3R - 77

REPORTS

DATE:

2000

ThermoRetec

2000 Annual Groundwater Monitoring Report

Former Maverik Refinery Tank Farm
Kirtland, New Mexico

Prepared by:

ThermoRetec Consulting Corporation
1726 Cole Boulevard
Building 22, Suite 150
Golden, Colorado 80401

ThermoRetec Project Number: MCS00-04073-301

Prepared for:

Maverik Country Stores, Inc.
880 W Center Street
North Salt Lake UT 84054

December 20, 2000

2000 Annual Groundwater Monitoring Report

Former Maverik Refinery Tank Farm
Kirtland, New Mexico

Prepared by:

ThermoRetec Consulting Corporation
1726 Cole Boulevard
Building 22, Suite 150
Golden, Colorado 80401

ThermoRetec Project Number: MCS00-04073-301

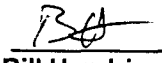
Prepared for:

Maverik Country Stores, Inc.
880 W Center Street
North Salt Lake UT 84054

Prepared by:

Matt Webre, Project Geologist, ThermoRetec

Reviewed by:



Bill Hendrix, Project Manager, ThermoRetec

December 20, 2000

Table of Contents

List of Tables

List of Figures

List of Appendices

1 Introduction

This report presents the results for the 2000 annual groundwater monitoring and sampling event conducted at the Former Maverik Refinery Tank Farm, located in Kirtland, New Mexico. This event represents the second annual groundwater monitoring and sampling event completed since semi-annual monitoring and sampling was terminated.

Groundwater monitoring and sampling was conducted on October 27, 2000. This annual monitoring event was coordinated by ThermoRetec Consulting Corporation (ThermoRetec) on behalf of Maverik Country Stores, Inc. (Maverik).

Fieldwork was completed as proposed in Section 5 of the *1998 Annual Groundwater Monitoring Report* (ThermoRetec, 1998) and agreed upon with modifications in a letter from the New Mexico Oil Conservation Division (NMOCD) dated March 19, 1999.

2 Description of Field Activities

2.1 Groundwater Measurements

On October 27, 2000, the depth to groundwater and total well depth measurements were collected at the following monitoring wells:

- Located outside the slurry wall impoundment:
- MW-10, MW-14, MW-16, MW-18, MW- 19, MW-20, MW-21.
- Located inside the slurry wall impoundment:
- MW-17 and MW-22.

Groundwater and total well depth measurements were not collected from MW-1, MW-2, MW-9, and MW-15.

Depth to groundwater and total well depth was measured using an electronic oil-water interface probe. The probe was properly decontaminated prior to and after each measurement of each groundwater monitoring well. Measurements were recorded on groundwater monitoring data sheets included in Appendix A. Table 1 summarizes the corrected groundwater level elevations.

2.2 Groundwater Sampling and Analysis

The additional field activities for groundwater monitoring included measurement of pH, temperature, specific conductivity, oxidation/reduction potential and dissolved oxygen in addition to collecting representative groundwater samples. Groundwater sampling activities were completed in accordance with the standard United States Environmental Protection Agency (USEPA) sampling protocol.

Sampled monitoring wells were purged with a disposable bailer until three casing volumes were removed (with the exception of wells that bailed dry or had low recharge rates) and pH and specific conductivity measurements had stabilized. Field parameter measurements and water quality observations were recorded on groundwater monitoring field data sheets included in Appendix A. After purging, samples were collected from the wells using a disposable bailer.

On October 27, 2000, the following wells MW-10, MW-14, MW-16, MW-17 MW-18, MW-19, MW-20, MW-21, and MW-22 were sampled and analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) and 1,2-dichloroethane (DCA) using EPA Method 8021.

3 Summary of Monitoring and Sampling Results

3.1 Fluid Level Measurements

Historic groundwater elevation data are presented in Table 1, *Summary of Corrected Groundwater Elevations*. Corrected groundwater elevations were calculated using an assumed product density of 0.8 when necessary. A groundwater elevation map was completed using these data and is presented as Figure 1, *Groundwater Elevation Map, October 2000*. Groundwater flow direction is generally to the southeast, which is typical of past observations. The groundwater gradient is approximately 0.10 feet/feet.

October 2000 fluid level measurements demonstrate that water levels were approximately one foot higher than those measured during the October 1999 annual monitoring event. Free product was not reported in any of the monitoring wells; however, hydrocarbon sheens were reported in MW-14, MW-17, MW-18, MW-20 and MW-22, located upgradient of the slurry wall impoundment, within the slurry wall, and east of the slurry wall, respectively. Sheens or thin product layers have historically been detected sporadically within the slurry wall. Water table fluctuations likely contribute to the sporadic presence of product observed in monitoring wells. Analytical data collected from wells MW-14 and MW-20 suggest that the reported sheens are not representative of the wells based on non-detectable levels of the analyzed constituents.

3.2 Water Quality Analyses

Water quality monitoring results for the October 2000 annual sampling event are summarized in Table 2. The laboratory analytical report for the 2000 annual event is included in Appendix B. Figure 2 presents the concentrations of DCA, benzene, and total BTEX detected in each well sampled during the 2000 annual sampling event.

During the 2000 annual event, no wells outside of the slurry wall exceeded analyte concentrations above New Mexico Water Quality Standards. A graph of benzene and BTEX concentrations over time for MW-18 is presented in Figure 3; the graph demonstrates a general decreasing concentration trend. Analytes were not detected in any of the other wells outside the slurry wall. These results are consistent with past results.

Monitoring wells MW-17 and MW-22 are located within the confines of the slurry wall where elevated hydrocarbon levels have been historically encountered. Analytical results from these wells indicate a general decreasing trend of BTEX concentrations in groundwater (Figures 4 and 5). The decrease in BTEX concentrations is likely the cumulative effect of

biodegradation within the aquifer and volatilization of BTEX from the unsaturated zone. This decrease is expected to continue.

4 Conclusions and Recommendations

Data indicate that the slurry wall has maintained its integrity and is performing its planned function of containing the gasoline-affected groundwater. BTEX and DCA were not detected in monitoring wells downgradient from the slurry wall. Historical analytical results suggest that natural attenuation of organic contaminants in the groundwater at the site is likely occurring. The annual groundwater sampling and reporting program will be continued in 2001.

Tables

Table 1 Summary of Corrected Groundwater Elevations
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
Outside Slurry Wall						
MW-1	Jan-92	5,205.75	5,207.24	10.90	0	5,196.34
	Jun-92	5,205.75	5,207.24	8.40	0	5,198.84
	Aug-92	5,205.75	5,207.24	6.00	0	5,201.24
	Dec-92	5,205.75	5,207.24	8.00	0	5,199.24
	Mar-93	5,205.75	5,207.24	12.30	0	5,194.94
	May-93	5,205.75	5,207.24	NM	0	NM
	Nov-93	5,205.75	5,207.24	NM	0	NM
	May-94	5,205.75	5,207.24	NM	0	NM
	Oct-94	5,205.75	5,207.24	NM	0	NM
	May-95	5,205.75	5,207.24	NM	0	NM
	Oct-95	5,205.75	5,207.24	NM	0	NM
	May-96	5,205.75	5,207.24	NM	0	NM
	Oct-96	5,205.75	5,207.24	10.97	0	5,196.27
	Jun-97	5,205.75	5,207.24	13.58	0	5,193.66
	Oct-97	5,205.75	5,207.24	11.87	0	5,195.37
	May-98	5,205.75	5,207.24	16.17	0	5,191.07
	Dec-98	5,205.75	5,207.24	NM	NM	NM
	Oct-99	5,205.75	5,207.24	10.66	0	5,196.58
	Oct-00	5,205.75	5,207.24	NM	NM	NM
MW-2	Jan-92	5,195.25	5,196.93	3.80	0	5,193.13
	Jun-92	5,195.25	5,196.93	4.40	0	5,192.53
	Aug-92	5,195.25	5,196.93	3.80	0	5,193.13
	Dec-92	5,195.25	5,196.93	2.50	0	5,194.43
	Mar-93	5,195.25	5,196.93	4.50	0	5,192.43
	May-93	5,195.25	5,196.93	NM	0	NM
	Nov-93	5,195.25	5,196.93	NM	0	NM
	May-94	5,195.25	5,196.93	NM	0	NM
	Oct-94	5,195.25	5,196.93	NM	0	NM
	May-95	5,195.25	5,196.93	NM	0	NM
	Oct-95	5,195.25	5,196.93	NM	0	NM
	May-96	5,195.25	5,196.93	NM	0	NM
	Oct-96	5,195.25	5,196.93	5.99	0	5,190.94
	Jun-97	5,195.25	5,196.93	7.51	0	5,189.42
	Oct-97	5,195.25	5,196.93	6.66	0	5,190.27
	May-98	5,195.25	5,196.93	8.22	0	5,188.71
	Dec-98	5,195.25	5,196.93	NM	NM	NM
	Oct-99	5,195.25	5,196.93	6.51	0	5,190.42
	Oct-00	5,195.25	5,196.93	NM	NM	NM
MW-9	Jan-92	5,189.33	5,191.22	1.50	0	5,189.72
	Jun-92	5,189.33	5,191.22	2.30	0	5,188.92
	Aug-92	5,189.33	5,191.22	1.80	0	5,189.42
	Dec-92	5,189.33	5,191.22	0.60	0	5,190.62
	Mar-93	5,189.33	5,191.22	1.80	0	5,189.42
	May-93	5,189.33	5,191.22	NM	0	NM
	Nov-93	5,189.33	5,191.22	1.30	0	5,189.92
	May-94	5,189.33	5,191.22	NM	0	NM
	Oct-94	5,189.33	5,191.22	2.03	0	5,189.19
	May-95	5,189.33	5,191.22	NM	0	NM
	Oct-95	5,189.33	5,191.22	4.22	0	5,187.00
	May-96	5,189.33	5,191.22	NM	0	NM
	Oct-96	5,189.33	5,191.22	3.88	0	5,187.34
	Jun-97	5,189.33	5,191.22	5.59	0	5,185.63
	Oct-97	5,189.33	5,191.22	5.06	0	5,186.16
	May-98	5,189.33	5,191.22	5.89	0	5,185.33
	Dec-98	5,189.33	5,191.22	3.96	0	5,187.26
	Oct-99	5,189.33	5,191.22	4.82	0	5,186.40
	Oct-00	5,189.33	5,191.22	NM	NM	NM

