	2008-11-08

Standard (ICV-1)

QC Batch: 54090 Date Analyzed: 2008-11-08 Analyzed By: AG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.926	93	85 - 115	2008-11-08

Standard (CCV-1)

QC Batch: 54090 Date Analyzed: 2008-11-08 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	0.957	96	85 - 115	2008-11-08

Standard (ICV-1)

QC Batch: 54109 Date Analyzed: 2008-11-10 Analyzed By: LD

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	216	86	85 - 115	2008-11-10

Standard (CCV-1)

QC Batch: 54109 Date Analyzed: 2008-11-10 Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	228	91	85 - 115	2008-11-10

Standard (ICV-1)

QC Batch: 54122 Date Analyzed: 2008-11-10 Analyzed By: AG

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.10	110	85 - 115	2008-11-10

Standard (CCV-1)

QC Batch: 54122 Date Analyzed: 2008-11-10 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	1.01	101	85 - 115	2008-11-10

Standard (ICV-1)

QC Batch: 54208 Date Analyzed: 2008-11-12 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	2008-11-12

Standard (CCV-1)

QC Batch: 54208 Date Analyzed: 2008-11-12 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	2008-11-12

Standard (ICV-1)

QC Batch: 54209 Date Analyzed: 2008-11-12 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	2008-11-12

Standard (CCV-1)

QC Batch: 54209 Date Analyzed: 2008-11-12 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	2008-11-12

Standard (ICV-1)

QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.9	100	85 - 115	2008-11-13

Standard (ICV-1)

QC Batch: 54211 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.0	99	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54211 Date Analyzed: 2008-11-13 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	2008-11-13

Standard (ICV-1)

QC Batch: 54212 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54212 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2008-11-13

Standard (ICV-1)

QC Batch: 54213 Date Analyzed: 2008-11-13 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54213 Date Analyzed: 2008-11-13 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	2008-11-13

011063C

Analysis Request of Chain of Custody Record

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

PAGE: 1 OF: 8

CLIENT NAME: St Mary Land & Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 115-640 3613
PROJECT NAME: St Mary / Tuesday Federal #1
Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. (Ext. to C35)	TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
178542	10/30/08		S		X	BH - 1 0 - 1'	1				X			X												X				
543			S		X	BH - 1 2' - 3'	1				X															X				
544			S		X	BH - 1 4' - 5'	1				X															X				
545			S		X	BH - 1 6' - 7'	1				X															X				
546			S		X	BH - 1 8' - 9'	1				X															X				
547			S		X	BH - 1 10' - 11'	1				X															X				
548			S		X	BH - 1 15' - 16'	1				X															X				
549			S		X	BH - 1 20' - 21'	1				X															X				
550			S		X	BH - 1 25' - 26'	1				X															X				
551	↓		S		X	BH - 1 30' - 31'	1				X															X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) — Date: 11/6/08 Time: 15:30
RECEIVED BY: (Signature) — Date: 11-6-08 Time: 17:30
SAMPLED BY: (Print & Initial) Ray Taylor — Date: 10/31/08 Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.2

REMARKS: If TPH Exceeds 1,000 (mg/kg) run deeper interval, Also run 3 BTEX on the highest TPH's

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

811063U

Analysis Request of Chain of Custody Record

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

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: St Mary Land & Exploration

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-6403613

PROJECT NAME: St Mary/ Tuesday Federal #1 Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
178552	10/30/08		S		X	BH-1 35'-36'	1				X																		
553	↓		S		X	BH-1 40'-41'	1				X														X				
554			S		X	BH-1 45'-46'	1				X																		
555			S		X	BH-1 50'-51'	1				X														X				
556			S		X	BH-1 55'-56'	1				X																		
557			S		X	BH-1 60'-61'	1				X																		
558			S		X	BH-2 0-1'	1				X			X											X				
559			S		X	BH-2 2'-3'	1				X														X				
560			S		X	BH-2 4'-5'	1				X														X				
561	↓		S		X	BH-2 6'-7'	1				X														X				

