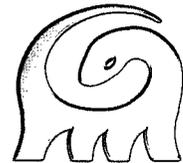


GW - 25

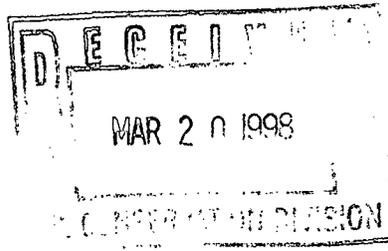
**MONITORING
REPORTS**

DATE:

1998-1992



William C. Olson
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505



ARCADIS Geraghty & Miller Inc
5100 E Skelly Drive
Suite 1000
Tulsa
Oklahoma 74135
Tel 918 664 9900
Fax 918 664 9925

ENVIRONMENTAL

Subject:

Annual Summary Report for 1997 Groundwater Monitoring Activities at Warren Monument Gas Plant, Lea County, New Mexico

Dear Mr. Olson:

On behalf of Warren Petroleum Company L.P. (Warren), please find the annual summary report for 1997 groundwater monitoring activities at the Warren Monument Gas Plant in Lea County, New Mexico. Groundwater monitoring activities for 1997 were conducted by Warren plant personnel. This annual summary report has been prepared jointly by Warren and ARCADIS Geraghty & Miller, Inc. to satisfy the reporting requirements outlined in the New Mexico Oil Conservation District (NMOCD) letter to Warren dated August 9, 1996.

Tulsa,
19 March 1998

Contact:
John P. Shonfelt, P.G.

Extension:
(918) 664-9900

SUMMARY OF MONITORING ACTIVITIES

The 1997 monitoring activities consisted of conducting quarterly groundwater gauging and sampling events. The following monitoring activities were conducted during each referenced quarterly event. Any deviations, problems, or deficiencies encountered during the monitoring period are also reported.

FIRST QUARTER 1997

- Gauged fluid levels in 13 monitoring wells on February 27, 1997.
- Sampled five monitoring wells (WP-1, WP-5, WP-6, WP-7, and WP-14) on February 27, 1997 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents using USEPA Method 8020A; the inorganic constituents chlorides, total dissolved solids (TDS), and sulfates; total metals; and polynuclear aromatic hydrocarbons (PAHs).
- Well WP-2 was still dry and thus, could not be sampled.

- Due to the delay in sampling the fourth quarter 1996 sampling event, the first quarter 1997 groundwater samples were not collected until February 27, 1997.

SECOND QUARTER 1997

- Gauged fluid levels in 13 monitoring wells on May 19, 1996.
- Sampled four monitoring wells (WP-1, WP-5, WP-7, and WP-14) on May 19, 1997 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A; the inorganic constituents chlorides, TDS, and sulfates; total metals; and PAHs.
- Well WP-2 was essentially dry and thus, could not be sampled.

THIRD QUARTER 1996

- Gauged fluid levels in 13 monitoring wells on August 19, 1996.
- Sampled four monitoring wells (WP-1, WP-5, WP-7, and WP-14) on August 19, 1996 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A; the inorganic constituents chlorides, TDS, and sulfates; total metals; and PAHs.
- Well WP-2 was essentially dry and thus, could not be sampled.

FOURTH QUARTER 1997

- Gauged fluid levels in 13 monitoring wells on January 5, 1998.
- Sampled four monitoring wells (WP-1, WP-5, WP-7, and WP-14) on January 5, 1998. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A; the inorganic constituents chlorides, TDS, and sulfates; total metals; and PAHs.
- Well WP-2 was essentially dry and thus, could not be sampled during the fourth quarter event.

SUMMARY OF MONITORING AND ANALYTICAL RESULTS

FLUID LEVEL MEASUREMENTS

Results of the 1997 fluid-level monitoring activities are summarized below. A site map with monitoring well locations is presented as Figure 1.

- Field measurements, water-level elevations, and liquid hydrocarbon thickness are presented in Tables 1A, 1B, and 1C, respectively. A summary table of groundwater elevations corrected for the presence of liquid hydrocarbons is presented in Table 1D. Based on previous results of liquid hydrocarbon characterization conducted at the site, a average specific gravity of 0.72 was used to calculate corrected groundwater elevations. Graphs of groundwater elevations versus time are presented as Appendix A.
- A slight increasing trend in water-level elevations was observed across the site during 1997 with the exception of water-level elevations from Wells WP-3 and WP-4. Well WP-2 was essentially dry during 1997.
- Groundwater was encountered at approximately 28 ft to 40 ft below the measuring point elevations (Table 1A). The saturated thickness of the alluvial sediments beneath the site ranged from being near dry in Well WP-2 to 8.5 ft in Well WP-10. The saturated thickness was less than 5 ft in seven of the 13 wells at the site.
- Groundwater elevation contour maps for each quarterly monitoring period are presented as Figures 2 through 5. Groundwater flow beneath the eastern half of the site is predominantly towards the southeast while groundwater flow beneath the western portion of the site is toward the south. An apparent area of groundwater mounding is present east of the processing area. The configuration of the water table appears to be consistent throughout each monitoring event in 1997.
- An anomalous high water-level elevation was recorded in Well WP-7 during the January 1998 gauging event. This value was not used in the construction of the groundwater elevation contour map for this period. The cause of the anomalous data is unknown.

ANALYTICAL RESULTS

Analytical results for the 1997 monitoring program are summarized below.

- A summary of groundwater quality data for the six wells (WP-1, WP-5, WP-6, WP-7, WP-13, and WP-14) sampled on a quarterly basis is presented in Tables 2A, 2B and 2C. A series of graphs showing BTEX concentrations versus time and inorganic parameter (chlorides, TDS, and sulfate) concentrations versus time are presented as Appendix B. The analytical data sheets for samples collected during the 1997 monitoring program are presented as Appendix C.
- BTEX levels were detected in four out of five monitoring wells sampled during the first quarter of 1997 except Well WP-7. Benzene is the predominant constituent detected in four of the five groundwater samples with detectable concentrations of BTEX. During the 1997 monitoring period, the highest concentrations of benzene were detected in Wells WP-1 and WP-5. Ethylbenzene was the predominant constituent detected in Well WP-6 during the first quarter of 1997. Well WP-6 was not sampled after the first quarter of 1997 due to the presence of a hydrocarbon film.
- Inorganic groundwater quality indicates elevated concentrations of chlorides, TDS, and sulfates are present in the groundwater beneath the site. The highest concentrations of chlorides, TDS, and sulfates were detected in Well WP-7 which is located in the northwest portion of the site. The elevated concentrations do not appear to be related to gas plant operations but are likely related to former operations at the Climax Chemical Company located approximately one-half mile northwest (upgradient) of the Warren site.
- A summary of total metals data for groundwater samples collected in 1997 is presented in Table 2B. Of the eight RCRA heavy metals, only three (barium, chromium, and lead) metals were detected in the groundwater samples. Barium was detected in all five monitoring wells at concentrations ranging from 0.06 mg/L to 2.6 mg/L. Chromium was detected in all five monitoring wells at concentrations ranging from 0.01 mg/L to 0.15 mg/L. Lead was detected in only one sample collected from Well WP-1 at a concentration of 0.09 mg/L.
- A summary of PAH data for groundwater samples collected in 1997 is presented in Table 2C. Only trace levels of PAHs were detected in four (WP-2, WP-5, WP-7, and WP-14) of the five wells. Detectable concentrations of naphthalene were present in Wells WP-1, WP-5, and WP-7 at concentrations ranging from 0.1 µg/L to 7.0 µg/L. Detectable concentrations of fluorene were present in Wells WP-1 and WP-5 with concentrations ranging from 0.8 µg/L to 8.0 µg/L. Detectable levels of phenanthrene ranging from 0.5 µg/L to 11.0 µg/L were

detected in Wells WP-1, WP-5, WP-7, and WP-14. Dibenzo (a,h) anthracene was detected in only Well WP-1 at a concentration of 3.0 µg/L.

DISTRIBUTION OF LIQUID HYDROCARBONS

The approximate extent of liquid hydrocarbons is shown for each quarterly monitoring event on Figures 6 through 9. A brief summary of findings is presented below.

- During February 1997, liquid hydrocarbons were detected in eight (Wells WP-3, WP-4, WP-6, WP-10, WP-11, WP-12, WP-13, and WP-15) of the 13 wells (Figure 6). Liquid hydrocarbon thickness in wells ranged from 0.01 ft in Well WP-6 to 1.49 ft in Well WP-4.
- During May 1997, liquid hydrocarbons were detected in eight (Wells WP-3, WP-4, WP-6, WP-10, WP-11, WP-12, WP-13, and WP-15) of the 13 wells (Figure 7). Liquid hydrocarbon thickness in wells ranged from 0.01 ft in Wells WP-3, WP-6, and WP-10 to 0.78 ft in Well WP-11.
- During August 1997, liquid hydrocarbons were detected in seven (Wells WP-4, WP-6, WP-10, WP-11, WP-12, WP-13, and WP-15) of the 13 wells (Figure 8). Liquid hydrocarbon thickness in wells ranged from 0.01 ft in Wells WP-6, WP-10, and WP-15 to 1.16 ft in Well WP-4.
- During January 1998, liquid hydrocarbons were detected in seven (Wells WP-4, WP-6, WP-10, WP-11, WP-12, WP-13, and WP-15) of the 13 wells (Figure 9). Liquid hydrocarbon thickness in wells ranged from 0.03 ft in Well WP-6 to 1.0 ft in Well WP-4.

SUMMARY OF HYDROCARBON RECOVERY OPERATIONS

Hydrocarbon recovery operations in 1997 consisted of periodically pumping three wells using pneumatic skimming pumps. Produced fluids are pumped to the onsite oil/water separator and plant wastewater system. Recovered volumes of produced water and hydrocarbons for each recovery well are presented in Tables 3A, 3B, and 3C and can be summarized as follows.

- Hydrocarbons could not be recovered from Well WP-2 because it was essentially dry during 1997.
- Approximately 140 gallons of hydrocarbon product and 150 gallons of produced water were recovered from Well WP-3 during 1997. Hydrocarbon recovery

operations were ceased in April 1997 due to low water-table conditions and pump limitations.

- Approximately 220 gallons of hydrocarbon product and 270 gallons of produced water were recovered from Well WP-4 during 1997. Hydrocarbon recovery operations were ceased in April 1997 because of the low water-table conditions and pump limitations.
- Approximately 25 gallons of hydrocarbon product and 265 gallons of produced water were recovered from Well WP-10 during 1997. Hydrocarbon recovery operations were ceased in March 1997 because of the reduced hydrocarbon thickness in the well.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 1997 monitoring program, the following conclusions can be made.

- A slight increasing trend in water-level elevations was observed across the site during 1997 with the exception of water-level elevations from Wells WP-3, and WP-4. These wells are located along the extreme south or eastern portions of the site (Figure 1). Well WP-2 was essentially dry during 1997.
- Groundwater flow beneath the eastern half of the site is predominantly towards the southeast while groundwater flow beneath the western portion of the site is toward the south. An apparent area of groundwater mounding is present east of the processing area, and possibly in Well WP-7. The configuration of the water table appears to be consistent throughout each monitoring event in 1997.
- BTEX levels were detected in all samples from monitoring wells except Well WP-7. Benzene is the predominant constituent detected in four of the five groundwater samples with detectable concentrations of BTEX. During the 1997 monitoring period, the highest concentrations of benzene were detected in Wells WP-1 and WP-5. Ethylbenzene was the predominant constituent detected in Well WP-6 during the first quarter of 1997. Well WP-6 was not sampled after the first quarter of 1997.
- Inorganic groundwater quality indicates elevated concentrations of chlorides, TDS, and sulfates are present in the groundwater beneath the site. The highest concentrations of chlorides, TDS, and sulfates were detected in Well WP-7 which is located in the northwest portion of the site. The elevated concentrations do not appear to be related to gas plant operations but are likely related to former

operations at the Climax Chemical Company located approximately one-half mile northwest (upgradient) of the Warren site.

- Only low levels of the heavy metals barium, chromium, and lead were detected in groundwater samples.
- Trace levels of PAHs were detected in samples from four of the five monitoring wells. The levels of PAHs in groundwater beneath the site are considered insignificant.
- Two separate hydrocarbon plumes were detected at the site during 1997. The northern plume is larger and occurs southeast (downgradient) of the gas processing area and condensate storage area. The southern plume occurs southeast (downgradient) of the former produced water pond and burn pit.
- A total of 385 gallons of hydrocarbons were recovered in 1997 from Wells WP-3, WP-4, and WP-10. Low water-table conditions in conjunction with pump limitations minimized recovery well operation in the third and fourth quarters of 1997. In an effort to make the recovery system operate more efficiently during low water-level conditions, Warren is in the process of purchasing two bottom loading hydrocarbon skimming pumps for Wells WP-4 and WP-13. In addition, the hydrocarbon recovery system is currently being expanded. These modifications should improve hydrocarbon recovery operations in 1998.