Table 1 Summary of Corrected Groundwater Elevations Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-10	Jan-92	5,187.47	5,189.30	1.60	0	5,187.70
	Jun-92	5,187.47	5,189.30	2.70	0	5,186.60
	Aug-92	5,187.47	5,189.30	2.90	0	5,186.40
	Dec-92	5,187.47	5,189.30	0.90	0	5,188.40
	Mar-93	5,187.47	5,189.30	1.60	0	5,187.70
	May-93	5,187.47	5,189.30	2.80	0	5,186.50
	Nov-93	5,187.47	5,189.30	1.80	0	5,187.50
	May-94	5,187.47	5,189.30	4.47	0	5,184.83
	Oct-94	5,187.47	5,189.30	2.97	0	5,186.33
	May-95	5,187.47	5,189.30	4.42	0	5,184.88
	Oct-95	5,187.47	5,189.30	4.60	0	5,184.70
	May-96	5,187.47	5,189.30	4.28	0	5,185.02
	Oct-96	5,187.47	5,189.30	4.23	0	5,185.07
	Jun-97	5,187.47	5,189.30	5.37	0	5,183.93
	Oct-97	5,187.47	5,189.30	4.90	0	5,184.40
	May-98	5,187.47	5,189.30	5.52	0	5,183.78
	Dec-98	5,187.47	5,189.30	3.76	0	5,185.54
	Oct-99	5,187.47	5,189.30	4.85	0	5,184.45
	Oct-00	5,187.47	5,189.30	3.93	0	5,185.37
MW-13	Jan-92	5,187.56	5,187.76	NM	0	NM
	Jun-92	5,187.56	5,187.76	2.80	0	5,184.96
	Aug-92	5,187.56	5,187.76	2.70	0	5,185.06
	Dec-92	5,187.56	5,187.76	1.10	0	5,186.66
	Mar-93	5,187.56	5,187.76	1.70	0	5,186.06
	May-93	5,187.56	5,187.76	NM	0	NM
	Nov-93	5,187.56	5,187.76	1.40	0	5,186.36
	May-94	5,187.56	5,187.76	NM	0	NM
	Oct-94	5,187.56	5,187.76	2.91	0	5,184.85
	May-95	5,187.56	5,187.76	NM	0	NM
	Oct-95	5,187.56	5,187.76	3.23	0	5,184.53
	May-96	5,187.56	5,187.76	NM	0	NM
	Oct-96	5,187.56	5,187.76	2.52	0	5,185.24
	Jun-97	5,187.56	5,187.76	4.08	0	5,183.68
	Oct-97	5,187.56	5,187.76	4.12	0	5,183.64
	May-98	5,187.56	5,187.76	4.03	0	5,183.73
	Dec-98	5,187.56	5,187.76	2.17	0	5,185.59
Well Destroyed	Oct-99	5,187.56	5,187.76	NA	0	NA
MW-14	Jan-92	5,190.70	5,194.47	2.10	0	5,192.37
	Jun-92	5,190.70	5,194.47	4.10	0	5,190.37
	Aug-92	5,190.70	5,194.47	4.20	0	5,190.27
	Dec-92	5,190.70	5,194.47	0.70	0	5,193.77
	Mar-93	5,190.70	5,194.47	2.20	0	5,192.27
	May-93	5,190.70	5,194.47	NM	0	NM
	Nov-93	5,190.70	5,194.47	1.70	0	5,192.77
	May-94	5,190.70	5,194.47	NM	0	NM
	Oct-94	5,190.70	5,194.47	4.27	0	5,190.20
	May-95	5,190.70	5,194.47	NM	0	NM
	Oct-95	5,190.70	5,194.47	8.09	0	5,186.38
	May-96	5,190.70	5,194.47	NM	0	NM
	Oct-96	5,190.70	5,194.47	7.52	0	5,186.95
	Jun-97	5,190.70	5,194.47	8.95	0	5,185.52
	Oct-97	5,190.70	5,194.47	8.87	0	5,185.60
	May-98	5,190.70	5,194.47	9.02	0	5,185.45
	Dec-98	5,190.70	5,194.47	6.74	0	5,187.73
	Oct-99	5,190.70	5,194.47	8.21	0	5,186.26
	Oct-00	5,190.70	5,194.47	7.30	Slight Sheen	5,187.17

Table 1 Summary of Corrected Groundwater Elevations Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-15	Jan-92	5,185.40	5,188.80	0.80	0	5,188.00
	Jun-92	5,185.40	5,188.80	2.20	0	5,186.60
	Aug-92	5,185.40	5,188.80	2.40	0	5,186.40
	Dec-92	5,185.40	5,188.80	0.10	0	5,188.70
	Mar-93	5,185.40	5,188.80	0.60	0	5,188.20
	May-93	5,185.40	5,188.80	NM	0	NM
	Nov-93	5,185.40	5,188.80	0.60	0	5,188.20
	May-94	5,185.40	5,188.80	NM	0	NM
	Oct-94	5,185.40	5,188.80	1.86	0	5,186.94
	May-95	5,185.40	5,188.80	NM	0	NM
	Oct-95	5,185.40	5,188.80	5.79	0	5,183.01
	May-96	5,185.40	5,188.80	NM	0	NM
	Oct-96	5,185.40	5,188.80	5.32	0	5,183.48
	Jun-97	5,185.40	5,188.80	6.07	0	5,182.73
	Oct-97	5,185.40	5,188.80	5.57	0	5,183.23
	May-98	5,185.40	5,188.80	5.53	0	5,183.27
	Dec-98	5,185.40	5,188.80	4.39	0	5,184.41
	Oct-99	5,185.40	5,188.80	5.86	0	5,182.94
	Oct-00	5,185.40	5,188.80	NM	NM	NM
MW-16	Jan-92	5,193.74	5,194.98	3.40	0	5,191.58
	Jun-92	5,193.74	5,194.98	4.50	0	5,190.48
	Aug-92	5,193.74	5,194.98	3.30	0	5,191.68
	Dec-92	5,193.74	5,194.98	1.90	0	5,193.08
	Mar-93	5,193.74	5,194.98	4.00	0	5,190.98
	May-93	5,193.74	5,194.98	NM	0	NM
	Nov-93	5,193.74	5,194.98	3.00	0	5,191.98
	May-94	5,193.74	5,194.98	NM	0	NM
	Oct-94	5,193.74	5,194.98	4.53	0	5,190.45
	May-95	5,193.74	5,194.98	NM	0	NM
	Oct-95	5,193.74	5,194.98	6.03	0	5,188.95
	May-96	5,193.74	5,194.98	NM	0	NM
	Oct-96	5,193.74	5,194.98	7.61	0	5,187.37
	Jun-97	5,193.74	5,194.98	7.72	0	5,187.26
	Oct-97	5,193.74	5,194.98	7.20	0	5,187.78
	May-98	5,193.74	5,194.98	8.36	0	5,186.62
	Dec-98	5,193.74	5,194.98	5.58	0	5,189.40
	Oct-99	5,193.74	5,194.98	6.72	0	5,188.26
	Oct-00	5,193.74	5,194.98	5.76	0	5,189.22
MW-18	Jan-92	5,199.14	5,201.75	NM	0	NM
	Jun-92	5,199.14	5,201.75	7.10	0	5,194.65
	Aug-92	5,199.14	5,201.75	5.00	0	5,196.75
	Dec-92	5,199.14	5,201.75	4.50	0	5,197.25
	Mar-93	5,199.14	5,201.75	6.70	0	5,195.05
	May-93	5,199.14	5,201.75	7.10	0	5,194.65
	Nov-93	5,199.14	5,201.75	5.20	0	5,196.55
	May-94	5,199.14	5,201.75	9.58	0	5,192.17
	Oct-94	5,199.14	5,201.75	8.60	0	5,193.15
	May-95	5,199.14	5,201.75	11.82	0	5,189.93
	Oct-95	5,199.14	5,201.75	10.69	0	5,191.06
	May-96	5,199.14	5,201.75	11.81	0	5,189.94
	Oct-96	5,199.14	5,201.75	10.35	0	5,191.40
	Jun-97	5,199.14	5,201.75	12.46	0	5,189.29
	Oct-97	5,199.14	5,201.75	11.96	0	5,189.79
	May-98	5,199.14	5,201.75	13.72	0	5,188.03
	Dec-98	5,199.14	5,201.75	10.37	0	5,191.38
	Oct-99	5,199.14	5,201.75	11.51	Slight Sheen	5,190.24
	Oct-00	5,199.14	5,201.75	10.48	Slight Sheen	5,191.27

Table 1 Summary of Corrected Groundwater Elevations Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
MW-19	Jan-92	5188.58	5189.54	1.00	0	5,188.54
	Jun-92	5188.58	5189.54	2.00	0	5,187.54
	Aug-92	5188.58	5189.54	1.90	0	5,187.64
	Dec-92	5188.58	5189.54	0.30	0	5,189.24
	Mar-93	5188.58	5189.54	1.20	0	5,188.34
	May-93	5188.58	5189.54	2.20	0	5,187.34
	Nov-93	5188.58	5189.54	1.00	0	5,188.54
	May-94	5188.58	5189.54	3.43	0	5,186.11
	Oct-94	5188.58	5189.54	2.48	0	5,187.06
	May-95	5188.58	5189.54	3.50	0	5,186.04
	Oct-95	5188.58	5189.54	3.44	0	5,186.10
	May-96	5188.58	5189.54	3.42	0	5,186.12
	Oct-96	5188.58	5189.54	2.97	0	5,186.57
	Jun-97	5188.58	5189.54	4.51	0	5,185.03
	Oct-97	5188.58	5189.54	3.99	0	5,185.55
	May-98	5188.58	5189.54	4.62	0	5,184.92
	Dec-98	5188.58	5189.54	2.68	0	5,186.86
	Oct-99	5188.58	5189.54	3.70	0	5,185.84
	Oct-00	5188.58	5189.54	2.84	0	5,186.70
MW-20	Jan-92	5,190.10	5,191.05	2.60	0	5,188.45
	Jun-92	5,190.10	5,191.05	3.50	0	5,187.55
	Aug-92	5,190.10	5,191.05	3.50	0	5,187.55
	Dec-92	5,190.10	5,191.05	1.80	0	5,189.25
	Mar-93	5,190.10	5,191.05	2.70	0	5,188.35
	May-93	5,190.10	5,191.05	3.70	0	5,187.35
	Nov-93	5,190.10	5,191.05	2.60	0	5,188.45
	May-94	5,190.10	5,191.05	5.76	0	5,185.29
	Oct-94	5,190.10	5,191.05	3.83	0	5,187.22
	May-95	5,190.10	5,191.05	4.78	0	5,186.27
	Oct-95	5,190.10	5,191.05	4.71	0	5,186.34
	May-96	5,190.10	5,191.05	4.57	0	5,186.48
	Oct-96	5,190.10	5,191.05	4.35	0	5,186.70
	Jun-97	5,190.10	5,191.05	5.65	0	5,185.40
	Oct-97	5,190.10	5,191.05	5.15	0	5,185.90
	May-98	5,190.10	5,191.05	5.73	0	5,185.32
	Dec-98	5,190.10	5,191.05	4.05	0	5,187.00
	Oct-99	5,190.10	5,191.05	5.10	0	5,185.95
	Oct-00	5,190.10	5,191.05	4.11	Sheen	5,186.94
MW-21	Jan-92	5,193.62	5,194.81	2.80	0	5,192.01
	Jun-92	5,193.62	5,194.81	4.30	0	5,190.51
	Aug-92	5,193.62	5,194.81	4.60	0	5,190.21
	Dec-92	5,193.62	5,194.81	2.20	0	5,192.61
	Mar-93	5,193.62	5,194.81	3.20	0	5,191.61
	May-93	5,193.62	5,194.81	4.70	0	5,190.11
	Nov-93	5,193.62	5,194.81	3.30	0	5,191.51
	May-94	5,193.62	5,194.81	6.00	0	5,188.81
	Oct-94	5,193.62	5,194.81	5.04	0	5,189.77
	May-95	5,193.62	5,194.81	6.29	0	5,188.52
	Oct-95	5,193.62	5,194.81	6.22	0	5,188.59
	May-96	5,193.62	5,194.81	6.22	0	5,188.59
	Oct-96	5,193.62	5,194.81	5.71	0	5,189.10
	Jun-97	5,193.62	5,194.81	6.73	0	5,188.08
	Oct-97	5,193.62	5,194.81	6.92	0	5,187.89
	May-98	5,193.62	5,194.81	7.45	0	5,187.36
	Dec-98	5,193.62	5,194.81	NM	NM	NM
	Oct-99	5,193.62	5,194.81	6.64	0	5,188.17
	Oct-00	5,193.62	5,194.81	4.99	0	5,189.82