RELINQUISHED BY: (Signature) [signature] Date: 11/6/08 Time: 1530

RECEIVED BY: (Signature) [signature] Date: 11-6-08 Time: 15:30

SAMPLED BY: (Print & Initial) [signature] Date: 10/31/08 Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS (HAND DELIVERED) UPS AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RECEIVING LABORATORY: Trace

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE: DATE: TIME:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.2

REMARKS:

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

8110630

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-640 3613

PROJECT NAME: St Mary / Tuesday Federal #1

Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
178562	10/30/08		S		X	BH-2 8'-9'	1				X	
563			S		X	BH-2 10'-11'	1				X	
564			S		X	BH-2 15'-16'	1				X	
565			S		X	BH-2 20'-21'	1				X	
566			S		X	BH-2 25'-26'	1				X	
567			S		X	BH-2 30'-31'	1				X	
568			S		X	BH-2 40'-41'	1				X	
569			S		X	BH-2 50'-51'	1				X	
570	↓		S		X	BH-2 60'-61'	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
												X				
												X				
												X				
												X				
												X				
												X				

RELINQUISHED BY: (Signature) Date: 11/5/08 Time: 15:30

RECEIVED BY: (Signature) Lindsey Wilson Date: 11-6-08 Time: 15:30

SAMPLED BY: (Print & Initial) Ike Taylor Date: 10/30/08 Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.2

REMARKS:

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

811063C

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 115-6403613
PROJECT NAME: St Mary / Tuesday Federal #1
Eddy County, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
178571	11/3/08		S		X	BH-3 0-1'	1				X			X											X				
572	"		S		X	BH-3 2'-3'	1				X														X				
573	"		S		X	BH-3 4'-5'	1				X														X				
574	"		S		X	BH-3 6'-7'	1				X														X				
575	"		S		X	BH-3 8'-9'	1				X														X				
576	"		S		X	BH-3 10'-11'	1				X														X				
577	"		S		X	BH-3 15'-16'	1				X																		
578	"		S		X	BH-3 20'-21'	1				X														X				
579	"		S		X	BH-3 25'-26'	1				X																		
580	↓		S		X	BH-3 30'-31'	1				X			X											X				

RELINQUISHED BY: (Signature) — Date: 11/6/08 Time: 15:30
RECEIVED BY: (Signature) Lonasey Tello — Date: 11-6-08 Time: 15:30
SAMPLED BY: (Print & Initial) Ray Taylor — Date: Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.2
REMARKS:

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

811U630

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 115-640 3613
PROJECT NAME: St Mary / Tuesday Federal #1
Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
78581	11/3/08		S		X	BH - 3 35' - 36'	1				X	
582			S		X	BH - 3 40' - 41'	1				X	
583			S		X	BH - 3 50' - 51'	1				X	
584			S		X	BH - 4 0 - 1'	1				X	
585			S		X	BH - 4 2' - 3'	1				X	
586			S		X	BH - 4 4' - 5'	1				X	
587			S		X	BH - 4 6' - 7'	1				X	
588			S		X	BH - 4 10' - 11'	1				X	
589			S		X	BH - 4 15' - 16'	1				X	
590	↓		S		X	BH - 4 20' - 21'	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	X											X				

RELINQUISHED BY: (Signature) — Date: 11/6/08 Time: 1530
RECEIVED BY: (Signature) Lindsay Wilson — Date: 11-6-08 Time: 15:30
SAMPLED BY: (Print & Initial) Ron Taylor RAT — Date: Time:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
TETRA TECH CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 3.2
REMARKS:

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

811050

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 115-640 3613
PROJECT NAME: St Mary / Tuesday Federal #1
Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
178591	11/3/08		S		X	BH-4 25'-26'	1				X	
592			S		X	BH-4 30'-31'	1				X	
593			S		X	BH-4 35'-36'	1				X	
594			S		X	BH-4 40'-41'	1				X	
595			S		X	BH-4 50'-51'	1				X	
596	11/4/08		S		X	BH-5 0-1'	1				X	
597			S		X	BH-5 2'-3'	1				X	
598			S		X	BH-5 4'-5'	1				X	
599			S		X	BH-5 6'-7'	1				X	
600			S		X	BH-5 8'-9'	1				X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
	X															
												X				
												X				