Based on the results to the 1997 monitoring program the following recommendations can be made.

1. During the March 1998 sampling event, samples should be collected for analysis of BTEX, chlorides, TDS, and sulfates.
2. Complete the upgrade and modification of the hydrocarbon recovery system as discussed above.

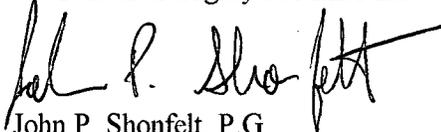
Based on information discussed with the OCD during the March 5, 1998, meeting, Warren proposes the following groundwater monitoring program for the Monument site in 1998. The 1998 groundwater monitoring program will consist of semi-annual groundwater sampling. Prior to sampling, all monitoring wells will be gauged for the presence of liquid hydrocarbons and water-level elevations. The first groundwater sampling event will be conducted in June 1998 in an effort to coincide with late Spring precipitation events. The first event will be considered the comprehensive sampling event as all five monitoring wells (WP-1, WP-5, WP-6, WP-7, and WP-14) without liquid hydrocarbons will be sampled for analysis of BTEX, chlorides, TDS, sulfates, and total metals using the appropriate USEPA methods. The second event will be

conducted in October to coincide with the end of the Fall precipitation season. Three perimeter downgradient monitor wells (WP-1, WP-5, and WP-14) will be sampled during the second event for analysis of BTEX, chlorides, TDS, and sulfates. The above monitoring events are scheduled to coincide with seasonal periods of precipitation and thus, should be representative of higher groundwater flow conditions. The results of the groundwater monitoring program as well as hydrocarbon recovery activities will be summarized in an annual report submitted to the OCD. The annual report for 1998 will be submitted to the OCD by January 15, 1999.

The first sampling event of 1998 monitoring event is scheduled for June. The 1998 groundwater monitoring will be completed per the proposed plan unless additional input is received from the OCD. Please contact Russell Dykes of Warren at (713) 767-0072 if you have any questions regarding this annual summary report package.

Sincerely,

ARCADIS Geraghty & Miller Inc



John P. Shonfelt, P.G.

Senior Project Manager/Hydrogeologist



Brian Guillette, P.G.

Regional Manager

Copies:

Russell Dykes (Warren Petroleum)

Jerry Sexton (NMOCD Hobbs District)

Mike Hicks (Warren - Monument)

e Elevations and Hydrocarbon Thickness Measurements

Water Table Elevations and Hydrocarbon Thickness must be measured every three months for all Monitoring Wells. Measurements should be taken during the first half of each quarter. All wells should be gauged at the same time with the date noted in the space provided in the table. Surveyed elevations are recorded on the Sheet labeled Well Information. MSL water elevations and product thickness are automatically calculated in Tables 1-B and 1-C, respectively.

Monitor Well ID		Table 1-A, ACTUAL FIELD MEASUREMENTS, from reference point on north side of casing, feet										1998			
		1995		1996				1997				MW #	1st Qtr	2nd Qtr	3rd Qtr
		3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 6/26/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr 2/27/97	2nd Qtr 5/19/97	3rd Qtr 8/19/97	4th Qtr 1/5/98				
WP-1	Product	32.00	25.80	28.00	29.95	30.45	31.08	31.26	31.00	29.72	29.14	MW1			
	Water	32.00	25.80	28.00	29.95	30.45	31.08	31.26	31.00	29.72	29.14				
WP-2	Product	30.70	30.95	31.53	31.71	31.71	31.71	31.65	31.65	31.65	31.65	MW2			
	Water	31.00	31.35	31.71	31.71	31.71	31.71	31.65	31.65	31.65	31.65				
WP-3	Product	29.40	29.30	29.17	29.53	29.85	29.94	29.94	30.06	NA	NA	MW3			
	Water	29.60	29.55	29.45	29.77	29.95	30.26	30.15	30.07	NA	NA				
WP-4	Product	33.60	33.75	33.96	34.70	35.20	35.65	35.68	36.56	36.14	36.30	MW4			
	Water	35.00	35.10	35.23	36.60	36.85	37.00	37.17	37.21	37.30	37.30				
WP-5	Product	31.90	32.10	32.62	33.60	34.00	34.57	34.71	34.50	34.19	34.31	MW5			
	Water	31.90	32.10	32.62	33.60	34.00	34.57	34.71	34.50	34.19	34.31				
WP-6	Product	28.80	28.80	28.75	28.80	28.80	28.78	28.72	28.75	28.77	28.77	MW6			
	Water	28.80	28.80	28.78	28.80	28.80	28.78	28.73	28.76	28.78	28.80				
WP-7	Product	31.25	34.30	31.77	32.10	32.20	32.45	32.47	32.34	31.29	28.65	MW7			
	Water	31.25	34.30	31.77	32.10	32.20	32.45	32.47	32.34	31.29	28.65				
WP-8	Product	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MW8			
	Water	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
WP-9	Product	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MW9			
	Water	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
WP-10	Product	28.35	28.15	28.10	28.60	28.75	28.88	28.89	29.79	28.89	28.58	MW10			
	Water	28.45	28.35	28.30	28.72	28.90	29.14	29.14	29.80	28.90	28.70				
WP-11	Product	NA	29.60	29.32	30.30	30.45	30.61	30.61	30.61	30.78	30.40	MW11			
	Water	NA	29.68	29.49	30.43	31.00	31.39	31.53	31.39	31.25	30.51				
WP-12	Product	NA	38.08	37.54	38.45	38.60	38.95	38.79	38.34	38.09	38.40	MW12			
	Water	NA	38.25	37.76	38.50	39.00	39.24	39.02	38.90	38.19	38.95				
WP-13	Product	NA	30.25	29.88	30.55	30.70	30.81	30.83	31.04	31.01	30.80	MW13			
	Water	NA	30.25	29.88	30.55	30.70	31.42	31.43	31.61	31.44	31.02				
WP-14	Product	NA	40.75	40.85	40.90	41.00	41.14	41.13	40.90	40.62	41.31	MW14			
	Water	NA	40.75	40.85	40.90	41.00	41.14	41.13	40.90	40.62	41.31				
WP-15	Product	NA	33.60	32.96	33.95	33.20	33.10	33.09	33.15	33.11	33.21	MW15			
	Water	NA	33.60	33.16	34.30	33.40	33.49	33.47	33.58	33.12	33.58				

Note: The bottom of well WP-2 is 31.71 feet from top of casing. Well #2 is dry.
 NA indicates not measured or not able to measure.
 Note: well #6 has trace of product but not enough to measure.
 Note: #3 MW 3rd Quarter 97 unable to measure due to grounding cable in hole

Table 1-B, Water Table Elevations, Feet above MSL

Monitor Well ID	1995		1996				1997				1998				
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 4/2/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr 2/27/97	2nd Qtr 5/19/97	3rd Qtr 8/19/97	4th Qtr 1/5/98	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
WP-1	3546.01	3552.21	3550.01	3548.06	3547.56	3546.93	3546.75	3547.01	3548.29	3548.87	MW1				
WP-2	3546.77	3546.42	3546.06	3546.06	3546.06	3546.06	3546.12	3546.12	3546.12	3546.12	MW2				
WP-3	3551.61	3551.66	3551.76	3551.44	3551.26	3550.95	3551.06	3551.14	NA	NA	MW3				
WP-4	3542.15	3542.05	3541.92	3540.55	3540.30	3540.15	3539.98	3539.94	3539.85	3539.85	MW4				
WP-5	3547.60	3547.40	3546.88	3545.90	3545.50	3544.93	3544.79	3545.00	3545.31	3545.19	MW5				
WP-6	3556.56	3556.56	3556.58	3556.56	3556.56	3556.58	3556.63	3556.60	3548.80	3549.22	MW6				
WP-7	3551.79	3548.74	3551.27	3550.94	3550.84	3550.59	3550.57	3550.70	3551.75	3554.39	MW7				
WP-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MW8				
WP-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	MW9				
WP-10	3551.63	3551.73	3551.78	3551.36	3551.18	3550.94	3550.94	3550.28	3551.18	3551.38	MW10				
WP-11	NA	3551.55	3551.74	3550.80	3550.23	3549.84	3549.70	3549.84	3549.98	3550.72	MW11				
WP-12	NA	3543.64	3544.13	3543.39	3542.89	3542.65	3542.87	3542.99	3543.70	3542.94	MW12				
WP-13	NA	3549.40	3549.77	3549.10	3548.95	3548.23	3548.22	3548.04	3548.21	3541.25	MW13				
WP-14	NA	3541.06	3540.96	3540.91	3540.81	3540.67	3540.68	3540.91	3541.19	3542.86	MW14				
WP-15	NA	3548.67	3549.11	3547.97	3548.87	3548.78	3548.80	3548.69	3549.15	3551.47	MW15				

The water table in well WP-3 may be below bottom of well which has an elevation of 3551.91 feet
 NA indicates not measured or not able to measure

Table 1-C, Product Thickness, feet

Monitor Well ID	1995		1996				1997				1998				
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 4/2/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr 2/27/97	2nd Qtr 5/19/97	3rd Qtr 8/19/97	4th Qtr 1/5/98	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
WP-1											MW1				
WP-2	0.30	0.40	0.18								MW2				
WP-3	0.20	0.25	0.28	0.24	0.10	0.32	0.21	0.01	NA	NA	MW3				
WP-4	1.40	1.35	1.27	1.90	1.65	1.35	1.49	0.65	1.16	1.00	MW4				
WP-5											MW5				
WP-6			0.03				0.01	0.01	0.01	0.03	MW6				
WP-7											MW7				
WP-8	NA	NA	NA				NA	NA	NA	NA	MW8				
WP-9	NA	NA	NA				NA	NA	NA	NA	MW9				
WP-10	0.10	0.20	0.20	0.12	0.15	0.26	0.25	0.01	0.01	0.12	MW10				
WP-11	NA	0.08	0.17	0.13	0.55	0.78	0.92	0.78	0.47	0.11	MW11				
WP-12	NA	0.17	0.22	0.05	0.40	0.29	0.23	0.56	0.10	0.55	MW12				
WP-13	NA					0.61	0.60	0.57	0.43	0.22	MW13				
WP-14	NA										MW14				
WP-15	NA		0.20	0.35	0.20	0.39	0.38	0.43	0.01	0.37	MW15				

Blanks indicate no product measured NA indicates not measured or not able to measure.

TABLE 1-D MEASUREMENTS TO BOTTOM OF WELLS

Monitor Well ID	1997				1998			
	1st Qtr 2/27/97	2nd Qtr 5/19/97	3rd Qtr 8/19/97	4th Qtr 1/5/98	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
MW-1	34.82	34.82	34.82	34.82	MW1			
MW-2	31.65	31.65	31.65	31.65	MW2			
MW-3	38.10	38.10	38.10	38.10	MW3			
MW-4	37.40	37.40	37.40	37.40	MW4			
MW-5	38.00	38.00	38.00	38.00	MW5			
MW-6	30.50	30.50	30.50	30.50	MW6			
MW-7	37.58	37.58	37.58	37.58	MW7			
MW-8	NA	NA	NA	NA	MW8			
MW-9	NA	NA	NA	NA	MW9			
MW-10	37.20	37.20	37.20	37.20	MW10			
MW-11	36.40	36.40	36.40	36.40	MW11			
MW-12	43.20	43.20	43.20	43.20	MW12			
MW-13	36.40	36.40	36.40	36.40	MW13			
MW-14	48.30	48.30	48.30	48.30	MW14			
MW-15	35.10	35.10	35.10	35.10	MW15			

TABLE 1-E THICKNESS OF PRODUCT AND WATER TO BOTTOM OF HOLE

Table 1D. Historical Summary of Groundwater Elevation Data, Warren Monument,
New Mexico, Warren Petroleum, Inc.