Table 1 Summary of Corrected Groundwater Elevations
Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
Inside Slurry Wall						
MW-17	Jan-92	5,193.43	5,195.91	NM	0	NM
	Jun-92	5,193.43	5,195.91	3.70	0	5,192.21
	Aug-92	5,193.43	5,195.91	3.40	0	5,192.51
	Dec-92	5,193.43	5,195.91	2.10	0	5,193.81
	Mar-93	5,193.43	5,195.91	3.10	0	5,192.81
	May-93	5,193.43	5,195.91	3.90	0	5,192.01
	Nov-93	5,193.43	5,195.91	2.90	0	5,193.01
	May-94	5,193.43	5,195.91	5.71	0	5,190.20
	Oct-94	5,193.43	5,195.91	5.47	0	5,190.44
	May-95	5,193.43	5,195.91	8.30	0	5,187.61
	Oct-95	5,193.43	5,195.91	8.29	0	5,187.62
	May-96	5,193.43	5,195.91	8.11	0	5,187.80
	Oct-96	5,193.43	5,195.91	8.02	0	5,187.89
	Jun-97	5,193.43	5,195.91	9.32	0	5,186.59
	Oct-97	5,193.43	5,195.91	9.48	0	5,186.43
	May-98	5,193.43	5,195.91	9.42	0.01	5,186.49
	Dec-98	5,193.43	5,195.91	7.37	Sheen	5,188.54
	Oct-99	5,193.43	5,195.91	9.45	0.00	5,186.46
	Oct-00	5,193.43	5,195.91	8.12	Sheen	5,187.79
MW-22	Jan-92	5,194.58	5,195.86	4.50	0	5,191.36
	Jun-92	5,194.58	5,195.86	5.30	0	5,190.56
	Aug-92	5,194.58	5,195.86	4.70	0	5,191.16
	Dec-92	5,194.58	5,195.86	3.50	0	5,192.36
	Mar-93	5,194.58	5,195.86	5.00	0	5,190.86
	May-93	5,194.58	5,195.86	5.70	0	5,190.16
	Nov-93	5,194.58	5,195.86	4.40	0	5,191.46
	May-94	5,194.58	5,195.86	7.62	0	5,188.24
	Oct-94	5,194.58	5,195.86	7.18	0	5,188.68
	May-95	5,194.58	5,195.86	7.64	0	5,188.22
	Oct-95	5,194.58	5,195.86	7.16	0	5,188.70
	May-96	5,194.58	5,195.86	7.51	0	5,188.35
	Oct-96	5,194.58	5,195.86	6.89	0	5,188.97
	Jun-97	5,194.58	5,195.86	8.16	0	5,187.70
	Oct-97	5,194.58	5,195.86	8.06	0.03	5,187.80
	May-98	5,194.58	5,195.86	9.02	0.01	5,186.84
	Dec-98	5,194.58	5,195.86	6.52	Sheen	5,189.34
	Oct-99	5,194.58	5,195.86	7.75	Slight Sheen	5,188.11
	Oct-00	5,194.58	5,195.86	6.90	Sheen	5,188.96
P-1	Jan-92	5,195.74	5,197.66	NM	0	NM
	Jun-92	5,195.74	5,197.66	5.40	0	5,192.26
	Aug-92	5,195.74	5,197.66	4.20	0	5,193.46
	Dec-92	5,195.74	5,197.66	3.30	0	5,194.36
	Mar-93	5,195.74	5,197.66	5.50	0	5,192.16
	May-93	5,195.74	5,197.66	6.10	0	5,191.56
	Nov-93	5,195.74	5,197.66	4.40	0	5,193.26
	May-94	5,195.74	5,197.66	7.21	0	5,190.45
	Oct-94	5,195.74	5,197.66	7.57	0	5,190.09
	May-95	5,195.74	5,197.66	8.62	0	5,189.04
	Oct-95	5,195.74	5,197.66	7.82	0	5,189.84
	May-96	5,195.74	5,197.66	8.54	0.01	5,189.12
	Oct-96	5,195.74	5,197.66	7.43	0	5,190.23
	Jun-97	5,195.74	5,197.66	9.29	0.01	5,188.37
	Oct-97	5,195.74	5,197.66	8.91	0.01	5,188.75
	May-98	5,195.74	5,197.66	9.87	0.01	5,187.79
	Dec-98	5,195.74	5,197.66	NM	NM	NM
	Oct-99	5,195.74	5,197.66	NM	NM	NM
	Oct-00	5,195.74	5,197.66	NM	NM	NM

Table 1 Summary of Corrected Groundwater Elevations Former Maverik Refinery - Kirtland, New Mexico

Well ID	Date	Ground Elevation	Datum Elevation	Depth to Water (feet)	Free Product Thickness (feet)	Corrected Elevation (ft)
P-2	Jan-92	5,190.50	5,192.32	NM	0	NM
	Jun-92	5,190.50	5,192.32	3.10	0	5,189.22
	Aug-92	5,190.50	5,192.32	2.30	0	5,190.02
	Dec-92	5,190.50	5,192.32	1.00	0	5,191.32
	Mar-93	5,190.50	5,192.32	2.20	0	5,190.12
	May-93	5,190.50	5,192.32	3.10	0	5,189.22
	Nov-93	5,190.50	5,192.32	1.90	0	5,190.42
	May-94	5,190.50	5,192.32	4.20	0	5,188.12
	Oct-94	5,190.50	5,192.32	4.81	0	5,187.51
	May-95	5,190.50	5,192.32	5.30	0	5,187.02
	Oct-95	5,190.50	5,192.32	4.86	0	5,187.46
	May-96	5,190.50	5,192.32	5.04	0	5,187.28
	Oct-96	5,190.50	5,192.32	4.53	0	5,187.79
	Jun-97	5,190.50	5,192.32	6.04	0	5,186.28
	Oct-97	5,190.50	5,192.32	5.69	0	5,186.63
	May-98	5,190.50	5,192.32	9.96	0.01	5,182.36
	Dec-98	5,190.50	5,192.32	NM	NM	NM
	Oct-99	5,190.50	5,192.32	NM	NM	NM
	Oct-00	5,190.50	5,192.32	NM	NM	NM
P-3	Jan-92	5,191.44	5,193.21	NM	0	NM
	Jun-92	5,191.44	5,193.21	3.40	0	5,189.81
	Aug-92	5,191.44	5,193.21	3.60	0	5,189.61
	Dec-92	5,191.44	5,193.21	1.60	0	5,191.61
	Mar-93	5,191.44	5,193.21	2.60	0	5,190.61
	May-93	5,191.44	5,193.21	3.60	0	5,189.61
	Nov-93	5,191.44	5,193.21	2.60	0	5,190.61
	May-94	5,191.44	5,193.21	4.86	0	5,188.35
	Oct-94	5,191.44	5,193.21	5.77	0	5,187.44
	May-95	5,191.44	5,193.21	5.94	0	5,187.27
	Oct-95	5,191.44	5,193.21	5.88	0	5,187.33
	May-96	5,191.44	5,193.21	5.66	0	5,187.55
	Oct-96	5,191.44	5,193.21	5.62	0	5,187.59
	Jun-97	5,191.44	5,193.21	7.17	0	5,186.04
	Oct-97	5,191.44	5,193.21	6.67	0	5,186.54
	May-98	5,191.44	5,193.21	6.94	0	5,186.27
	Dec-98	5,191.44	5,193.21	NM	NM	NM
	Oct-99	5,191.44	5,193.21	NM	NM	NM
	Oct-00	5,191.44	5,193.21	NM	NM	NM
P-4	Jan-92	5,197.06	5,198.82	NM	0	NM
	Jun-92	5,197.06	5,198.82	7.00	0	5,191.82
	Aug-92	5,197.06	5,198.82	6.20	0	5,192.62
	Dec-92	5,197.06	5,198.82	5.10	0	5,193.72
	Mar-93	5,197.06	5,198.82	7.10	0	5,191.72
	May-93	5,197.06	5,198.82	7.60	0	5,191.22
	Nov-93	5,197.06	5,198.82	6.10	0	5,192.72
	May-94	5,197.06	5,198.82	8.09	0	5,190.73
	Oct-94	5,197.06	5,198.82	8.93	0.28	5,189.89
	May-95	5,197.06	5,198.82	9.85	0	5,188.97
	Oct-95	5,197.06	5,198.82	9.13	0	5,189.69
	May-96	5,197.06	5,198.82	9.73	0	5,189.09
	Oct-96	5,197.06	5,198.82	8.79	0	5,190.03
	Jun-97	5,197.06	5,198.82	9.88	0	5,188.94
	Oct-97	5,197.06	5,198.82	9.90	0	5,188.92
	May-98	5,197.06	5,198.82	6.46	0	5,192.36
	Dec-98	5,197.06	5,198.82	NM	NM	NM
	Oct-99	5,197.06	5,198.82	NM	NM	NM
	Oct-00	5,197.06	5,198.82	NM	NM	NM