RELINQUISHED BY: (Signature) — Date: 11/6/08 Time: 15:26
RECEIVED BY: (Signature) Lindsay Wilson — Date: 11-6-08 Time: 15:30
SAMPLED BY: (Print & Initial) Ray Taylor RAT — Date: Time:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
TETRA TECH CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No
SAMPLE CONDITION WHEN RECEIVED: 3.2
REMARKS:

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

8110630

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 115-640 3613
PROJECT NAME: St Mary/Tuesday Federal #1
Eddy County, NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. (Ext. to C35) TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
178601	11/4/08		S		X	BH-5 10'-11'	1				X													X				
602	"		S		X	BH-5 15'-16'	1				X													X				
603	"		S		X	BH-5 20'-21'	1				X													X				
604	"		S		X	BH-5 25'-26'	1				X													X				
605	↓		S		X	BH-5 30'-31'	1				X													X				
606	11/3/08		S		X	Background 0-1'	1				X													X				
607	"		S		X	Background 5'-6'	1				X													X				
608	"		S		X	Background 10'-11'	1				X													X				
609	"		S		X	Background 15'-16'	1				X													X				
610	↓		S		X	Background 20'-21'	1				X													X				

RELINQUISHED BY: (Signature) — Date: 11/5/08 Time: 1530
RECEIVED BY: (Signature) Lindsay Belo — Date: 11-6-08 Time: 15:30
SAMPLED BY: (Print & Initial) Ray Taylor RPT — Date: Time:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:
RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:
RECEIVING LABORATORY: Trace — RECEIVED BY: (Signature)
ADDRESS:
CITY: Midland STATE: TX ZIP:
CONTACT: PHONE: DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 5.2
REMARKS:

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

811C50

Analysis Request of Chain of Custody Record

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

CLIENT NAME: St Mary Land & Exploration

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-6403613

PROJECT NAME: St Mary/Tuesday Federal #1 Eddy County, NM

ANALYSIS REQUEST (Circle or Specify Method No.): BTEX 8021B (circled); TPH 8015 MOD. (circled) TX1005 (Ext. to C35); PAH 8270; RCRA Metals Ag As Ba Cd Cr Pb Hg Se; TCLP Metals Ag As Ba Cd Vr Pd Hg Se; TCLP Volatiles; TCLP Semi Volatiles; RCI; GC.MS Vol. 8240/8260/624; GC.MS Semi. Vol. 8270/625; PCB's 8080/608; Pest. 808/608; Chloride (circled); Gamma Spec.; Alpha Beta (Air); PLM (Asbestos); Major Anions/Cations, pH, TDS

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	Chloride
178611	11/3/08		S		X	Background 30'-31'	1				X		X
612	11/3/08		S		X	Background 40'-41'	1				X		X

RELINQUISHED BY: (Signature) [signature] Date: 11/6/08 Time: 1530

RECEIVED BY: (Signature) Lindsay Wilder Date: 11-6-08 Time: 15:30

SAMPLED BY: (Print & Initial) Ray Taylor RPT Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #: HAND DELIVERED (circled) UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Trace

RECEIVED BY: (Signature)

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE: DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 3.2

REMARKS:

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

Summary Report

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

Report Date: March 31, 2009

Work Order: 9031723

Project Location: Eddy County, NM
Project Name: St. Mary/Tuesday Federal #1
Project Number: 115-6403613

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
190477	TMW-1	water	2009-03-16	15:15	2009-03-17

Sample: 190477 - TMW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		**84.0**	mg/L as CaCo3	4.00
Total Alkalinity		**84.0**	mg/L as CaCo3	4.00
Dissolved Calcium		**520**	mg/L	1.00
Chloride		**280**	mg/L	0.500
Hardness (by ICP)		**1780**	mg eq CaCO3/L	0.00
Dissolved Potassium		**9.57**	mg/L	1.00
Dissolved Magnesium		**116**	mg/L	1.00
Dissolved Sodium		**147**	mg/L	1.00
pH		**7.78**	s.u.	0.00
Sulfate		**1800**	mg/L	0.500
Total Dissolved Solids		**2530**	mg/L	10.0