Date	Well I.D.	Measured Groundwater Elevation (ft AMSL)	Measured Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
10/31/95	WP-1	3,546.01		3,546.01
11/14/95		3,552.21		3,552.21
1/24/96		3,550.01		3,550.01
4/2/96		3,548.06		3,548.06
9/26/96		3,547.56		3,547.56
1/28/97		3,546.93		3,546.93
2/27/97		3,546.75		3,546.75
5/19/97		3,547.01		3,547.01
8/19/97		3,548.29		3,548.29
1/5/98		3,548.87		3,548.87
10/31/95	WP-2	3,546.77	0.30	3,546.99
11/14/95		3,546.42	0.40	3,546.71
1/24/96		3,546.06	0.18	3,546.19
4/2/96		3,546.06		3,546.06
9/26/96		3,546.06		3,546.06
1/28/97		3,546.06		3,546.06
2/27/97		3,546.12		3,546.12
5/19/97		3,546.12		3,546.12
8/19/97		3,546.12		3,546.12
1/5/98		3,546.12		3,546.12
10/31/95	WP-3	3,551.61	0.20	3,551.76
11/14/95		3,551.66	0.25	3,551.84
1/24/96		3,551.76	0.28	3,551.96
4/2/96		3,551.44	0.24	3,551.61
9/26/96		3,551.26	0.10	3,551.33
1/28/97		3,550.95	0.32	3,551.18
2/27/97		3,551.06	0.21	3,551.21
5/19/97		3,551.14	0.01	3,551.15
8/19/97		NA	NA	NA
1/5/98		NA	NA	NA
10/31/95	WP-4	3,542.15	1.40	3,543.17
11/14/95		3,542.05	1.35	3,543.03
1/24/96		3,541.92	1.27	3,542.84
4/2/96		3,540.55	1.90	3,541.93
9/26/96		3,540.30	1.65	3,541.50
1/28/97		3,540.15	1.35	3,541.13
2/27/97		3,539.98	1.49	3,541.06
5/19/97		3,539.94	0.65	3,540.41
8/19/97		3,539.85	1.16	3,540.69
1/5/98		3,539.85	1.00	3,540.58

Footnotes on last page.

Table 1D. Historical Summary of Groundwater Elevation Data, Warren Monument,
New Mexico, Warren Petroleum, Inc.

Date	Well I.D.	Measured Groundwater Elevation (ft AMSL)	Measured Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
10/31/95	WP-5	3,547.60		3,547.60
11/14/95		3,547.40		3,547.40
1/24/96		3,546.88		3,546.88
4/2/96		3,545.90		3,545.90
9/26/96		3,545.50		3,545.50
1/28/97		3,544.93		3,544.93
2/27/97		3,544.79		3,544.79
5/19/97		3,545.00		3,545.00
8/19/97		3,545.31		3,545.31
1/5/98		3,545.19		3,545.19
10/31/95	WP-6	3,556.56		3,556.56
11/14/95		3,556.56		3,556.56
1/24/96		3,556.58	0.03	3,556.60
4/2/96		3,556.56		3,556.56
9/26/96		3,556.56		3,556.56
1/28/97		3,556.58		3,556.58
2/27/97		3,556.63	0.01	3,556.64
5/19/97		3,556.60	0.01	3,556.61
8/19/97		3,556.58	0.01	3,556.59
1/5/98		3,556.56	0.03	3,556.58
10/31/95	WP-7	3,551.79		3,551.79
11/14/95		3,548.74		3,548.74
1/24/96		3,551.27		3,551.27
4/2/96		3,550.94		3,550.94
9/26/96		3,550.84		3,550.84
1/28/97		3,550.59		3,550.59
2/27/97		3,550.57		3,550.57
5/19/97		3,550.70		3,550.70
8/19/97		3,551.75		3,551.75
1/5/98		3,554.39		3,554.39
10/31/95	WP-10	3,551.63	0.10	3,551.70
11/14/95		3,551.73	0.20	3,551.88
1/24/96		3,551.78	0.20	3,551.93
4/2/96		3,551.36	0.12	3,551.45
9/26/96		3,551.18	0.15	3,551.29
1/28/97		3,550.94	0.26	3,551.13
2/27/97		3,550.94	0.25	3,551.12
5/19/97		3,550.28	0.01	3,550.29
8/19/97		3,551.18	0.01	3,551.19
1/5/98		3,551.38	0.12	3,551.47

Footnotes on last page.

Table 1D. Historical Summary of Groundwater Elevation Data, Warren Monument,
New Mexico, Warren Petroleum, Inc.

Date	Well I.D.	Measured Groundwater Elevation (ft AMSL)	Measured Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
11/14/95	WP-11	3,551.55	0.08	3,551.61
1/24/96		3,551.74	0.17	3,551.86
4/2/96		3,550.80	0.13	3,550.89
9/26/96		3,550.23	0.55	3,550.63
1/28/97		3,549.84	0.78	3,550.41
2/27/97		3,549.70	0.92	3,550.37
5/19/97		3,549.84	0.78	3,550.41
8/19/97		3,549.98	0.47	3,550.32
1/5/98		3,550.72	0.11	3,550.80
11/14/95	WP-12	3,543.64		3,543.64
1/24/96		3,544.13		3,544.13
4/2/96		3,543.39		3,543.39
9/26/96		3,542.89	0.40	3,543.18
1/28/97		3,542.65	0.29	3,542.86
2/27/97		3,542.87	0.23	3,543.04
5/19/97		3,542.99	0.56	3,543.40
8/19/97		3,543.70	0.10	3,543.77
1/5/98		3,542.94	0.55	3,543.34
11/14/95	WP-13	3,549.40		3,549.40
1/24/96		3,549.77		3,549.77
4/2/96		3,549.10		3,549.10
9/26/96		3,548.95		3,548.95
1/28/97		3,548.23	0.61	3,548.67
2/27/97		3,548.22	0.60	3,548.66
5/19/97		3,548.04	0.57	3,548.45
8/19/97		3,548.21	0.43	3,548.52
1/5/98		3,548.63	0.22	3,548.79
11/14/95	WP-14	3,541.06		3,541.06
1/24/96		3,540.96		3,540.96
4/2/96		3,540.91		3,540.91
9/26/96		3,540.81		3,540.81
1/28/97		3,540.67		3,540.67
2/27/97		3,540.68		3,540.68
5/19/97		3,540.91		3,540.91
8/19/97		3,541.19		3,541.19
1/5/98		3,540.50		3,540.50

Footnotes on last page.

Table 1D. Historical Summary of Groundwater Elevation Data, Warren Monument,
New Mexico, Warren Petroleum, Inc.

Date	Well I.D.	Measured Groundwater Elevation (ft AMSL)	Measured Product Thickness (ft)	Corrected Groundwater Elevation (ft AMSL)
11/14/95	WP-15	3,548.67		3,548.67
1/24/96		3,549.11	0.20	3,549.26
4/2/96		3,547.97	0.35	3,548.22
9/26/96		3,548.87	0.20	3,549.02
1/28/97		3,548.78	0.39	3,549.06
2/27/97		3,548.80	0.38	3,549.08
5/19/97		3,548.69	0.43	3,549.00
8/19/97		3,549.15	0.01	3,549.16
1/5/98		3,548.69	0.37	3,548.96

ft Feet
AMSL Above Mean Sea Level

Table 2A. Summary of Groundwater Quality Data, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Chlorides (mg/L)	TDS (mg/L)	Sulfate (mg/L)	
10/31/95	WP-1	5,100	ND	18	ND	5,118	30	907	ND	
12/20/95		5,000	ND	ND	ND	5,000	16	798	ND	
2/19/96		6,300	ND	ND	ND	6,300	21	1,146	ND	
7/11/96		2,500	ND	60	58	2,618	78	1,369	9	
10/11/96		1,100	33	68	280	1,481	202	1,446	8	
1/17/97		NA	NA	NA	NA	NA	NA	NA	NA	NA
2/27/97		590	ND	12	5	607	277	1,389	9	
5/19/97		200	1	8	1	210	594	14,099	8,310	
8/19/97		1,300	ND	ND	130	1,430	226	1,530	29	
1/5/98		1,200	ND	24	ND	1,224	92	1,319	9	
10/31/95	WP-5	140	ND	2	2	144	6,700	16,229	2,960	
12/20/95		110	ND	1	ND	111	7,500	17,087	2,670	
2/19/96		140	ND	ND	ND	140	9,000	20,202	3,090	
7/11/96		180	ND	ND	ND	180	6,250	15,321	2,880	
10/11/96		200	ND	1.1	ND	201.1	6,150	15,024	2,800	
1/17/97		260	1.9	2.2	ND	264.1	6,350	15,833	3,110	
2/27/97		290	ND	1.1	ND	291.0	6,300	15,190	2,800	
5/19/97		210	ND	ND	ND	210.0	6,820	15,288	2,440	
8/19/97		430	ND	ND	ND	430	14,200	32,222	5,550	
1/5/98		750	ND	ND	ND	750	5,760	14,579	2,900	
10/31/95	WP-6	620	ND	880	180	1,680	2,100	5,271	53	
12/20/95		290	ND	320	70	680	1,900	5,259	28	
2/19/96		610	ND	630	ND	1,240	1,500	4,718	21	
7/11/96		280	25	450	42	797	1,520	4,724	34	
10/11/96		280	ND	910	500	1,690	1,670	3,678	17	
1/17/97		180	ND	580	ND	760	1,500	4,371	268	
2/27/97		260	ND	690	ND	950	1,420	4,654	71	
5/19/97		NS	NS	NS	NS	NS	NS	NS	NS	
8/19/97		NS	NS	NS	NS	NS	NS	NS	NS	
1/5/98		NS	NS	NS	NS	NS	NS	NS	NS	

Footnotes on last page.

Table 2A. Summary of Groundwater Quality Data, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Chlorides (mg/L)	TDS (mg/L)	Sulfate (mg/L)
10/31/95	WP-7	ND	ND	ND	ND	ND	16,000	35,492	5,830
12/20/95		ND	ND	ND	ND	ND	15,000	32,986	5,390
2/19/96		ND	ND	1	ND	1	16,500	36,587	6,160
7/11/96		ND	ND	ND	1.1	1.1	15,200	34,522	6,270
10/11/96		ND	ND	ND	ND	ND	15,200	33,712	5,720
1/17/97		ND	ND	ND	ND	ND	15,200	30,385	3,510
2/27/97		ND	ND	ND	ND	ND	15,200	34,468	6,170
5/19/97		ND	ND	ND	ND	ND	16,200	34,470	5,160
8/19/97		ND	ND	ND	ND	ND	6,870	16,781	3,350
1/5/98		ND	ND	ND	ND	ND	9,300	26,116	6,900
12/20/95	WP-13	5,100	ND	170	ND	5,270	2,300	5,387	11
2/19/96		5,700	ND	150	ND	5,850	1,150	3,495	5
7/11/96		3,600	ND	130	ND	3,730	975	3,229	13
10/11/96		3,400	ND	500	320	4,220	975	3,027	9
1/17/97		2,700	63	700	140	3,603	487	2,207	15
2/27/97		NS	NS	NS	NS	NS	NS	NS	NS
5/19/97		NS	NS	NS	NS	NS	NS	NS	NS
8/19/97		NS	NS	NS	NS	NS	NS	NS	NS
1/5/98		NS	NS	NS	NS	NS	NS	NS	NS
12/20/95		WP-14	120	ND	2	21	143	7,750	15,888
2/19/96	81		ND	1	ND	82	10,000	21,366	2,670
7/11/96	27		ND	ND	ND	27	12,200	25,570	3,040
10/11/96	29		1.4	6.1	12	49	11,500	19,754	29
1/17/97	ND		ND	ND	ND	ND	11,700	24,483	3,110
2/27/97	27		1.5	1.6	1.6	31.7	11,700	25,463	3,780
5/19/97	32		1.4	1.3	ND	34.7	12,400	25,009	2,740
8/19/97	65		ND	55	55	175	10,600	23,619	3,790
1/5/98	30		ND	2.9	6.5	39.4	12,000	25,345	3,500

µg/L grams per liter.
mg/L grams per liter.

G:\APROJECT\warrenlok532002\lab\as\warrenwq.xls\WATER QUALITY DATA

Table 2B. 1997 Summary of Groundwater Quality Data, Total Metals, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Silver (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Calcium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Iron (mg/L)	Mercury (mg/L)	Potassium (mg/L)	Magnesium (mg/L)	Lead (mg/L)	Selenium (mg/L)
2/27/97	WP-1	ND	ND	1.3	120	ND	0.02	28	ND	5	39	ND	ND
5/19/97		ND	ND	2.6	676	ND	0.15	134	ND	28	90.3	0.09	ND
8/19/97		ND	ND	1.5	346	ND	0.03	32	ND	10	44.8	ND	ND
1/5/98	WP-5	ND	ND	0.8	122	ND	0.03	16	ND	7	26.3	ND	ND
2/27/97		ND	ND	0.5	508	ND	ND	7.1	ND	56	125	ND	ND
5/19/97		ND	ND	1.26	2330	ND	0.08	69.6	ND	75	249	ND	ND
8/19/97	WP-6	ND	ND	0.05	278	ND	ND	0.6	ND	49	108	ND	ND
1/5/98		ND	ND	0.21	393	ND	ND	3.0	ND	51	108	ND	ND
2/27/97		ND	ND	0.66	189	ND	0.14	22.5	ND	26	134	ND	ND
5/19/97	WP-7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/19/97		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/5/98		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/27/97	WP-14	ND	ND	0.06	909	ND	ND	1.4	ND	123	358	ND	ND
5/19/97		ND	ND	0.52	1350	ND	0.04	14.6	ND	119	377	ND	ND
8/19/97		ND	ND	0.17	1110	ND	ND	4.7	ND	114	381	ND	ND
1/5/98	WP-14	ND	ND	0.20	634	ND	ND	6.5	ND	70	157	ND	ND
2/27/97		ND	ND	0.46	890	ND	ND	5.2	ND	78	314	ND	ND
5/19/97		ND	ND	0.68	1160	ND	0.01	6.7	ND	79	325	ND	ND
8/19/97	WP-14	ND	ND	0.45	859	ND	ND	4.8	ND	69	304	ND	ND
1/5/98		ND	ND	0.36	923	ND	ND	4.6	ND	70	310	ND	ND

NS Not Sampled
 ND Not Detected
 µg/L Micrograms per liter.
 mg/L Milligrams per liter.