Notes: NM + Not Measured
NA - Not Applicable, Well Destroyed

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
Within Slurry Wall									
MW-17	Sep 13-14, 1990	360	11,000	15,000	1,160	13,000	40,160	7.01	2,500
	Mar 18-19, 1991	400	11,000	10,000	1,900	15,000	37,900	7.04	2,700
	Jun 13, 1991	420	9,800	6,300	1,800	16,000	33,900	7.04	2,650
	Jan 20-21, 1992	MSG	MSG	MSG	MSG	MSG	MSG	MSG	MSG
	Jun 9 & 12, 1992	45	9,240	7,580	1,150	7,190	25,160	7.26	2,730
	Aug 19-20-1992	27	7,710	1,920	669	5,130	15,429	7.23	2,810
	Dec 16, 1992	17.3	7,990	4,740	638	4,600	17,968	7.54	2,970
	Mar 30, 1993	16.8	13,800	6,830	1,110	6,930	28,670	7.37	2,610
	May 23, 1993	12.5	13,700	6,360	993	10,530	31,583	7.33	2,470
	Nov 29-30, 1993	30.9	8,590	2,820	636	4,880	16,926	7.39	2,360
	May 25, 1994	8.3	10,900	4,340	823	5,660	21,723	7.30	2,830
	Oct 2-3, 1994	4.9	5,130	1,160	409	2,818	9,517	7.04	2,470
Duplicate	Oct 2-3, 1994	< 1	2,070	807	350	2,013	5,240	7.04	2,470
	May 17, 1995	< 10	9,320	2,510	694	3,782	16,306	7.49	2,480
Duplicate	May 17, 1995	< 10	12,800	4,460	944	5,710	23,914	7.49	2,480
**	Oct 18-19, 1995	2.3	3,000	464	244	1,079	4,787	7.09	2,430
	May 1-2, 1996	2.2	7,700	1,200	530	1,800	11,230	7.20	2,280
Duplicate	May 1-2, 1996	< 5	7,300	1,200	490	1,800	10,790	7.20	2,280
	Oct 20, 1996	< 5	3,600	880	290	1,500	6,270	7.50	2,290
	June 24, 1997	<0.5	5,500	51	23	180	5,754	7.52	2,550
	Oct. 28, 1997	<5	590	920	140	1,300	2,950	7.42	2,310
Duplicate	Oct. 28, 1997	<5	490	680	95	930	2,195	7.42	2,310
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
Duplicate	Dec. 9, 1998	180	4,000	970	870	4,500	10,340	7.57	1,160
	Dec. 9, 1998	<10	2,300	44	370	1,300	4,014	7.57	1,160
	Oct. 14, 1999	<5	440	140	110	930	1,620	7.64	2,030
	Oct. 27, 2000	<5	500	57	180	1,600	2,337	7.5	1,920
MW-22	Sep 13-14, 1990	7,200	21,000	20,000	1,100	8,300	50,400	7.00	1,500
	Mar 18-19, 1991	2,200	17,000	9,500	910	6,600	34,010	6.87	1,900
	Jun 13, 1991	3,600	15,000	3,200	760	3,000	21,960	7.06	1,700
	Jan 20-21, 1992	5,400	36,000	27,000	1,900	13,500	78,400	6.86	1,600
	Jun 9 & 12, 1992	3,170	21,200	7,540	1,040	5,730	35,510	7.13	1,690
	Aug 19-20-1992	568	20,500	4,610	588	3,280	28,978	7.28	1,545
	Dec 16, 1992	908	12,100	4,220	514	3,254	20,088	7.43	1,508
	Mar 30, 1993	1,930	29,800	14,100	1,170	7,030	52,100	7.26	1,408
	May 23, 1993	28	17,000	6,520	1,100	6,150	30,770	7.61	6,550
	Nov 29-30, 1993	2,780	18,400	8,480	1,150	7,300	35,330	8.01	1,610
	May 25, 1994	379	9,340	2,250	845	3,725	16,160	7.15	1,505
	Oct 2-3, 1994	566	10,500	5,890	1,390	8,350	26,130	7.24	1,710
	May 17, 1995	62	7,510	1,750	1,000	6,520	16,780	7.15	1,517
Duplicate	May 17, 1995	67	9,020	2,620	1,230	7,310	20,180	7.15	1,517
Duplicate **	Oct 18-19, 1995	42	5,700	2,430	1,580	9,000	18,710	7.25	1,820
**	Oct 18-19, 1995	< 1	5,120	2,130	1,540	8,320	17,110	7.25	1,820
	May 1-2, 1996	37	4,600	410	1,300	10,000	16,310	7.30	1,325
	Oct 20, 1996	38	880	250	710	4,100	5,940	7.49	1,505
	June 24, 1997	24	4,300	580	510	5,500	10,890	7.31	1,280
Duplicate	June 24, 1997	21	5,800	930	750	7,300	14,780	7.31	1,280
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	May 5, 1998	12	3,300	300	610	3,400	7,610	8	1,290
Duplicate	May 5, 1998	14	3,500	310	630	3,600	8,040	8	1,290
	Dec. 9, 1998	190	3,700	910	720	4,000	9,330	7.40	1,500
	Oct. 14, 1999	<5	580	210	150	820	1,760	7.72	1,840
Duplicate	Oct. 14, 1999	<5	730	270	180	1000	2,180	7.72	1,840
	Oct. 27, 2000	<10	210	120	220	830	1,380	7.7	1,610

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
P-1	May 23, 1993	< 1	**4,110**	18.8	361	**2,522**	7,012	7.04	2,290
	Nov 29-30, 1993	< 1	**3,580**	10.2	506	**3,215**	7,311	7.22	1,460
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	8.9	< 1	1.9	11.8	22.6	7.04	2,210
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 27, 2000	NS	NS	NS	NS	NS	NS	NS	NS
P-2	May 23, 1993	3.2	**5.2**	< 1	< 1	< 1	5.2	7.36	3,910
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.92	3,540
	May 25, 1994	1.3	< 1	< 1	< 1	< 1	< 1	7.41	3,980
	Oct 2-3, 1994	3.6	< 1	< 1	< 1	< 1	< 1	7.12	3,480
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.40	2,980
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 27, 2000	NS	NS	NS	NS	NS	NS	NS	NS
P-3	May 23, 1993	**10.6**	< 1	< 1	< 1	< 1	< 1	7.24	11,160
	Nov 29-30, 1993	**11.5**	< 1	< 1	< 1	< 1	< 1	7.31	9,140
	May 25, 1994	**12.1**	< 1	< 1	< 1	< 1	< 1	7.28	8,070
	Oct 2-3, 1994	**12.6**	< 1	< 1	< 1	< 1	< 1	7.06	5,550
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	3.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.40	4,280
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 27, 2000	NS	NS	NS	NS	NS	NS	NS	NS
P-4	May 23, 1993	8.3	**6,690**	**4,090**	559	**6,260**	17,599	NA	NA
	Nov 29-30, 1993	2.1	**6,400**	**4,420**	**900**	**7,700**	19,420	NA	NA
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	May 1-2, 1996	NA	NA	NA	NA	NA	NA	6.60	1,621
	Oct 20, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 18, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 27, 2000	NS	NS	NS	NS	NS	NS	NS	NS

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
On Site									
MW-10	Sep 13-14, 1990	1.4	< 0.5	< 0.5	< 0.5	< 1	< 1	6.95	1,550
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.29	1,700
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.31	1,840
	Jun 9 & 12, 1992	1.6	< 1	< 1	< 1	< 1	1.6	7.65	1,400
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.85	1,160
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.64	6,110
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.22	9,060
	May 23, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.93	2,320
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.73	1,320
	May 25, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.75	1,335
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.56	1,159
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.64	1,695
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.41	1,453
	May 1-2, 1996	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.70	1,288
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.69	1,310
	June 24, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.63	2,520
	October 20, 1997	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.61	1,585
	May 5, 1998	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.60	1,608
	Dec. 9, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.64	1,290
	Oct. 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.68	1,650
	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.5	1,470
MW-18	Sep 13-14, 1990	< 1	**17**	< 12	84.0	**880**	981	7.00	1,500
	Mar 18-19, 1991	< 1	**26**	< 12	85.0	**770**	881	7.24	1,200
	Jun 13, 1991	< 1	< 25	< 25	78.0	**930**	1,008	6.77	1,200
	Jan 20-21, 1992	MSG	MSG	MSG	MSG	MSG	MSG	MSG	MSG
	Jun 9 & 12, 1992	< 1	**313**	1.1	200	**1,710**	2,224	7.07	1,480
	Aug 19-20-1992	< 1	**527**	10.8	258	**2,075**	2,871	7.26	2,100
	Dec 16, 1992	< 25	**294**	< 25	224	**1,460**	1,978	7.31	1,930
	Mar 30, 1993	< 1	**117**	8.0	96.0	226	447	7.07	2,780
	May 23, 1993	< 1	**73**	< 1	31.2	259	363	7.15	2,220
	Nov 29-30, 1993	< 1	**337**	4.9	261	**1,352**	1,955	7.00	1,870
	May 25, 1994	< 1	**51**	10.0	7.0	99	167	7.00	1,510
	Oct 2-3, 1994	< 1	**210**	10.9	46.0	483	750	7.10	1,530
	May 17, 1995	< 1	**128**	< 1	10.4	274	412	6.84	1,370
	Oct 18-19, 1995	< 1	**118**	12.2	20.0	296	447	7.03	1,299
	May 1-2, 1996	< 0.5	**48**	0.5	3.4	150	202	7.00	1,270
	Oct 20, 1996	< 0.5	**37**	11.0	14.0	110	172	7.50	1,314
Duplicate	Oct 20, 1996	< 0.5	**33**	0.8	12.0	120	166	7.50	1,314
	June 24, 1997	< 0.5	**130**	<0.5	15.0	200	345	6.98	1,399
	October 20, 1997	< 0.5	**55**	0.5	19.0	150	225	6.99	1,280
	May 5, 1998	< 0.5	**16**	<0.5	<0.5	2.1	18	6.84	1,374
	Dec. 9, 1998	<2.5	**44**	<2.5	21	<2.5	65	7.04	1,438
	Oct. 14, 1999	0.50	**33**	4	11	60	108	7.13	1,550
	Oct. 27, 2000	0.90	9.5	<0.5	<0.5	6.9	16	6.9	3,400
MW-19	Sep 13-14, 1990	**45**	< 0.5	< 0.5	1.1	1.9	3.0	6.95	3,000
	Mar 18-19, 1991	**35**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.22	2,500
	Jun 13, 1991	**44**	< 0.5	< 0.5	5.9	< 0.5	5.9	7.10	2,400
	Jan 20-21, 1992	**14**	< 5	< 5	< 5	< 5	< 5	7.66	460
	Jun 9 & 12, 1992	**11.4**	< 1	< 1	< 1	< 1	< 1	7.76	1,970
	Aug 19-20-1992	9.0	< 1	< 1	< 1	< 1	< 1	7.72	1,320
	Dec 16, 1992	6.6	< 1	< 1	< 1	< 1	< 1	7.70	1,620
	Mar 30, 1993	2.4	< 1	< 1	< 1	< 1	< 1	7.74	1,750
	May 23, 1993	7.9	< 1	< 1	< 1	< 1	< 1	7.73	1,630
	Nov 29-30, 1993	6.6	< 1	< 1	< 1	< 1	< 1	7.78	1,380
	May 25, 1994	8.0	< 1	< 1	< 1	< 1	< 1	7.65	1,762
	Oct 2-3, 1994	7.9	< 1	< 1	< 1	< 1	< 1	7.44	1,258
	May 17, 1995	8.6	< 1	< 1	< 1	< 1	< 1	7.52	1,624
	Oct 18-19, 1995	8.8	< 1	< 1	< 1	< 1	< 1	7.31	1,411
	May 1-2, 1996	8.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.50	1,361
	Oct 20, 1996	4.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.62	1,340
	June 24, 1997	3.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.52	1,573
	October 20, 1997	2.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.53	1,346
	May 5, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.40	1,672
	Dec. 9, 1998	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.58	1,381
	Oct 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.62	2,000
	Oct 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.4	1,490

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-20	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	7.01	1,350
	Mar 18-19, 1991	2.0	< 0.5	< 0.5	< 0.5	0.7	0.7	7.39	3,000
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.54	3,750
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.62	1,600
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	6.97	1,310
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.87	1,340
	Mar 30, 1993	2.1	< 1	< 1	< 1	< 1	< 1	7.10	6,740
	May 23, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.86	1,430
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.69	1,230
	May 25, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.38	1,292
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.57	1,308
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.65	1,434
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.35	1,525
	May 1-2, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.50	1,417
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.18	1,545
	June 24, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.48	1,540
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.01	1,452
	May 5, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.44	1,890
	Dec. 9, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.65	1,153
	Oct. 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.01	1,600
	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.6	14,840
MW-21	Sep 13-14, 1990	**67**	< 0.5	1.5	1.1	5.0	7.6	7.01	1,500
	Mar 18-19, 1991	**44**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.62	1,700
	Jun 13, 1991	**40**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.44	1,700
	Jan 20-21, 1992	8.8	< 5	< 5	< 5	< 5	< 5	8.31	5,110
	Jun 9 & 12, 1992	21.9	< 1	< 1	< 1	< 1	< 1	7.37	2,400
	Aug 19-20-1992	8.3	< 1	< 1	< 1	< 1	< 1	6.96	1,730
	Dec 16, 1992	1.7	< 1	< 1	< 1	< 1	< 1	7.69	2,030
	Mar 30, 1993	5.9	< 1	< 1	< 1	< 1	< 1	7.58	1,590
	May 23, 1993	**14.8**	< 1	< 1	< 1	< 1	< 1	7.63	2,530
	Nov 29-30, 1993	3.7	< 1	< 1	< 1	< 1	< 1	7.58	1,580
	May 25, 1994	8.3	< 1	< 1	< 1	< 1	< 1	7.66	1,592
	Oct 2-3, 1994	5.5	< 1	< 1	< 1	< 1	< 1	7.55	1,760
	May 17, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.59	1,819
Duplicate	May 17, 1995	5.4	< 1	< 1	< 1	< 1	< 1	7.59	1,819
	Oct 18-19, 1995	2.1	< 1	< 1	< 1	< 1	< 1	7.52	2,060
	May 1-2, 1996	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.60	1,824
	Oct 20, 1996	3.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.68	2,100
	June 24, 1997	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.98	1,642
	October 20, 1997	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	1,653
	May 5, 1998	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.67	1,760
	Dec. 9, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Oct. 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.97	2,180
	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.3	47,500
Duplicate	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.3	47,500