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: March 31, 2009

Work Order: 9031723

Project Location: Eddy County, NM
Project Name: St. Mary/Tuesday Federal #1
Project Number: 115-6403613

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
190477	TMW-1	water	2009-03-16	15:15	2009-03-17

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

Standard Flags

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

Case Narrative

Samples for project St. Mary/Tuesday Federal #1 were received by TraceAnalysis, Inc. on 2009-03-17 and assigned to work order 9031723. Samples for work order 9031723 were received intact at a temperature of 3.7 deg. C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Alkalinity	SM 2320B	49376	2009-03-19 at 10:14	57796	2009-03-19 at 16:15
Ca, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
Chloride (IC)	E 300.0	49602	2009-03-30 at 08:39	58113	2009-03-31 at 08:30
Hardness	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
K, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
Mg, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
Na, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
pH	SM 4500-H+	49297	2009-03-17 at 15:30	57707	2009-03-17 at 16:19
SO4 (IC)	E 300.0	49602	2009-03-30 at 08:39	58113	2009-03-31 at 08:30
TDS	SM 2540C	49328	2009-03-18 at 12:09	57885	2009-03-23 at 14:56

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9031723 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: 190477 - TMW-1

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	57796	Date Analyzed:	2009-03-19	Analyzed By:	AR
Prep Batch:	49376	Sample Preparation:	2009-03-19	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		**84.0**		mg/L as CaCo3	1	4.00
Total Alkalinity		**84.0**		mg/L as CaCo3	1	4.00

Sample: 190477 - TMW-1

Laboratory:	Lubbock				
Analysis:	Ca, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	Sample Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Calcium		**520**		mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	58113	Date Analyzed:	2009-03-31	Analyzed By:	AR
Prep Batch:	49602	Sample Preparation:	2009-03-30	Prepared By:	AR

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**280**		mg/L	50	0.500

Sample: 190477 - TMW-1

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010B	Prep Method:	N/A
QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	Sample Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		**1780**		mg eq CaCO3/L	1	0.00

Sample: 190477 - TMW-1

Laboratory:	Lubbock				
Analysis:	K, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	Sample Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Potassium		**9.57**		mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:	Lubbock				
Analysis:	Mg, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	Sample Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Magnesium		**116**		mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:	Lubbock				
Analysis:	Na, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	Sample Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Sodium		**147**		mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	57707	Date Analyzed:	2009-03-17	Analyzed By:	AR
Prep Batch:	49297	Sample Preparation:	2009-03-17	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
pH		**7.78**	s.u.	1	0.00

Sample: 190477 - TMW-1

Laboratory:	Midland				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	58113	Date Analyzed:	2009-03-31	Analyzed By:	AR
Prep Batch:	49602	Sample Preparation:	2009-03-30	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		**1800**	mg/L	50	0.500

Sample: 190477 - TMW-1

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	57885	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49328	Sample Preparation:	2009-03-18	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		**2530**	mg/L	2	10.0

Method Blank (1) QC Batch: 57796

QC Batch:	57796	Date Analyzed:	2009-03-19	Analyzed By:	AR
Prep Batch:	49376	QC Preparation:	2009-03-19	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 57885

QC Batch:	57885	Date Analyzed:	2009-03-23	Analyzed By:	AR
Prep Batch:	49328	QC Preparation:	2009-03-18	Prepared By:	AR

Parameter	Flag	MDL Result	Units	RL
Total Dissolved Solids		<5.00	mg/L	10

Method Blank (1) QC Batch: 57934

QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	QC Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	MDL Result	Units	RL
Dissolved Calcium		<0.117	mg/L	1

Method Blank (1) QC Batch: 57934

QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	QC Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	MDL Result	Units	RL
Dissolved Potassium		<0.172	mg/L	1

Method Blank (1) QC Batch: 57934

QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	QC Preparation:	2009-03-23	Prepared By:	KV

Parameter	Flag	MDL Result	Units	RL
Dissolved Magnesium		<0.160	mg/L	1

Method Blank (1) QC Batch: 57934

QC Batch:	57934	Date Analyzed:	2009-03-25	Analyzed By:	RR
Prep Batch:	49435	QC Preparation:	2009-03-23	Prepared By:	KV

continued ...

method blank continued ...