Table 2C. 1997 Summary of Groundwater Quality Data, Polynuclear Aromatic Hydrocarbons, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Naphthalene (µg/L)	Acenaphthylene (µg/L)	Acenaphthene (µg/L)	Fluorene (µg/L)	Phenanthrene (µg/L)	Anthracene (µg/L)	Fluoranthene (µg/L)	Pyrene (µg/L)	Chrysene (µg/L)	Benzo (a) anthracene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Benzo (a) pyrene (µg/L)	Dibenzo (a,h) anthracene (µg/L)	Benzo (g,h,i) perylene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)
2/27/97	WP-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/97		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8/19/97		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/5/98		7.0	ND	ND	8.0	11.0	ND	ND	ND	ND	ND	ND	ND	ND	3.0	ND	ND
2/27/97	WP-5	0.1	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/97		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8/19/97		ND	ND	ND	ND	1.0	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/5/98		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2/27/97	WP-6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/97		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
8/19/97		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/5/98		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/27/97	WP-7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/97		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8/19/97		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/5/98		0.1	ND	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2/27/97	WP-14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/97		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8/19/97		ND	ND	ND	ND	ND	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1/5/98		ND	ND	ND	ND	3.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

GWPROJECT\WARREN\OKS32902T\ABLES\W\WARREN\Q.21.S\WATER QUALITY DATA

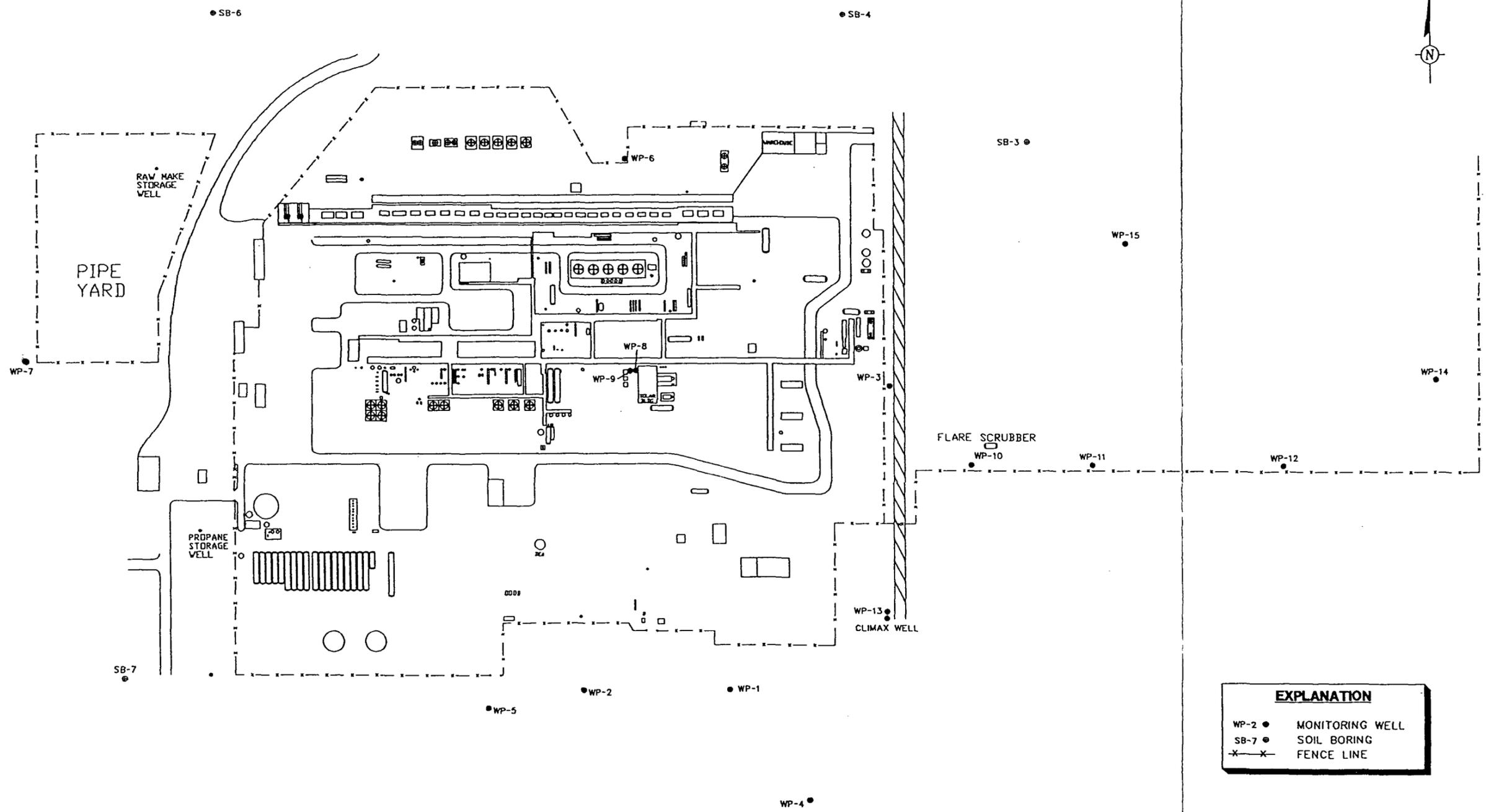
ND Not Detected.
 N/A Not Available.
 NS Not Sampled.
 µg/L Micrograms per liter.
 mg/L Milligrams per liter.

Well Information

These are the last elevations, shot 3-15-96 by
Basin Surveys.

Monitoring Well Reference Point Elevations, feet	
Monitor Well ID	Reference Elevation
	3/15/96
WP-1	3578.01
WP-2	3577.77
WP-3	3581.21
WP-4	3577.15
WP-5	3579.50
WP-6	3585.36
WP-7	3583.04
WP-8	3580.67
WP-9	3579.75
WP-10	3580.08
WP-11	3581.23
WP-12	3581.89
WP-13	3579.65
WP-14	3581.81
WP-15	3582.27

DWG DATE: 31-JAN-96 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: SITE-3 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
●	MONITORING WELL
⊙	SOIL BORING
-X-X-	FENCE LINE


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

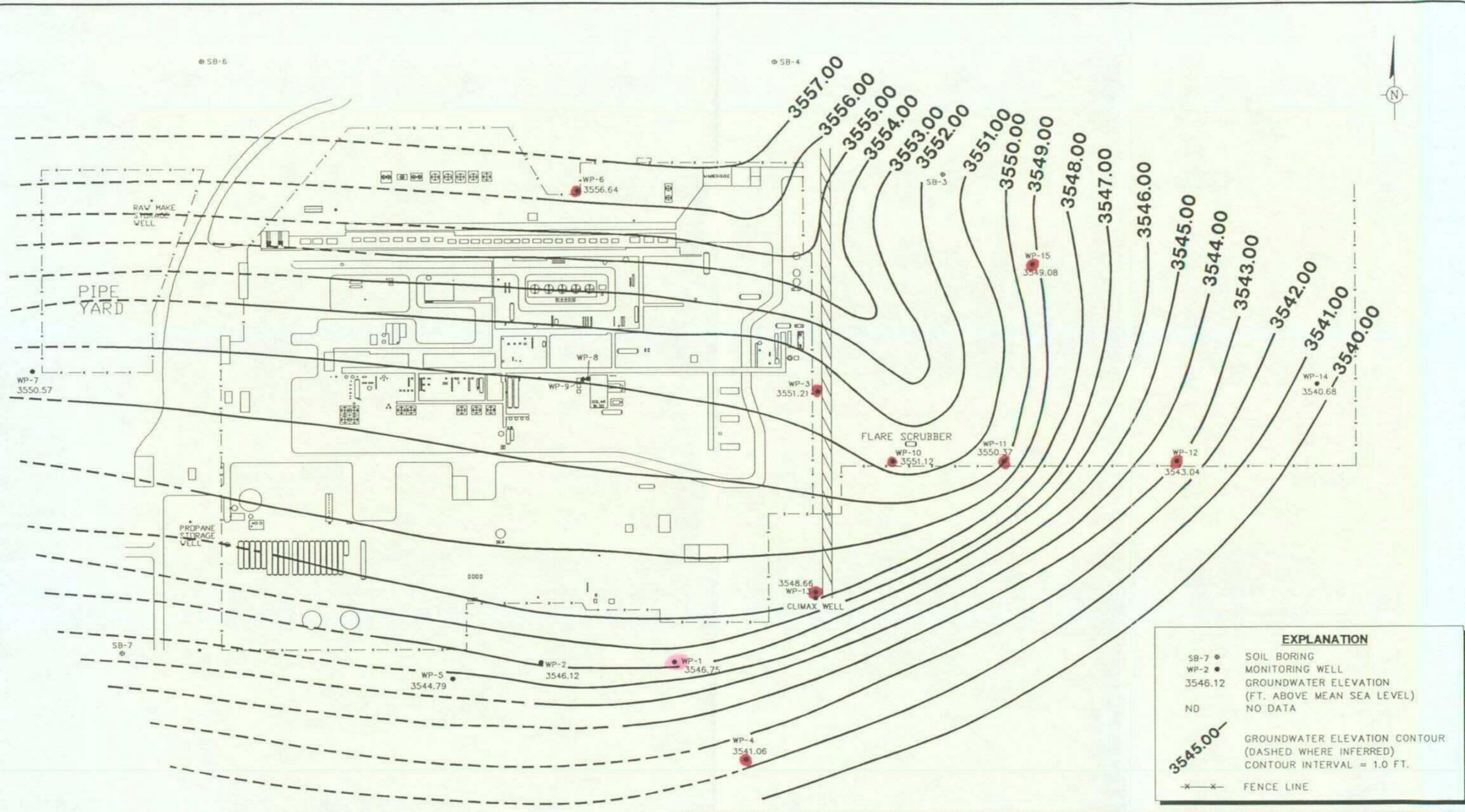
SITE MAP WITH SOIL BORINGS AND OBSERVATION WELL LOCATIONS

WARREN PETROLEUM MONUMENT, NEW MEXICO

0  200 ft.