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
Off Site									
MW-9	Sep 13-14, 1990	2.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	1,550
	Mar 18-19, 1991	1.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.57	2,000
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.31	4,360
	Jun 9 & 12, 1992	1.5	< 1	< 1	< 1	< 1	< 1	7.58	1,680
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.81	1,325
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.33	1,827
	Mar 30, 1993	1.5	< 1	< 1	< 1	< 1	< 1	7.63	1,640
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.62	1,460
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	1.2	< 1	< 1	< 1	< 1	< 1	7.80	1,610
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.38	1,523
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.85	1,645
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.51	1,588
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
MW-13	Sep 13-14, 1990	< 1	< 0.5	1.5	< 0.5	<1	1.5	7.02	2,950
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.84	3,250
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Jun 9 & 12, 1992	<1	<1	<1	<1	<1	<1	7.11	4,260
	Aug 19-20-1992	<1	<1	<1	<1	<1	<1	7.06	2,910
	Dec 16, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Mar 30, 1993	<1	<1	<1	<1	<1	<1	7.72	3,410
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	<1	<1	<1	<1	<1	<1	7.45	4,150
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	<1	<1	<1	<1	<1	<1	7.38	3,160
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	<1	<1	<1	<1	<1	<1	7.41	3,600
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.54	3,200
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.81	4,100
Destroyed	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
MW-14	Sep 13-14, 1990	2.0	< 0.5	< 0.5	< 0.5	< 1	< 1	6.97	5,450
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	1.7	1.7	7.51	8,400
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.20	19,380
	Jun 9 & 12, 1992	2.3	< 1	< 1	< 1	< 1	< 1	7.62	4,520
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.38	5,760
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.40	9,090
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.02	15,280
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	1.2	< 1	< 1	< 1	< 1	< 1	7.61	6,030
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	1.9	< 1	< 1	< 1	< 1	< 1	7.34	4,560
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.15	6,760
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.15	6,120
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.68	14,100
	Oct. 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.26	7,830
	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.7	10,500

Table 2 Summary of Groundwater Quality Monitoring Results (Since Installation of Slurry Wall) Former Maverik Refinery - Kirtland, New Mexico

Location		DCA	B	T	E	X	Total BTEX	pH	SC
MW-15	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	7.00	3,250
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.02	8,500
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.15	12,120
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.27	3,430
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.39	2,450
	Dec 16, 1992	NA	NA	NA	NA	NA	NA	NA	NA
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.42	9,810
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	8.01	1,630
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.54	2,500
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.48	2,260
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	8.21	1,939
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.97	3,250
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.30	1,980
	Oct. 14, 1999	NS	NS	NS	NS	NS	NS	NS	NS
MW-16	Sep 13-14, 1990	< 1	< 0.5	< 0.5	< 0.5	< 1	< 1	6.97	1,370
	Mar 18-19, 1991	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.57	1,200
	Jun 13, 1991	NA	NA	NA	NA	NA	NA	NA	NA
	Jan 20-21, 1992	< 5	< 5	< 5	< 5	< 5	< 5	7.30	2,050
	Jun 9 & 12, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.50	1,430
	Aug 19-20-1992	< 1	< 1	< 1	< 1	< 1	< 1	7.76	1,230
	Dec 16, 1992	< 1	< 1	< 1	< 1	< 1	< 1	7.12	1,735
	Mar 30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.23	2,400
	May 23, 1993	NA	NA	NA	NA	NA	NA	NA	NA
	Nov 29-30, 1993	< 1	< 1	< 1	< 1	< 1	< 1	7.31	1,760
	May 25, 1994	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 2-3, 1994	< 1	< 1	< 1	< 1	< 1	< 1	7.44	1,253
	May 17, 1995	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 18-19, 1995	< 1	< 1	< 1	< 1	< 1	< 1	7.26	1,421
	May 1-2, 1996	NS	NS	NS	NS	NS	NS	NS	NS
	Oct 20, 1996	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	6.78	1,665
	June 24, 1997	NS	NS	NS	NS	NS	NS	NS	NS
	October 20, 1997	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	NV	NV
	May 5, 1998	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 9, 1998	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	7.26	3,930
	Oct. 14, 1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.3	1,890
	Oct. 27, 2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.3	1,970
Water Quality Standards									
New Mexico		**10**	**10**	**750**	**750**	**620**		**6.90**	---
EPA MCL		**5**	**5**	**1,000**	**700**	**10,000**		---	---

NOTES:

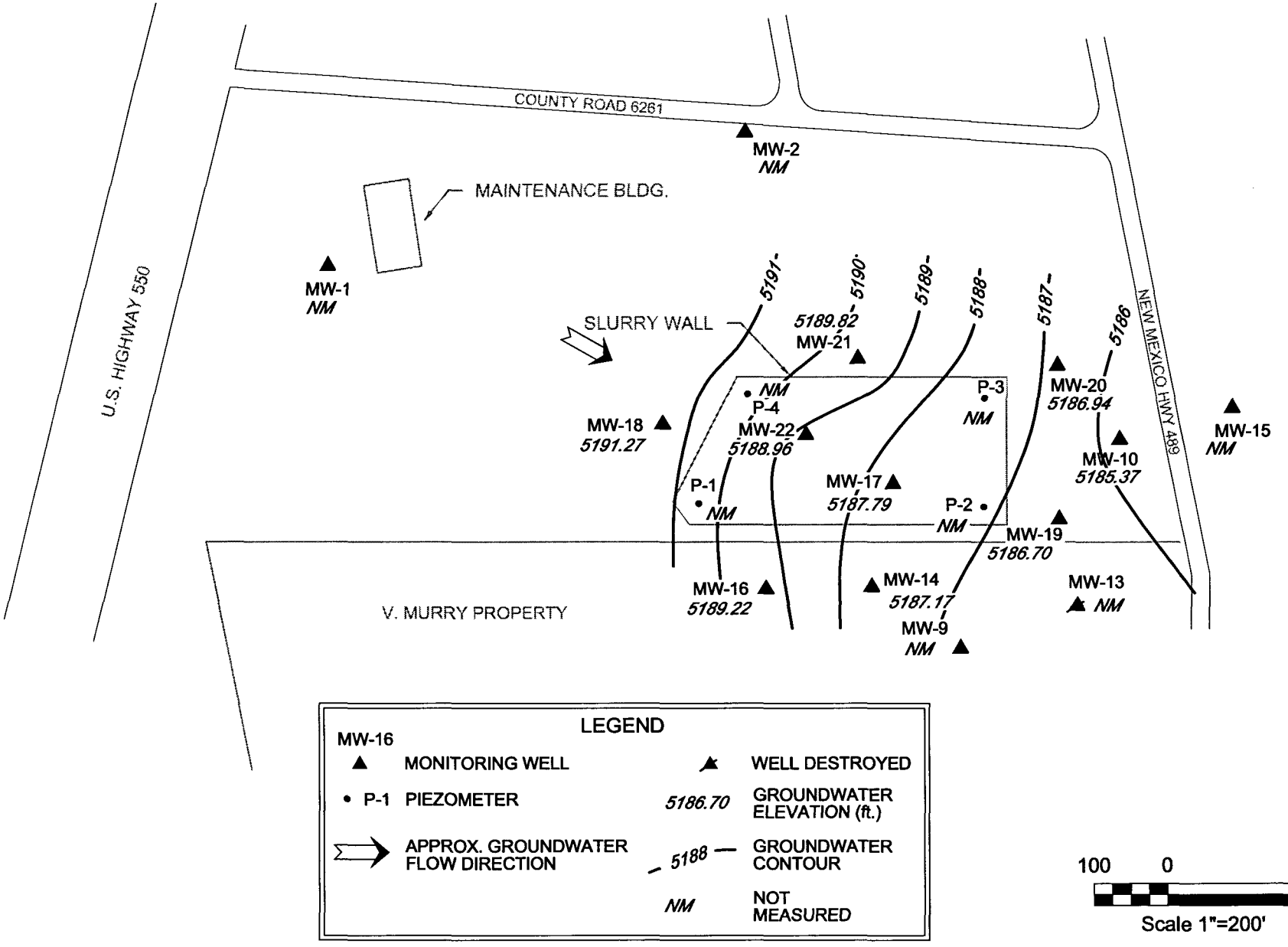
1,2-dichloroethane
Benzene
Toluene
Ethylbenzene
Total Xylenes

SC = Specific Conductivity
TDS = Total Dissolved Solids
MSG = Well Missing
NA = Not Analyzed
NS = Not Sampled

Organic values in ug/l
pH in standard units
SC in umhos/cm
NV=no value recorded

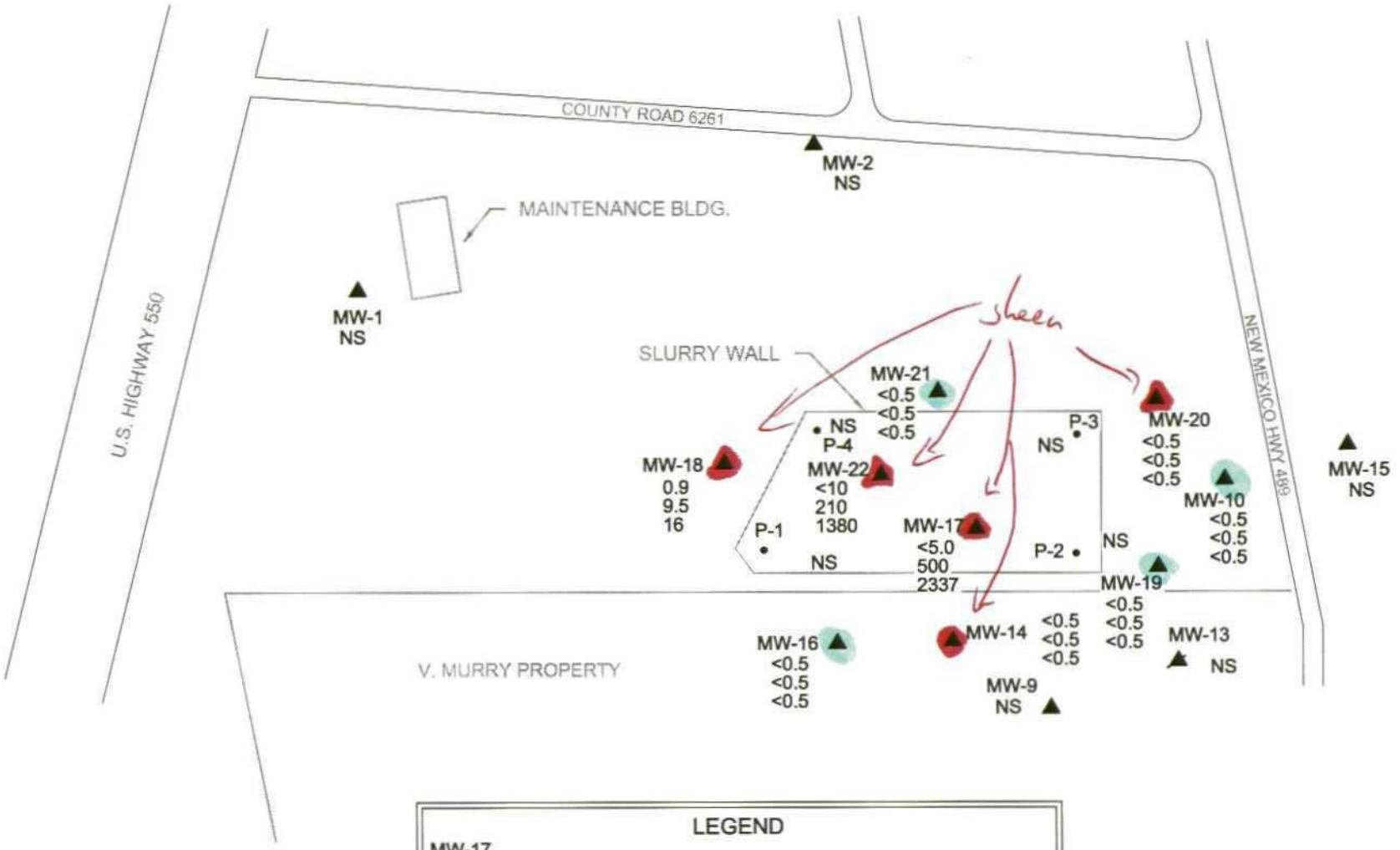
Values in bold exceed New Mexico MCL for drinking water
** = Laboratory exceeded holding time before completing sample analyses.