Parameter	Flag	MDL Result	Units	RL

Parameter	Flag	MDL Result	Units	RL
Dissolved Sodium		<0.0500	mg/L	1

Method Blank (1) QC Batch: 58113

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR
Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.475	mg/L	0.5

Method Blank (1) QC Batch: 58113

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR
Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.217	mg/L	0.5

Duplicates (1) Duplicated Sample: 190478

QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: AR
Prep Batch: 49297 QC Preparation: 2009-03-17 Prepared By: AR

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	7.90	7.86	s.u.	1	0	1.5

Duplicates (1) Duplicated Sample: 190540

QC Batch: 57796 Date Analyzed: 2009-03-19 Analyzed By: AR
Prep Batch: 49376 QC Preparation: 2009-03-19 Prepared By: AR

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	181	182	mg/L as CaCo3	1	1	20
Total Alkalinity	181	182	mg/L as CaCo3	1	1	20

Duplicates (1) Duplicated Sample: 190478

QC Batch: 57885 | Date Analyzed: 2009-03-23 | Analyzed By: AR
Prep Batch: 49328 | QC Preparation: 2009-03-18 | Prepared By: AR

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	2820	2690	mg/L	2	5	20

Laboratory Control Spike (LCS-1)

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium	49.4	mg/L	1	50.0	<0.117	99	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
Dissolved Calcium	47.5	mg/L	1	50.0	<0.117	95	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: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Potassium	45.2	mg/L	1	50.0	<0.172	90	85 - 115

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

continued ...

control spikes continued ...

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Potassium	43.8	mg/L	1	50.0	<0.172	88	85 - 115	3	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: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR
Prep Batch: 49435 QC Preparation: 2009-03-23 Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Magnesium	47.7	mg/L	1	50.0	<0.160	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
Dissolved Magnesium	45.9	mg/L	1	50.0	<0.160	92	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: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR
Prep Batch: 49435 QC Preparation: 2009-03-23 Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium	51.4	mg/L	1	50.0	<0.0500	103	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
Dissolved Sodium	50.5	mg/L	1	50.0	<0.0500	101	85 - 115	2	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: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR
Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	12.5	mg/L	1	12.5	<0.475	100	90 - 110

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	12.6	mg/L	1	12.5	<0.475	101	90 - 110	1	

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: 58113 | Date Analyzed: 2009-03-31 | Analyzed By: AR
Prep Batch: 49602 | QC Preparation: 2009-03-30 | Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate	13.4	mg/L	1	12.5	<0.217	107	90 - 110

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
Sulfate	13.4	mg/L	1	12.5	<0.217	107	90 - 110	0	

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

Matrix Spike (MS-1) Spiked Sample: 190255

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium	851	mg/L	1	50.0	796	110	75 - 125

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
Dissolved Calcium	848	mg/L	1	50.0	796	104	75 - 125	0	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: 190255

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Potassium	64.9	mg/L	1	50.0	19.8	90	75 - 125

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
Dissolved Potassium	64.8	mg/L	1	50.0	19.8	90	75 - 125	0	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: 190255

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Magnesium	189	mg/L	1	50.0	142	94	75 - 125

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
Dissolved Magnesium	189	mg/L	1	50.0	142	94	75 - 125	0	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: 190255

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR
Prep Batch: 49435 | QC Preparation: 2009-03-23 | Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium	876	mg/L	1	50.0	820	112	75 - 125

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
Dissolved Sodium	882	mg/L	1	50.0	820	124	75 - 125	1	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: 191564

QC Batch: 58113 | Date Analyzed: 2009-03-31 | Analyzed By: AR
Prep Batch: 49602 | QC Preparation: 2009-03-30 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	2880	mg/L	100	1250	1622	101	90 - 110

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	2890	mg/L	100	1250	1622	101	90 - 110	0	

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

Matrix Spike (MS-1) Spiked Sample: 191564

QC Batch: 58113 | Date Analyzed: 2009-03-31 | Analyzed By: AR
Prep Batch: 49602 | QC Preparation: 2009-03-30 | Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate [1]	3670	mg/L	100	1250	2279	111	90 - 110