FIGURE
1

DWG DATE: 11FEB98 | PRJCT NO.: OK0532.002 | FILE NO.: | DRAWING: GV0297 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 •	SOIL BORING
WP-2 •	MONITORING WELL
3546.12	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
3545.00—	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
—x—x—	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

GROUNDWATER ELEVATION CONTOURS
FEBRUARY 27, 1997

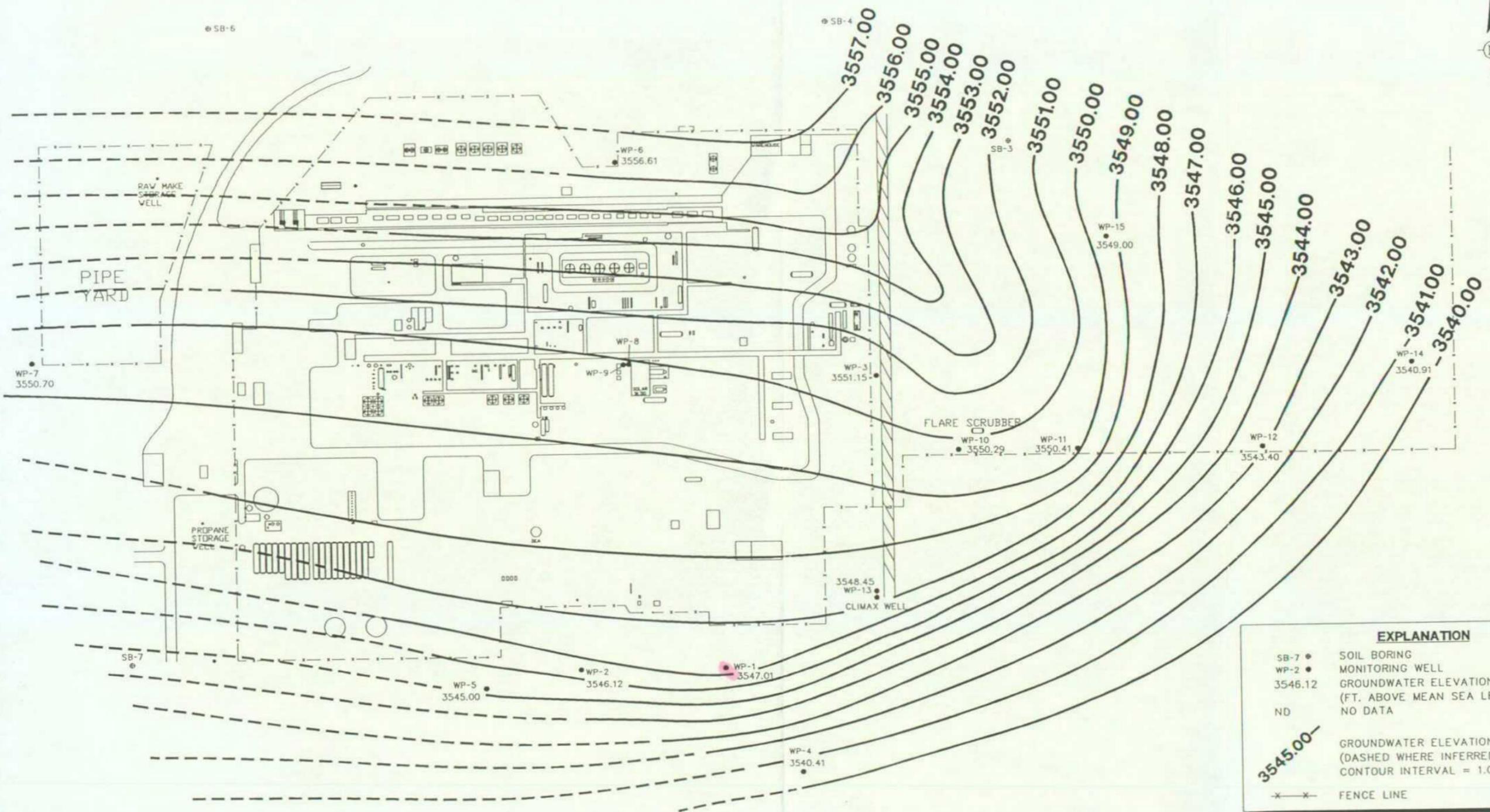
WARREN PETROLEUM
MONUMENT, NEW MEXICO



FIGURE
2



DWG DATE: 11FEB98 | PRJCT NO.: OK0532.002 | FILE NO.: — | DRAWING: GV0597 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

0  200 ft.

GROUNDWATER ELEVATION CONTOURS

MAY 19, 1997

WARREN PETROLEUM
MONUMENT, NEW MEXICO

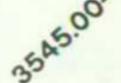
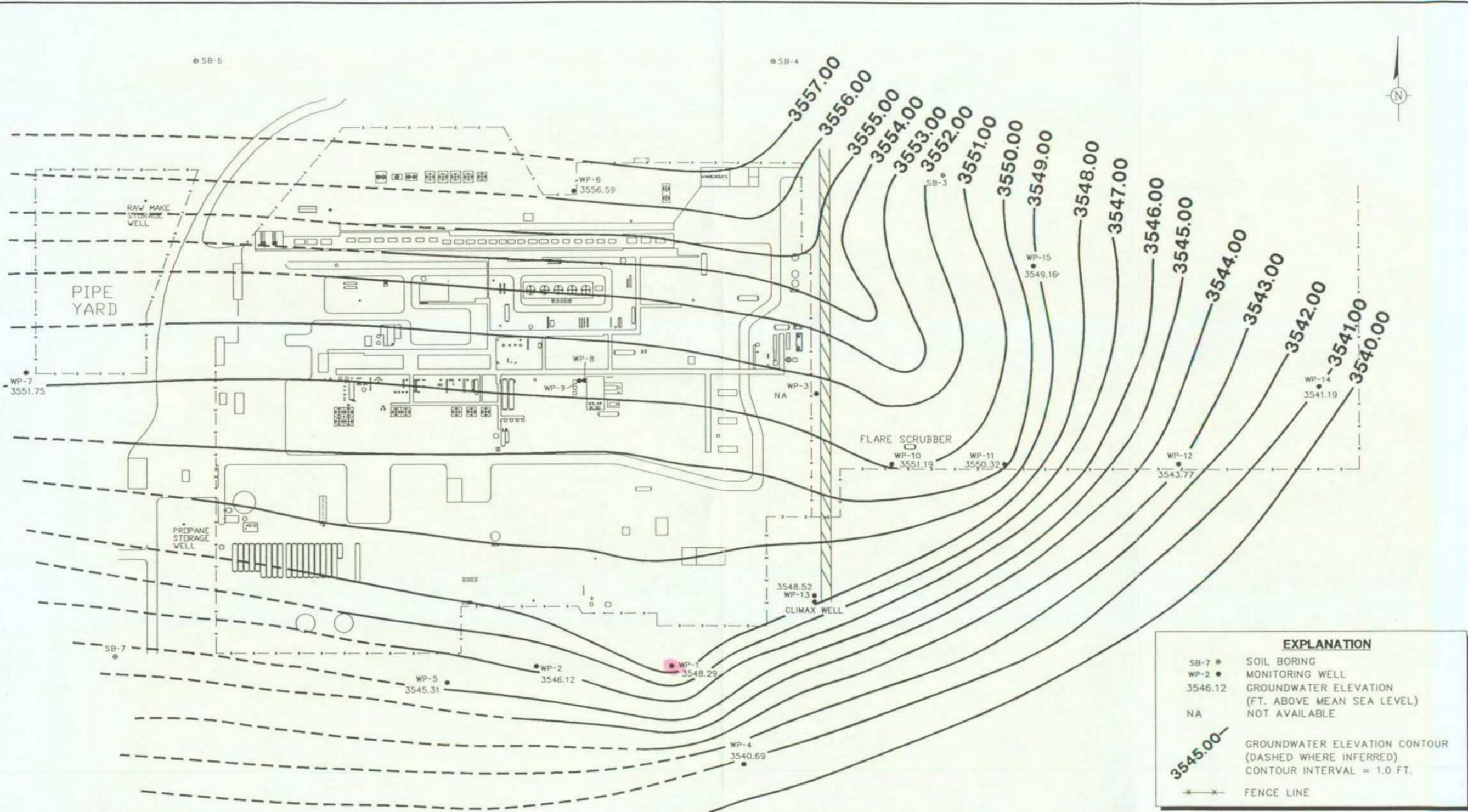
EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.12	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
	FENCE LINE

FIGURE
3

DWG DATE: 11FEB98 | PROJECT NO.: OK0532.002 | FILE NO.: - | DRAWING: GV0897 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

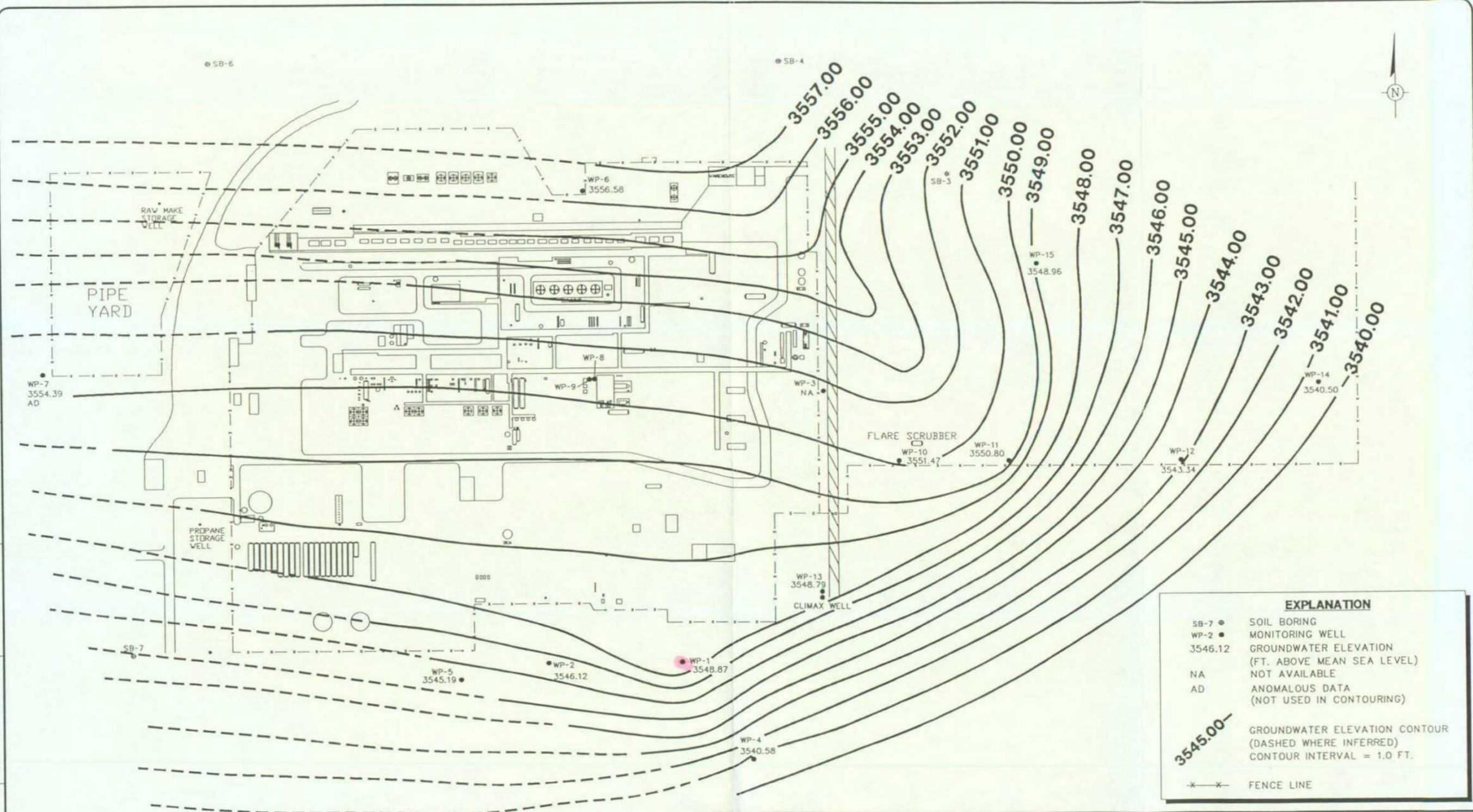
0 200 ft.

GROUNDWATER ELEVATION CONTOURS
AUGUST 19, 1997

WARREN PETROLEUM
MONUMENT, NEW MEXICO

EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.12	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
NA	NOT AVAILABLE
	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
	FENCE LINE

DWG DATE: 12FEB98 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: GV019B | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.12	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
NA	NOT AVAILABLE
AD	ANOMALOUS DATA (NOT USED IN CONTOURING)
3545.00—	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
—	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