Figures



ThermoRetec

2000 Annual Report Kirtland Refinery, Kirtland, NM (MCS00-03050-311)			GROUNDWATER ELEVATION MAP OCTOBER 27, 2000
DATE: 11/29/00	DRWN: E.S.S.	FILE: 132AN001-1	FIGURE 1



ThermoRetec

2000 Annual Report Kirtland Refinery, Kirtland, NM (MCS00-03050-311)			ORGANICS IN GROUNDWATER OCTOBER 27, 2000
DATE: 11/29/00	DRWN: E.S.S.	FILE: 132AN001-1	FIGURE 2

Concentrations of Benzene and BTEX in MW-18

Former Maverik Refinery - Kirtland, New Mexico

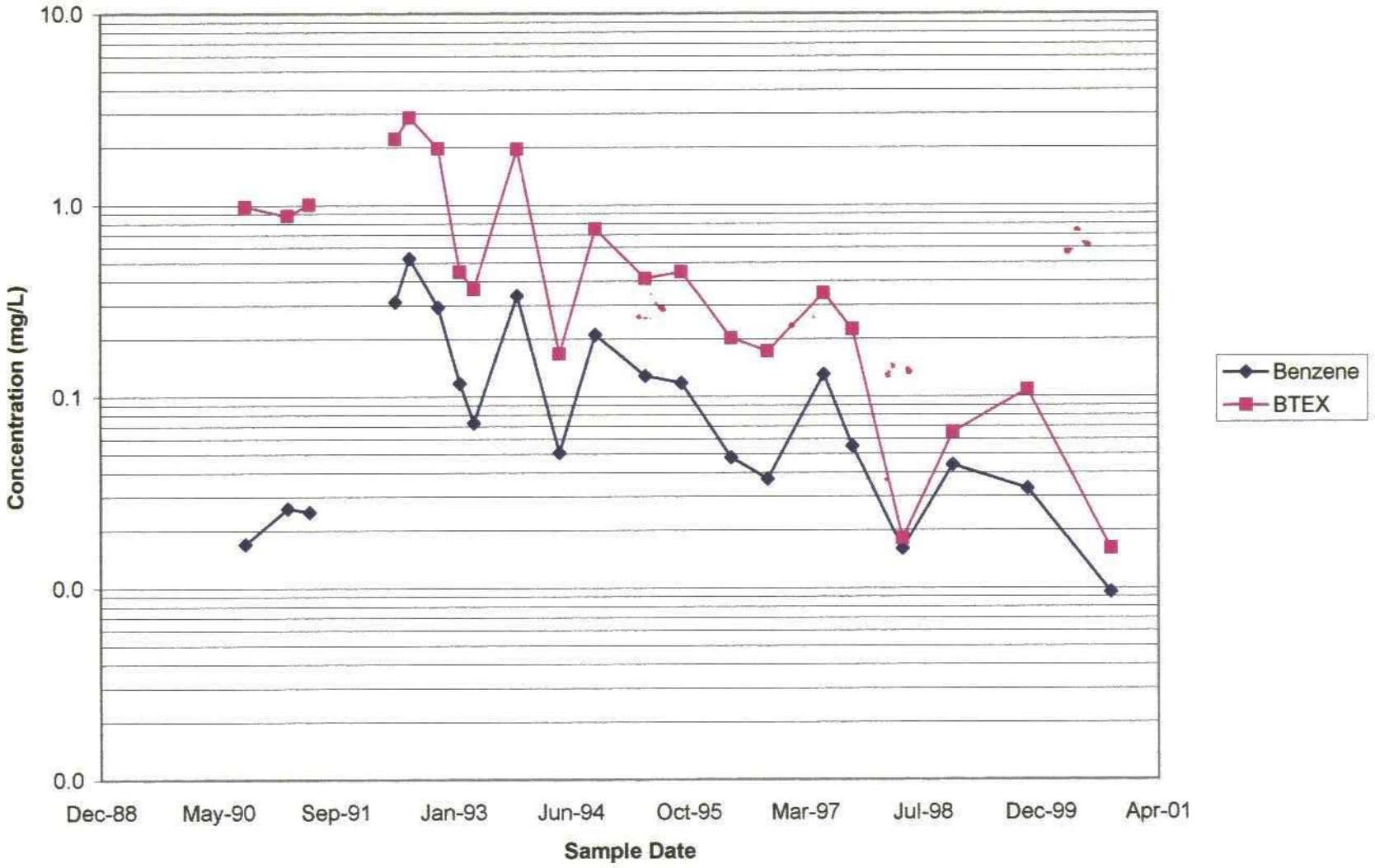


FIGURE 3

Concentrations of Benzene and BTEX in MW-17

Former Maverik Refinery - Kirtland, New Mexico

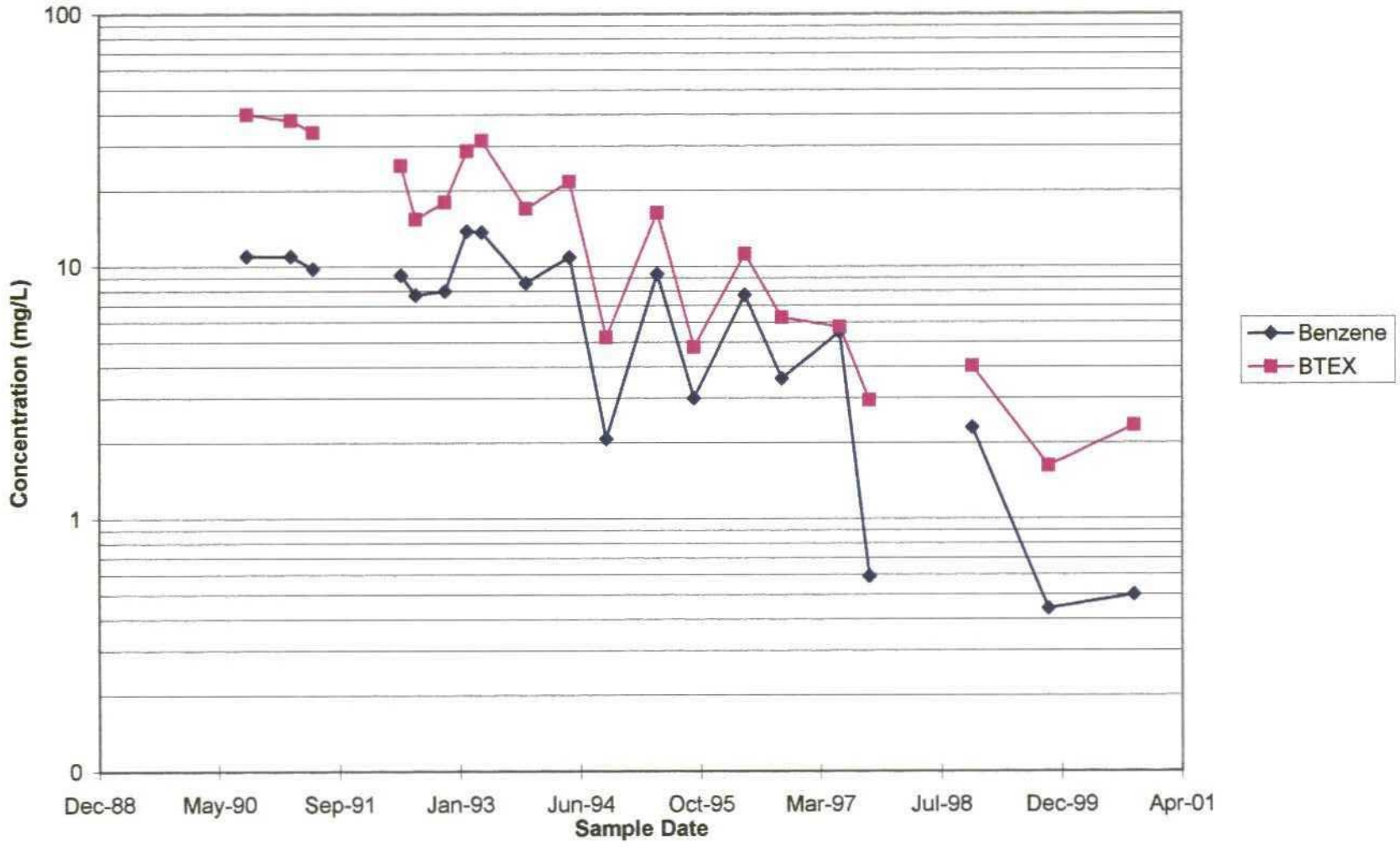


FIGURE 4

Concentrations of Benzene and BTEX in MW-22

Former Maverik Refinery - Kirtland, New Mexico

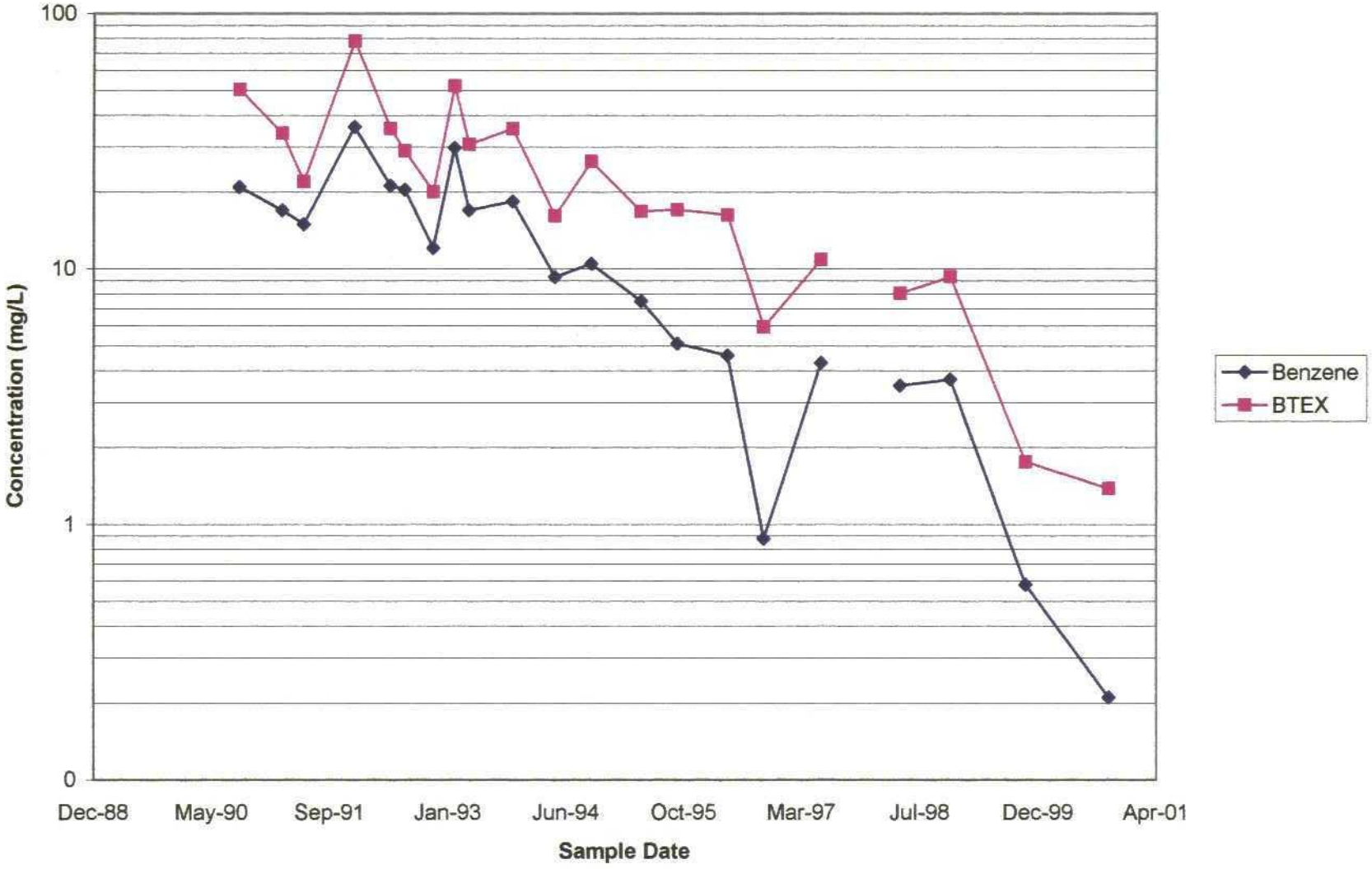


FIGURE 5

Appendix A

Field Notes

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT Thermo ReTec PROJECT# Former Maverik Refinery TankFarm

ADDRESS 1726 Cole Blvd, Bldg 22, #150 Golden, CO 80401-3213 DATE 10-27-00

MW# 10 PID - ppm

DEPTH OF CASED HOLE 15.15 (ft) DEPTH TO WATER 3.93 (ft)

HEIGHT OF WATER 11.22 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 2.0 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 6.00 (gal)

GROUNDWATER PARAMETERS:

	pH	TEMP(°F)	SPECIFIC CONDUCT.	REDOX POTENTIAL	D.O.
	7.0	17°C	1.76 mS	238.4	12.6 %
	7.4	15.6°C	1.55	291.5	21.7
	7.5	15.2°C	1.47	271.1	11.0

SAMPLE DESCRIPTION Dark-Gray, No sheen, No odor

OBSERVATIONS

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery TankFarm

ADDRESS 1726 Cole Blvd, Bldg 22, #150 DATE 10-27-00
Golden, Co 80401-3213

MW# 14 PID - ppm

DEPTH OF CASED HOLE 9.98 (ft) DEPTH TO WATER 7.30 (ft)

HEIGHT OF WATER 2.68 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 0.48 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 1.44 (gal)

GROUNDWATER PARAMETERS:

pH	7.6 7.7	TEMP(C°)	18° C 17.1° C	SPECIFIC CONDUCT.	10.2 m/s 10.5	REDOX POTENTIAL	-65.4 -67.3	D.O.	11.5 % 25.9

SAMPLE DESCRIPTION Dark-Gray, Some Black Solids, Slight Sheen. Well Bailing dry. Field Blank (Rinsate Sample) Collected After This Sample.

OBSERVATIONS Well casing Bent At ≈ 30° angle. Metal Casing. Straightened casing as best as we could. Used HDPE 1" bailer to collect samples.

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod.

TYPE OF SAMPLER HDPE Bailer 1"

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery Tankfarm

ADDRESS 1724 Cole Blvd, Bldg 22, #150 DATE 10-27-00
Golden, Co 80401-3213

MW# 16 PID - ppm

DEPTH OF CASED HOLE 14.55 (ft) DEPTH TO WATER 5.76 (ft)

HEIGHT OF WATER 8.79 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.50 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 4.50 (gal)

GROUNDWATER PARAMETERS:

pH	7.2	TEMP(°F)	19.5°C	SPECIFIC	1.98 m/s	REDOX	113.02	D.O. 14.1 %
	7.2		17.8°C	CONDUCT.	1.96	POTENTIAL	167.30	13.9
	7.3		17.1°C		1.97		222.4	13.8

SAMPLE DESCRIPTION Cloudy, No Sheen, No odor.

OBSERVATIONS

PARAMETERS SAMPLED FOR BTEX DCA 8021 mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery TANKFARM

ADDRESS 1724 Cole Blvd, Bldg 22, #150 DATE 10-27-00
Golden, Co 80401-3213

MW# 17 PID - ppm

DEPTH OF CASED HOLE 16.60 (ft) DEPTHTOWATER 8.12 (ft)

HEIGHT OF WATER 8.48 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.50 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 4.50 (gal)

GROUNDWATER PARAMETERS:

pH	7.1	TEMP(°F)	18.5°C	SPECIFIC	1.91 m/s	REDOX	-293.7	D.O.	20.5 %
	7.4		17.9°C	CONDUCT.	2.09	POTENTIAL	-288.5		26.4
	7.5		17.8°C		1.92		-288.6		26.1

SAMPLE DESCRIPTION Dark-Gray, Sheen, Strong odor.