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
Sulfate	3660	mg/L	100	1250	2279	110	90 - 110	0	

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

Standard (ICV-1)

QC Batch: 57707 | Date Analyzed: 2009-03-17 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.15	102	98 - 102	2009-03-17

Standard (CCV-1)

QC Batch: 57707 | Date Analyzed: 2009-03-17 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	6.96	99	98 - 102	2009-03-17

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

Standard (ICV-1)

QC Batch: 57796 | Date Analyzed: 2009-03-19 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2009-03-19
Carbonate Alkalinity		mg/L as CaCo3	0.00	248		0 - 200	2009-03-19
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	7.00		0 - 200	2009-03-19
Total Alkalinity		mg/L as CaCo3	250	255	102	90 - 110	2009-03-19

Standard (CCV-1)

QC Batch: 57796 | Date Analyzed: 2009-03-19 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2009-03-19
Carbonate Alkalinity		mg/L as CaCo3	0.00	258		0 - 200	2009-03-19
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2009-03-19
Total Alkalinity		mg/L as CaCo3	250	260	104	90 - 110	2009-03-19

Standard (ICV-1)

QC Batch: 57885 | Date Analyzed: 2009-03-23 | Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1030	103	90 - 110	2009-03-23

Standard (CCV-1)

QC Batch: 57885 | Date Analyzed: 2009-03-23 | Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	998	100	90 - 110	2009-03-23

Standard (ICV-1)

QC Batch: 57934 | Date Analyzed: 2009-03-25 | Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	50.0	52.4	105	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Potassium		mg/L	50.0	49.0	98	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Magnesium		mg/L	50.0	52.5	105	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		mg/L	50.0	48.6	97	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	50.0	50.5	101	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Potassium		mg/L	50.0	47.7	95	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Magnesium		mg/L	50.0	48.5	97	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		mg/L	50.0	53.3	107	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.5	100	90 - 110	2009-03-31

Standard (ICV-1)

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	13.8	110	90 - 110	2009-03-31

Standard (CCV-1)

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.5	100	90 - 110	2009-03-31

Standard (CCV-1)

QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	13.3	106	90 - 110	2009-03-31

9057125

Analysis Request of Chain of Custody Record

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

PAGE: 1 OF: 1

CLIENT NAME: St. Marys

SITE MANAGER: Ike Tavarez

PROJECT NO.: 115-640 3613

PROJECT NAME: St. Marys / Tuesday Fed. Eddy Co. NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
19047	3/4/2005	15:15	W		X	TMW-1	1	N			X	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations/TDS					
																X					

RELINQUISHED BY: (Signature) John Knilley — Date: March 7, 2005 — Time: 1440

RECEIVED BY: (Signature) Lindsey Wells — Date: 3/7/05 — Time: 14:40

SAMPLED BY: (Print & Initial) Robert Cobbs TC — Date: 3/6/05 — Time: 1510

RELINQUISHED BY: (Signature) — Date: — Time:

RECEIVED BY: (Signature) — Date: — Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS

AIRBILL #:

OTHER:

RELINQUISHED BY: (Signature) — Date: — Time:

RECEIVED BY: (Signature) — Date: — Time:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

RECEIVING LABORATORY: Traces

ADDRESS:

CITY: Midland STATE: TX ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature)

DATE: TIME:

SAMPLE CONDITION WHEN RECEIVED: 3.7

REMARKS: Alkalinity, chlorides, pH, SO4, TDS - Midland Ca, K, Mg, Na, Hardness - Lubbock

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

Cation-Anion Balance Sheet

DATE: 3/31/2009

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
190477	520	116	147	9.57	84	1800	280				2530	

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	Bromide in meq/L	**Cations in meq/L**	**Anions in meq/L**	**Percentage Error**
190477	25.95	9.55	6.39	0.24	1.68	37.48	7.90	0	0	0	42.13	47.05	11.0370761

	EC/Cation	EC/Anion					TDS/EC	TDS/Cat	TDS/Anion	
190477	4213.29406	4705.48	range	0	to	0	#DIV/0!	0.60	0.54	needs to be 0.55-0.77