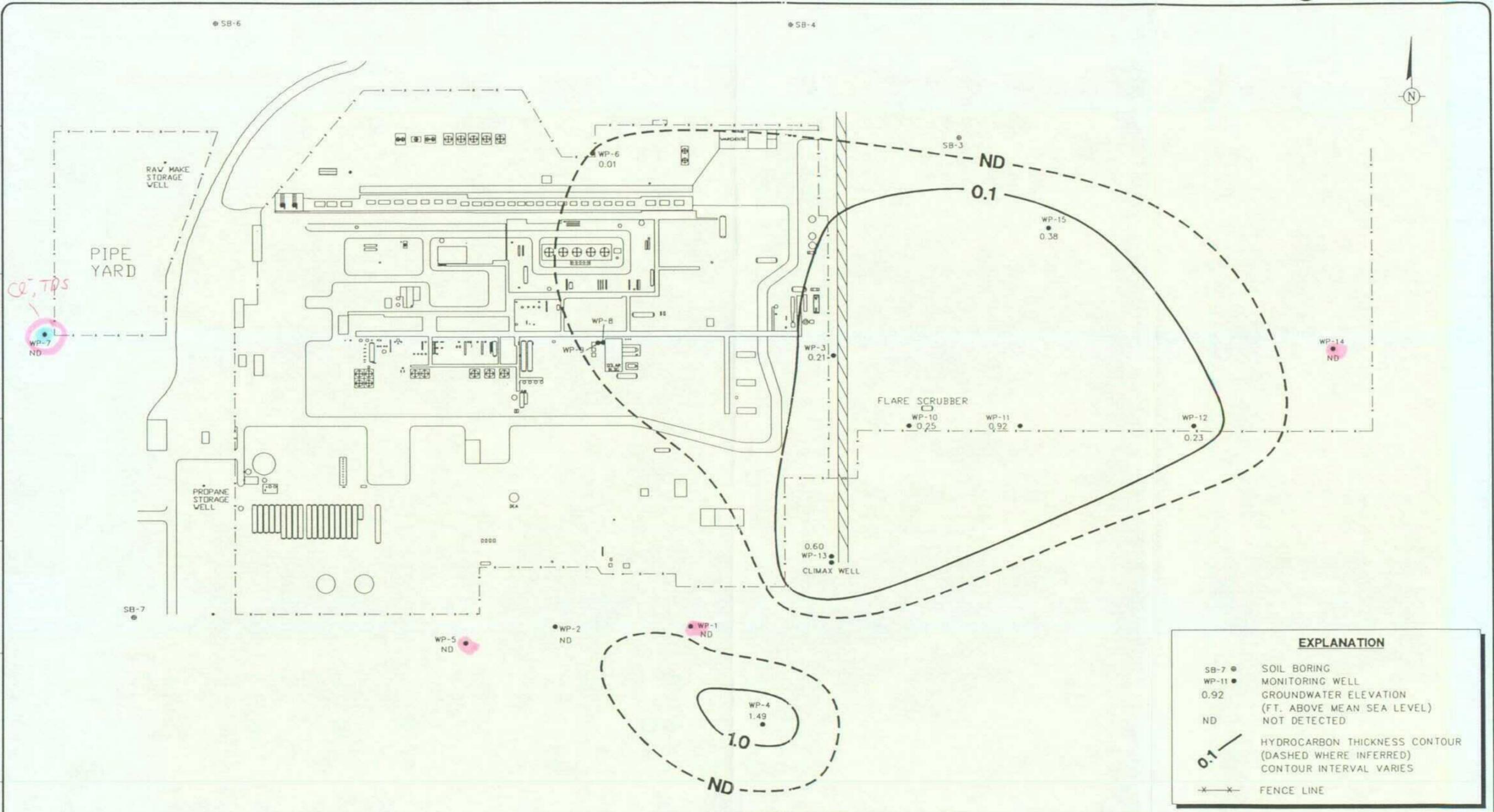
0 200 ft.

**GROUNDWATER ELEVATION CONTOURS
JANUARY 5, 1998**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
5

DWG DATE: 22SEPT97 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: EXT0297 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.92	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NOT DETECTED
0.1 —	HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

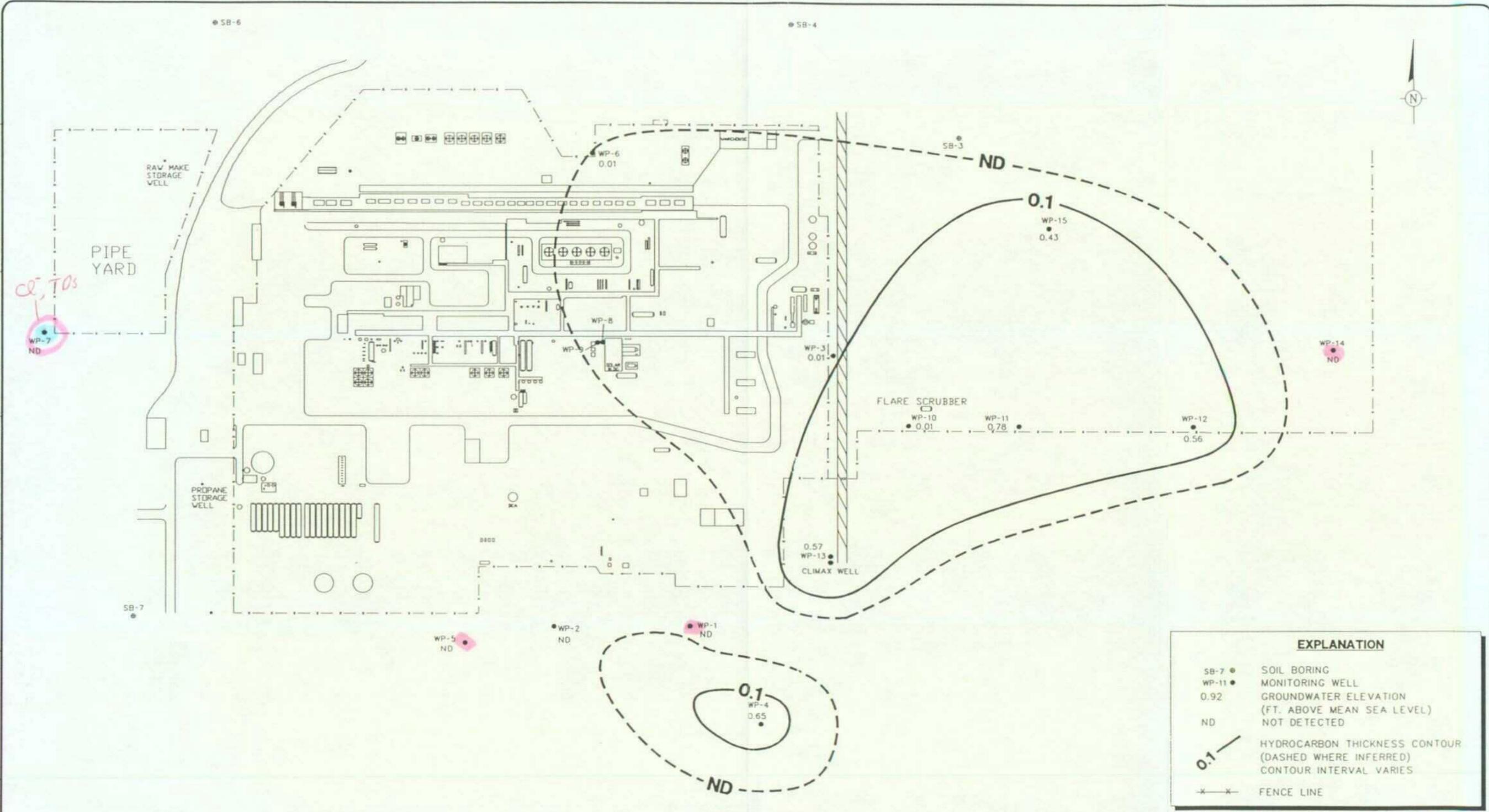
0  200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
FEBRUARY 27, 1997**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
6

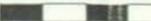
DWG DATE: 25SEPT97 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: EXT0597 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.92	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NOT DETECTED
0.1 /	HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

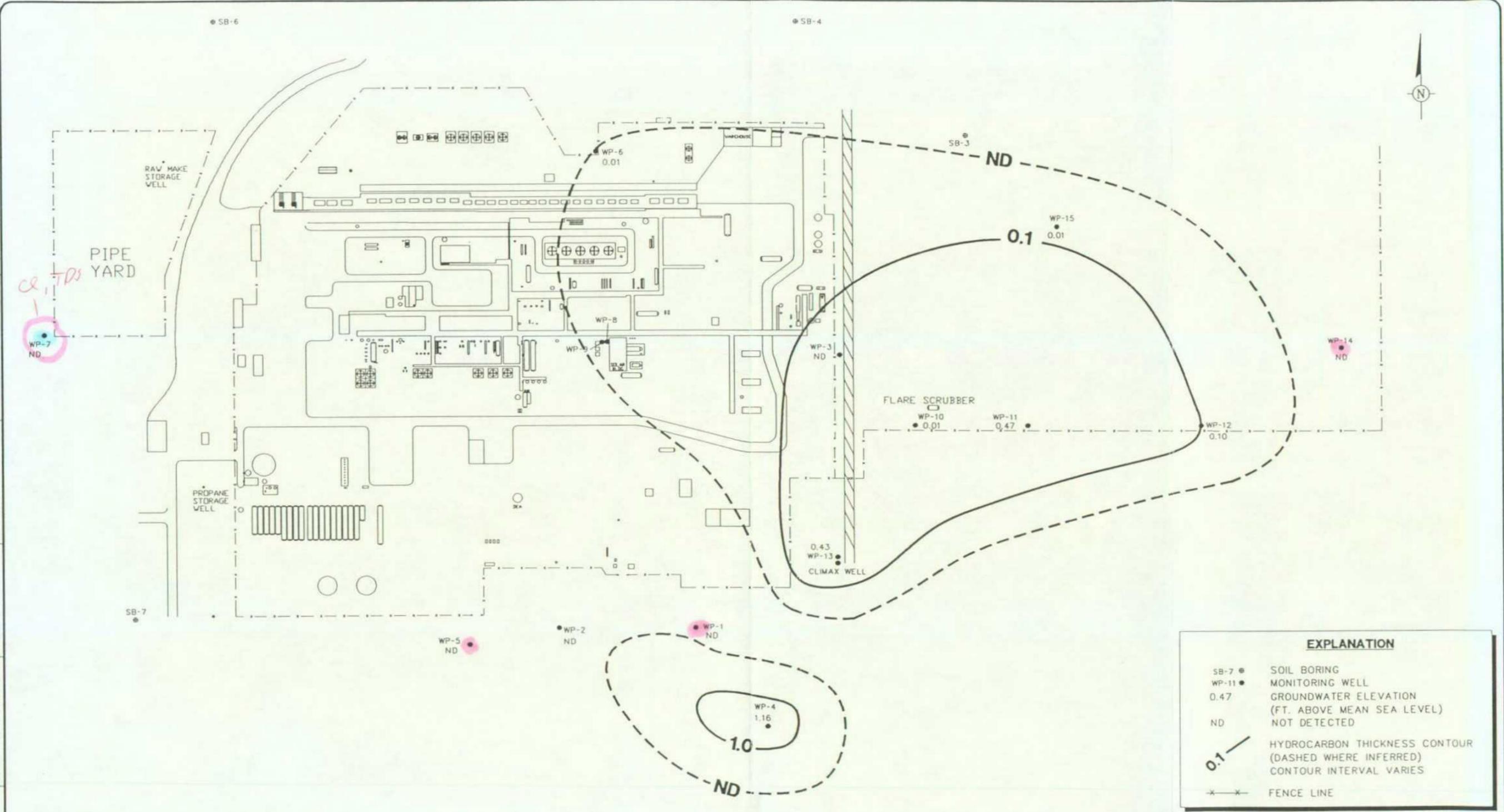
0  200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
MAY 19, 1997**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
7

DWG DATE: 25SEPT97 | PRJCT NO.: DK0532.002 | FILE NO.: - | DRAWING: EXT0897 | CHECKED: STEVE METZ | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.47	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NOT DETECTED
0.1 /	HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

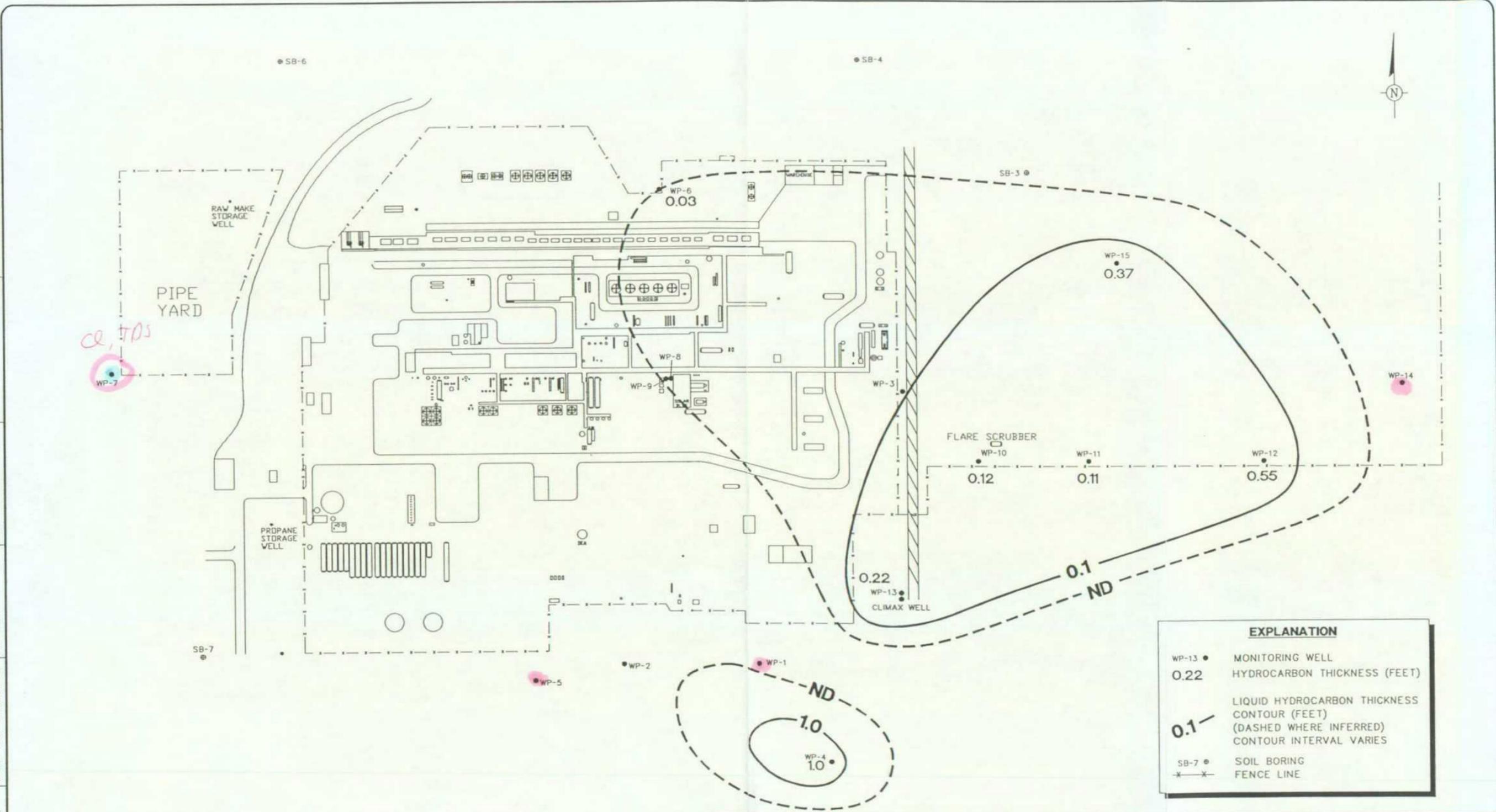
0 [Scale Bar] 200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
AUGUST 19, 1997**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
8