OBSERVATIONS No well cap but has casing cover.

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT Thermo Retec PROJECT# Former Maverik Refinery TANK FARM

ADDRESS 1726 Cole BLVD, BLDG 22, #150 Golden, CO 80401-3213 DATE 10-27-00

MW# 18 PID - ppm

DEPTH OF CASED HOLE 18.78 (ft) DEPTH TO WATER 10.48 (ft)

HEIGHT OF WATER 8.30 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.50 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 4.50 (gal)

GROUNDWATER PARAMETERS:

pH	TEMP(°F)	SPECIFIC CONDUCT.	REDOX POTENTIAL	D.O.
6.9	21.6°C	3.40 m/s	-128.10	13.2 %

SAMPLE DESCRIPTION Clear, Slight Sheen, odor

OBSERVATIONS MW-18 Bailed dry. only enough H_2O for Sample Collection. Bailed 2 Gallons.

PARAMETERS SAMPLED FOR BTEX DCA 8021 mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery Tank Farm

ADDRESS 1724 Cole Blvd, Bldg 22, #150 Golden, CO 80401-3213 DATE 10-27-00

MW# 19 PID - ppm

DEPTH OF CASED HOLE 14.11 (ft) DEPTH TO WATER 2.84 (ft)

HEIGHT OF WATER 11.27 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 2.0 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 6.00 (gal)

GROUNDWATER PARAMETERS:

	pH	TEMP(°F)	SPECIFIC CONDUCT.	REDOX POTENTIAL	D.O.
	7.1	16.4°C	1.75 mls	216.7	3.8 %
	7.4	15.6°C	1.73	275.6	18.1
	7.4	15.8°C	1.49	272.8	19.6

SAMPLE DESCRIPTION Clear, No odor, No sheen.

OBSERVATIONS

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT Thermo Retec PROJECT# Former Maverik Refinery TankFarm

ADDRESS 1726 Cole Blvd, Bldg 22, #150, Golden, CO 80401-3213 DATE 10-27-00

MW # 20 PID - ppm

DEPTH OF CASED HOLE 13.50 (ft) DEPTH TO WATER 4.11 (ft)

HEIGHT OF WATER 9.39 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.6 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 4.80 (gal)

GROUNDWATER PARAMETERS:

	pH	TEMP(°F)	SPECIFIC CONDUCT. (mS)	REDOX POTENTIAL	D.O. (%)
	7.4	17.5°C	14.81	192.7	17.9
	7.6	17.1°C	14.76	305.3	15.5
	7.6	17.1°C	14.84	326.4	15.4

SAMPLE DESCRIPTION Licht-Gray, Sheen, NO odor, Some roots.

OBSERVATIONS

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery TANKFARM

ADDRESS 1726 Cole BLVD, BLDG 22, #150 Golden, CO 80401-3213 DATE 10-27-00

MW# 21 PID - ppm

DEPTH OF CASED HOLE 14.50 (ft) DEPTH TO WATER 4.99 (ft)

HEIGHT OF WATER 9.51 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.71 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 5.13 (gal)

GROUNDWATER PARAMETERS:

pH	TEMP(°F)	SPECIFIC CONDUCT. (m/s)	REDOX POTENTIAL	D.O. (%)
6.2	16.8°C	19.8	118.5	28.2
6.3	17.1°C	54.9	92.3	29.8
6.3	17.8°C	47.5	85.3	31.0

SAMPLE DESCRIPTION Light-brown, cloudy, No sheen, No odor.

OBSERVATIONS Duplicate Sample collected at THIS Location for BTEX DCA by 8021 mod.

PARAMETERS SAMPLED FOR BTEX DCA 8021 mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY: S STELLAVATO

BASIN ENGINEERING, INC. - FARMINGTON, NEW MEXICO

P.O. Box 389, 2550 La Plata Highway, 87499 Tel. (505) 325-0267

GROUND WATER MONITORING DATA SHEET

CLIENT ThermoRetec PROJECT# Former Maverik Refinery TankFarm

ADDRESS 1726 Cole Blvd, Bldg 22, #150 Golden, CO 80401-3213 DATE 10-27-00

MW# 22 PID - ppm

DEPTH OF CASED HOLE 13.95 (ft) DEPTHTO WATER 6.90 (ft)

HEIGHT OF WATER 7.05 (ft) WELL DIAMETER 2" (ft)

VOLUME OF WATER 1.26 (gal)

VOLUME OF WATER REMOVED BEFORE SAMPLING 3.78 (gal)

GROUNDWATER PARAMETERS:

pH	TEMP(°F)	SPECIFIC CONDUCT.	REDOX POTENTIAL	D.O.
7.7	16.1 °C	1.61 m/s	-287.5	7.3 %

SAMPLE DESCRIPTION Clear, Sheen, odor

OBSERVATIONS MW-22 Bailed dry at 2 Gallons. Poor recharge. Collected Sample.

PARAMETERS SAMPLED FOR BTEX DCA 8021 Mod.

TYPE OF SAMPLER HDPE Bailer

SAMPLE TAKEN BY S Stellavato

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 10/27/00 PAGE: 1 OF 2

PLI Accession #: 010117

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

A-10

PROJECT MANAGER: Bill Hendrix

COMPANY: ThermoRetec
ADDRESS: 1726 Cole Blvd, Bldg 22, #150
Golden, CO 80401-3213
PHONE: (303) 271-2100
FAX: (303) 277-0110

BILL TO: Paul Weissenborn
COMPANY: Maverik Country Stores
ADDRESS: 880 W. Center St.
North Salt Lake, UT 84054

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX) BTEX DCA	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:		NUMBER OF CONTAINERS
MW-18	10/27/00	0920	H_2O	01							X																			2
MW-22	10/27/00	0950	H_2O	02							X																			2
MW-17	10/27/00	1015	H_2O	03							X																			2
MW-21	10/27/00	1100	H_2O	04							X																			2
MW-20	10/27/00	1135	H_2O	05							X																			2
MW-10	10/27/00	1210	H_2O	06							X																			2
MW-19	10/27/00	1240	H_2O	07							X																			2
MW-16	10/27/00	1330	H_2O	08							X																			2
MW-14	10/27/00	1410	H_2O	09							X																			2
DUP-1	10/27/00	—	H_2O	10							X																			2

PROJECT INFORMATION

PROJ. NO.:
PROJ. NAME: Former Maverik
P.O. NO.: Refinery Tank Farm
SHIPPED VIA:

SAMPLE RECEIPT

NO. CONTAINERS: Rx 20
CUSTODY SEALS: Rx NA
RECEIVED INTACT: Rx Y
BLUE ICE/ICE: Rx 2.3°C

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐
Please make invoice to Paul Weissenborn, Maverik Country Stores, but data package and invoice sent to Bill Hendrix at ThermoRetec for approval.

RELINQUISHED BY: 1.
Signature: Stephen Stellmanto Time: 0900
Printed Name: Stephen Stellmanto Date: 10/31/00
Company:
See reverse side (Force Majeure)

RECEIVED BY: (LAB) 1.
Signature: Time:
Printed Name: Date:
Company:

RELINQUISHED BY: 2.
Signature: Time:
Printed Name: Date:
Company:

RECEIVED BY: (LAB) 2.
Signature: Time: 1639
Printed Name: Date: 10/31/00
Pinnacle Laboratories Inc.

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

DATE: 10/27/00 PAGE: 2 OF 2

PLI Accession #: 01017

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER:	Bill Hendrix
COMPANY:	ThermoRetec
ADDRESS:	1726 Cole Blvd, Bldg 22, #150
	Golden, CO 80401-3213
PHONE:	(303) 271-2100
FAX:	(303) 277-0110
BILL TO:	Paul Weissenborn
COMPANY:	Maverik Country Stores
ADDRESS:	880 W. Center St.
	North Salt Lake, UT 84054

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline) MTBE	8021 (BTEX) MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX) BTEX DCA	8021 (HALO)	8021 (CUST)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081/8082)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310/8270-SIMS)	General Chemistry:		Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals:		NUMBER OF CONTAINERS
Field Blank	10/27/00	1430	H_2O	11							X																			1
TRIP Blank	10/18/00	1350	H_2O	12					X																					1

11-4

PROJECT INFORMATION	
PROJ. NO.:	
PROJ. NAME:	Former Maverik
~~P.O. NO.~~:	Refinery Tank Farm
SHIPPED VIA:	

SAMPLE RECEIPT	
NO. CONTAINERS:	5
CUSTODY SEALS:	N/A
RECEIVED INTACT:	Y
BLUE ICE/ICE:	Y

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE ☐

Please make Invoice to Paul Weissenborn, Maverik Country Stores, but data package and Invoice sent to Bill Hendrix at ThermoRetec for Approval.

RELINQUISHED BY: 1.	
Signature: Stephen Stellavato	Time: 0900
Printed Name: Stephen Stellavato	Date: 10/31/00
Company:	
See reverse side (Force Majeure)	

RECEIVED BY: 1.	
Signature:	Time:
Printed Name:	Date:
Company:	

RELINQUISHED BY: 2.	
Signature:	Time:
Printed Name:	Date:
Company:	

RECEIVED BY: (LAB) 2.	
Signature: Simone Tanno	Time: 1020
Printed Name: Simone Tanno	Date: 10/31/00
Pinnacle Laboratories Inc.	

Appendix B

Analytical Laboratory Data Reports

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

NOV 06 2000

Pinnacle Lab ID number **010117**
November 02, 2000

THERMORETEC CORPORATION
1726 COLE BLVD, BLDG. 22 #150
GOLDEN, CO 80401

Project Name FORMER MAVERIK REFINERY TANK FARM
Project Number (none)

Attention: BILL HENDRIX

On 10/31/00 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : THERMORETEC CORPORATION PINNACLE I.D.: 010117
PROJECT # : (none)
PROJECT NAME : FORMER MAVERIK REFINERY TANK FARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	MW-21	AQUEOUS	10/27/00	NA	11/01/00	1
05	MW-20	AQUEOUS	10/27/00	NA	11/01/00	1
06	MW-10	AQUEOUS	10/27/00	NA	11/01/00	1

PARAMETER	DET. LIMIT	UNITS	MW-21	MW-20	MW-10
BENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5
SURROGATE:					
BROMOCHLOROMETHANE (%)			120	115	122
SURROGATE LIMITS	(71 - 126)				
TRIFLUOROTOLUENE (%)			95	95	97
SURROGATE LIMITS	(72 - 130)				

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : THERMORETEC CORPORATION PINNACLE I.D.: 010117
PROJECT # : (none)
PROJECT NAME : FORMER MAVERIK REFINERY TANK FARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
07	MW-19	AQUEOUS	10/27/00	NA	11/01/00	1
08	MW-16	AQUEOUS	10/27/00	NA	11/01/00	1
09	MW-14	AQUEOUS	10/27/00	NA	11/01/00	1

PARAMETER	DET. LIMIT	UNITS	MW-19	MW-16	MW-14
BENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5
SURROGATE:					
BROMOCHLOROMETHANE (%)			108	107	118
SURROGATE LIMITS	(71 - 126)				
TRIFLUOROTOLUENE (%)			99	102	100
SURROGATE LIMITS	(72 - 130)				

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : THERMORETEC CORPORATION PINNACLE I.D.: 010117
PROJECT # : (none)
PROJECT NAME : FORMER MAVERIK REFINERY TANK FARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
10	DUP-1	AQUEOUS	10/27/00	NA	11/01/00	1
11	FIELD BLANK	AQUEOUS	10/27/00	NA	11/01/00	1

PARAMETER	DET. LIMIT	UNITS	DUP-1	FIELD BLANK
BENZENE	0.5	UG/L	< 0.5	< 0.5
1,2-DICHLOROETHANE (EDC)	0.5	UG/L	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5
SURROGATE:				
BROMOCHLOROMETHANE (%)			118	116
SURROGATE LIMITS	(71 - 126)			
TRIFLUOROTOLUENE (%)			93	99
SURROGATE LIMITS	(72 - 130)			

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : THERMORETEC CORPORATION PINNACLE I.D.: 010117
PROJECT # : (none)
PROJECT NAME : FORMER MAVERIK REFINERY TANK FARM

SAMPLE I.D. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
12	TRIP BLANK	AQUEOUS	10/18/00	NA	11/01/00	1

PARAMETER	DET. LIMIT	UNITS	TRIP BLANK
BENZENE	0.5	UG/L	< 0.5
TOLUENE	0.5	UG/L	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5
SURROGATE:			
BROMOCHLOROMETHANE (%)			116
SURROGATE LIMITS	(71 - 126)		
TRIFLUOROTOLUENE (%)			90
SURROGATE LIMITS	(72 - 130)		

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK
PURGEABLE HALOCARBONS / AROMATICS

TEST	: EPA 8021 MODIFIED		
BLANK I.D.	: 110100	PINNACLE I.D.	: 010117
CLIENT	: THERMORETEC CORPORATION	DATE EXTRACTED	: NA
PROJECT #	: (none)	DATE ANALYZED	: 11/01/00
PROJECT NAME	: FORMER MAVERIK REFINERY TANK FAR	MATRIX	: AQUEOUS

PARAMETER		UNITS	
BENZENE		UG/L	<0.5
1,2-DICHLOROETHANE (EDC)		UG/L	<0.5
TOLUENE		UG/L	<0.5
ETHYLBENZENE		UG/L	<0.5
TOTAL XYLENES		UG/L	<0.5
SURROGATE:			
BROMOCHLOROMETHANE (%)			107
SURROGATE LIMITS	(71 - 126)		
TRIFLUOROTOLUENE (%)			92
SURROGATE LIMITS	(72 - 130)		

CHEMIST NOTES:
N/A

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED		
MSMSD #	: 010117-05	PINNACLE I.D.	: 010117
CLIENT	: THERMORETEC CORPORATION	DATE EXTRACTED	: NA
PROJECT #	: (none)	DATE ANALYZED	: 11/01/00
PROJECT NAME	: FORMER MAVERIK REFINERY TANK FARM	SAMPLE MATRIX	: AQUEOUS
		UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	% RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	10.1	101	10.2	102	1	(82 - 128)	20
1,2-DICHLOROETHANE (EDC)	<0.5	10.0	9.6	96	10.1	101	5	(73 - 147)	20
TOLUENE	<0.5	10.0	10.3	103	11.7	117	13	(87 - 128)	20
ETHYLBENZENE	<0.5	10.0	10.0	100	10.2	102	2	(73 - 148)	20
TOTAL XYLENES	<0.5	30.0	32.9	110	33.1	110	1	(70 - 143)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: THERMORETEC CORPORATION	PINNACLE ID	: 010117
PROJECT #	: (none)	DATE RECEIVED	: 10/31/00
PROJECT NAME	: FORMER MAVERIK REFINERY TANK FARM	REPORT DATE	: 11/02/00

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	MW-18	AQUEOUS	10/27/00
02	MW-22	AQUEOUS	10/27/00
03	MW-17	AQUEOUS	10/27/00
04	MW-21	AQUEOUS	10/27/00
05	MW-20	AQUEOUS	10/27/00
06	MW-10	AQUEOUS	10/27/00
07	MW-19	AQUEOUS	10/27/00
08	MW-16	AQUEOUS	10/27/00
09	MW-14	AQUEOUS	10/27/00
10	DUP-1	AQUEOUS	10/27/00
11	FIELD BLANK	AQUEOUS	10/27/00
12	TRIP BLANK	AQUEOUS	10/18/00

PINNACLE LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : THERMORETEC CORPORATION PINNACLE I.D.: 010117
PROJECT # : (none)
PROJECT NAME : FORMER MAVERIK REFINERY TANK FARM

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
01	MW-18	AQUEOUS	10/27/00	NA	11/01/00	1
02	MW-22	AQUEOUS	10/27/00	NA	11/01/00	20
03	MW-17	AQUEOUS	10/27/00	NA	11/01/00	10

PARAMETER	DET. LIMIT	UNITS	MW-18	MW-22	MW-17
BENZENE	0.5	**UG/L**	**9.5**	**210**	**500**
1,2-DICHLOROETHANE (EDC)	0.5	**UG/L**	**0.9**	**< 10**	**< 5.0**
TOLUENE	0.5	**UG/L**	**< 0.5**	**120**	**57**
ETHYLBENZENE	0.5	**UG/L**	**< 0.5**	**220**	**180**
TOTAL XYLENES	0.5	**UG/L**	**6.9**	**830**	**1600**
SURROGATE:					
BROMOCHLOROMETHANE (%)			114	108	110
SURROGATE LIMITS	(71 - 126)				
TRIFLUOROTOLUENE (%)			88	92	82
SURROGATE LIMITS	(72 - 130)				

CHEMIST NOTES:
N/A