DWG DATE: 26FEB98 | PRJCT NO.: 0K0532.002 | FILE NO.: - | DRAWING: EXTENT98 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
WP-13 ●	MONITORING WELL
0.22	HYDROCARBON THICKNESS (FEET)
0.1—	LIQUID HYDROCARBON THICKNESS CONTOUR (FEET) (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
SB-7 ●	SOIL BORING
—x—x—	FENCE LINE

GERAGHTY & MILLER, INC.
Environmental Services
 A Heidemij Company

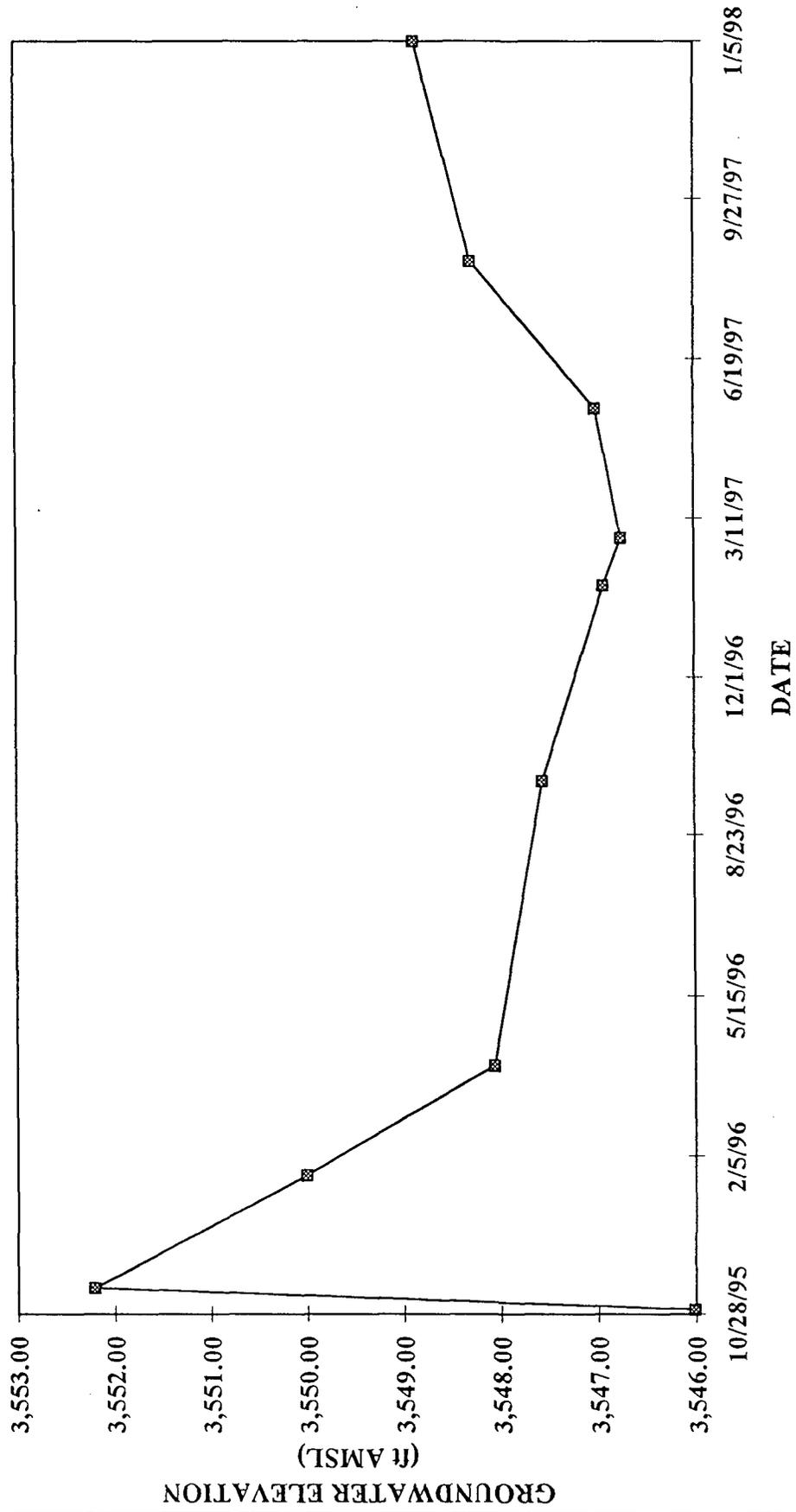
0 200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
 JANUARY 5, 1998**

WARREN PETROLEUM
 MONUMENT, NEW MEXICO

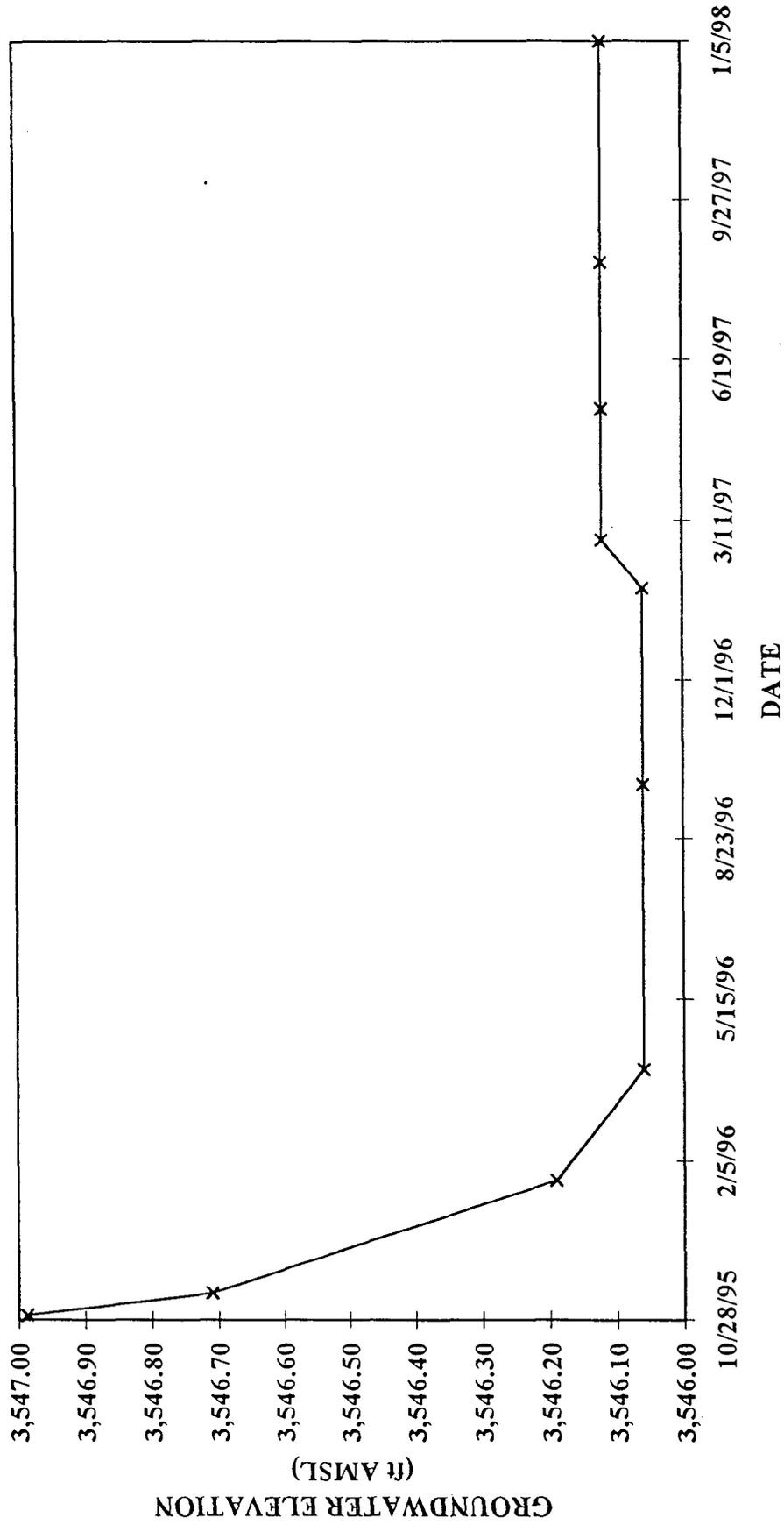
FIGURE
 9

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-1



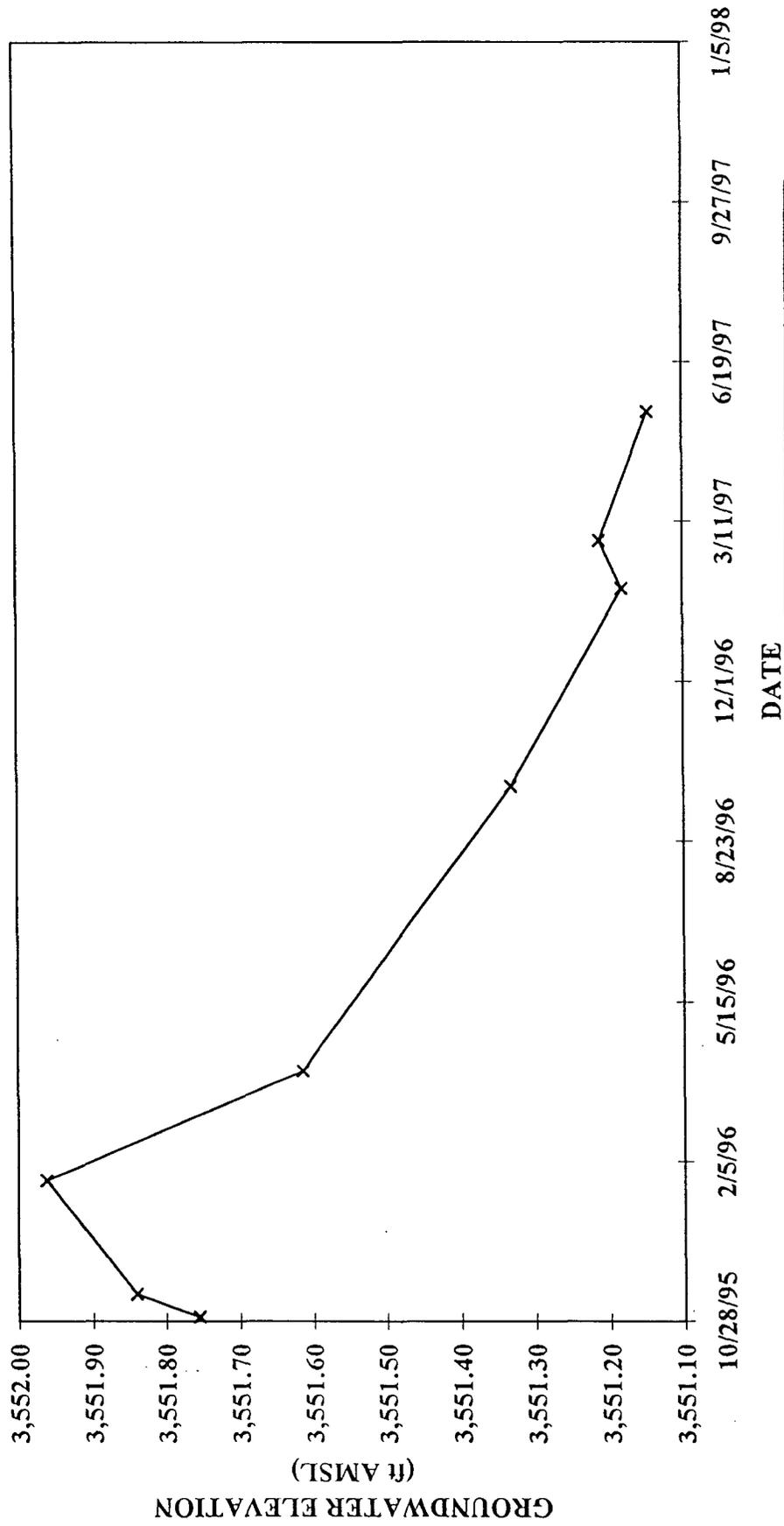
—■— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-2



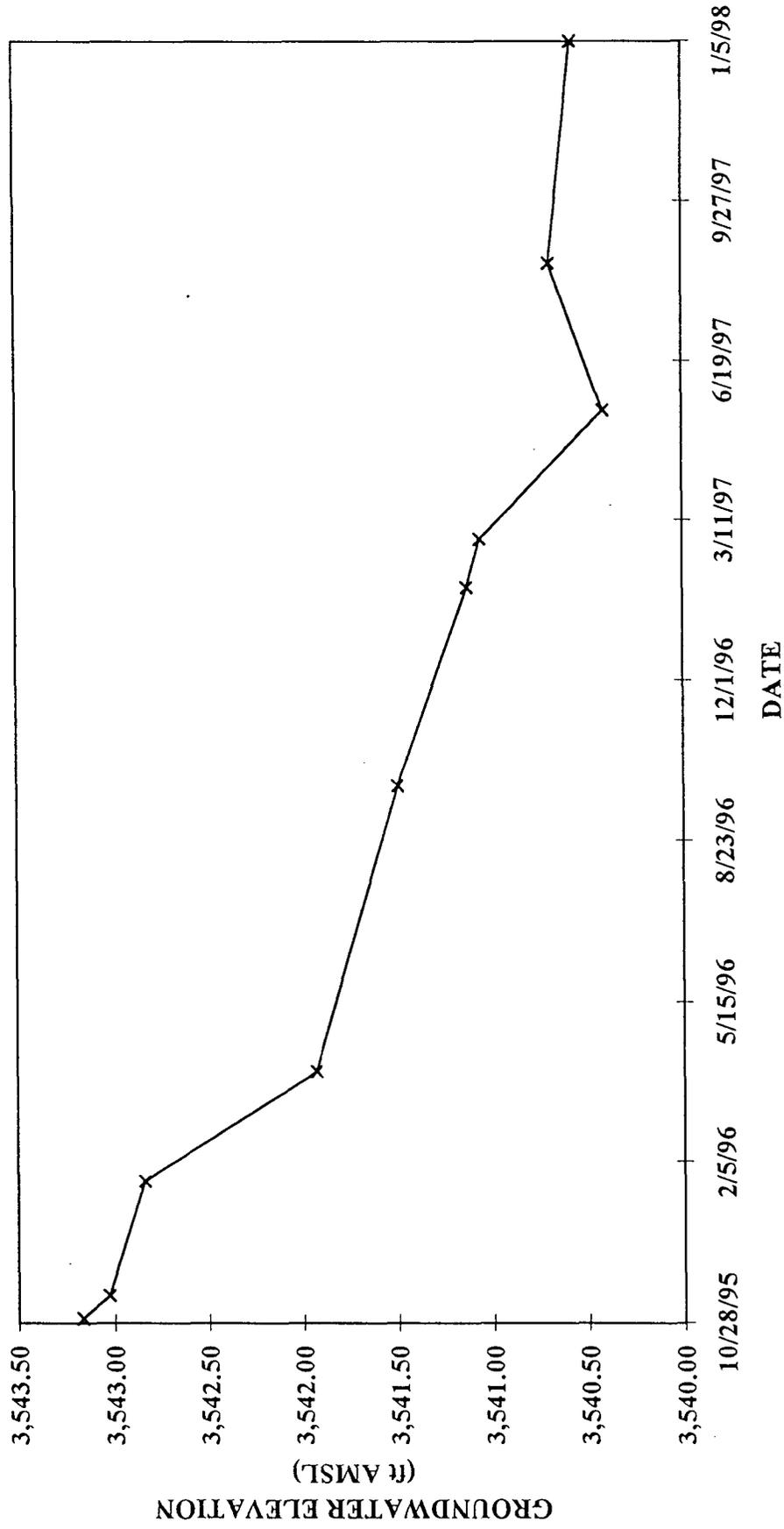
-*- Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-3



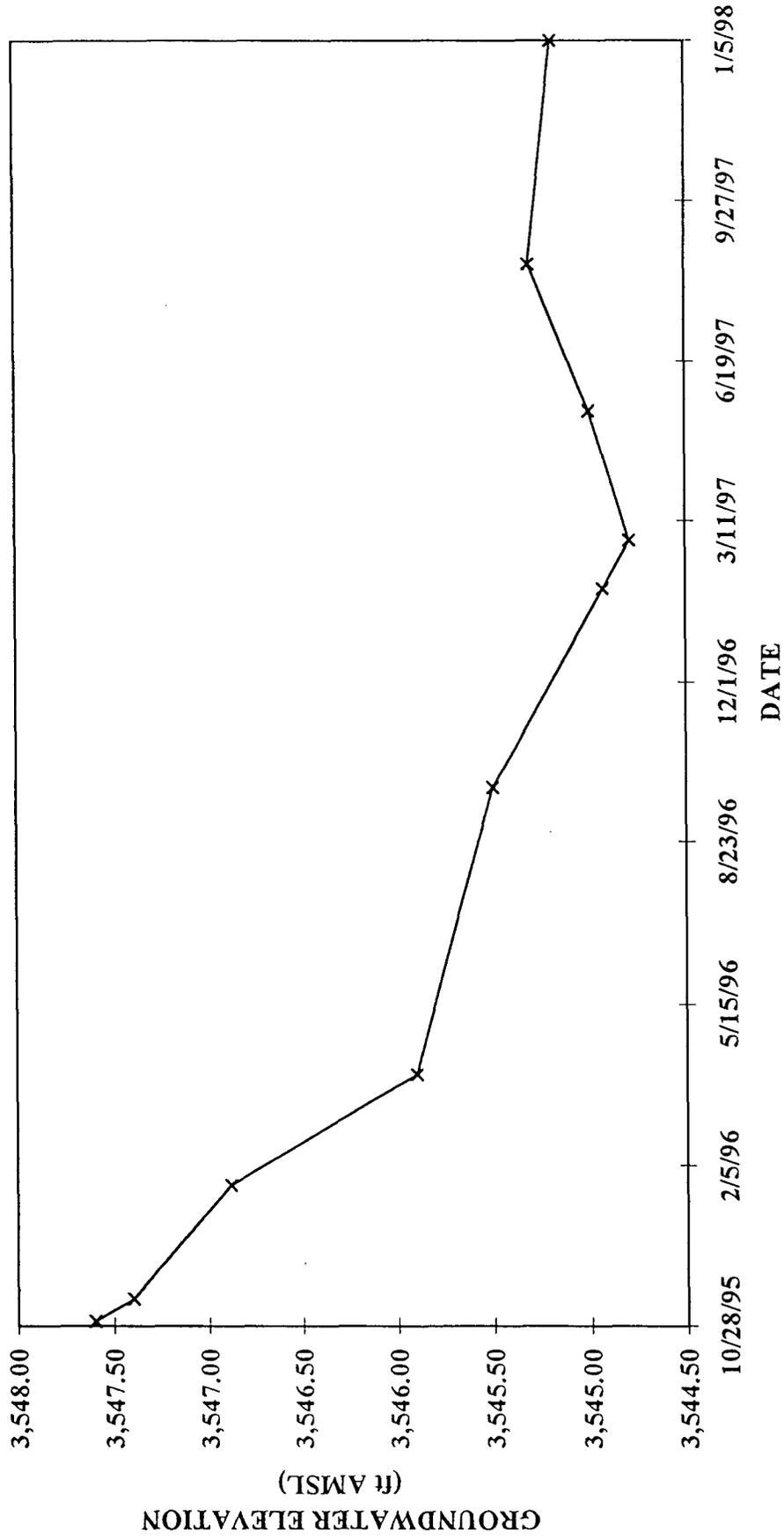
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-4



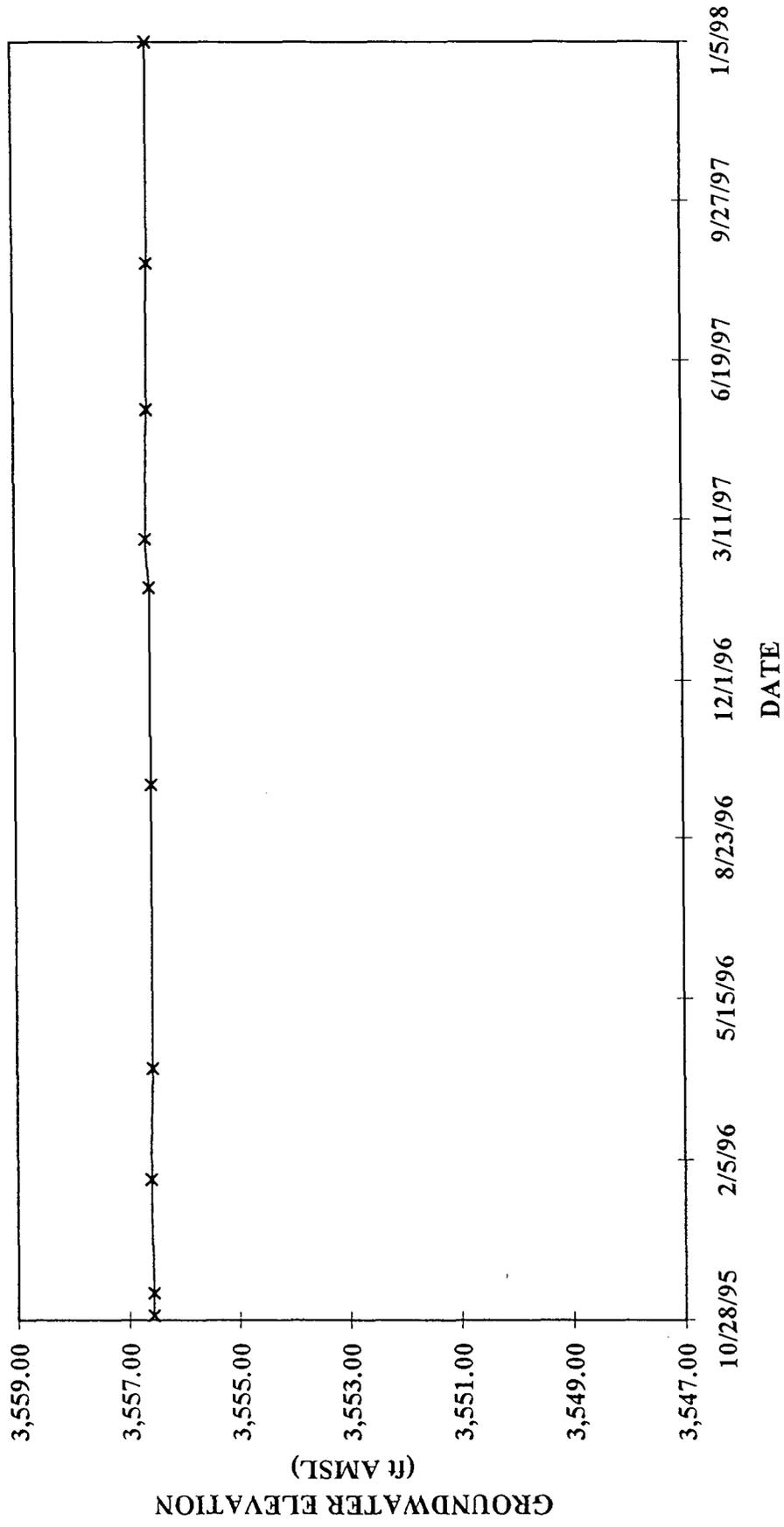
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



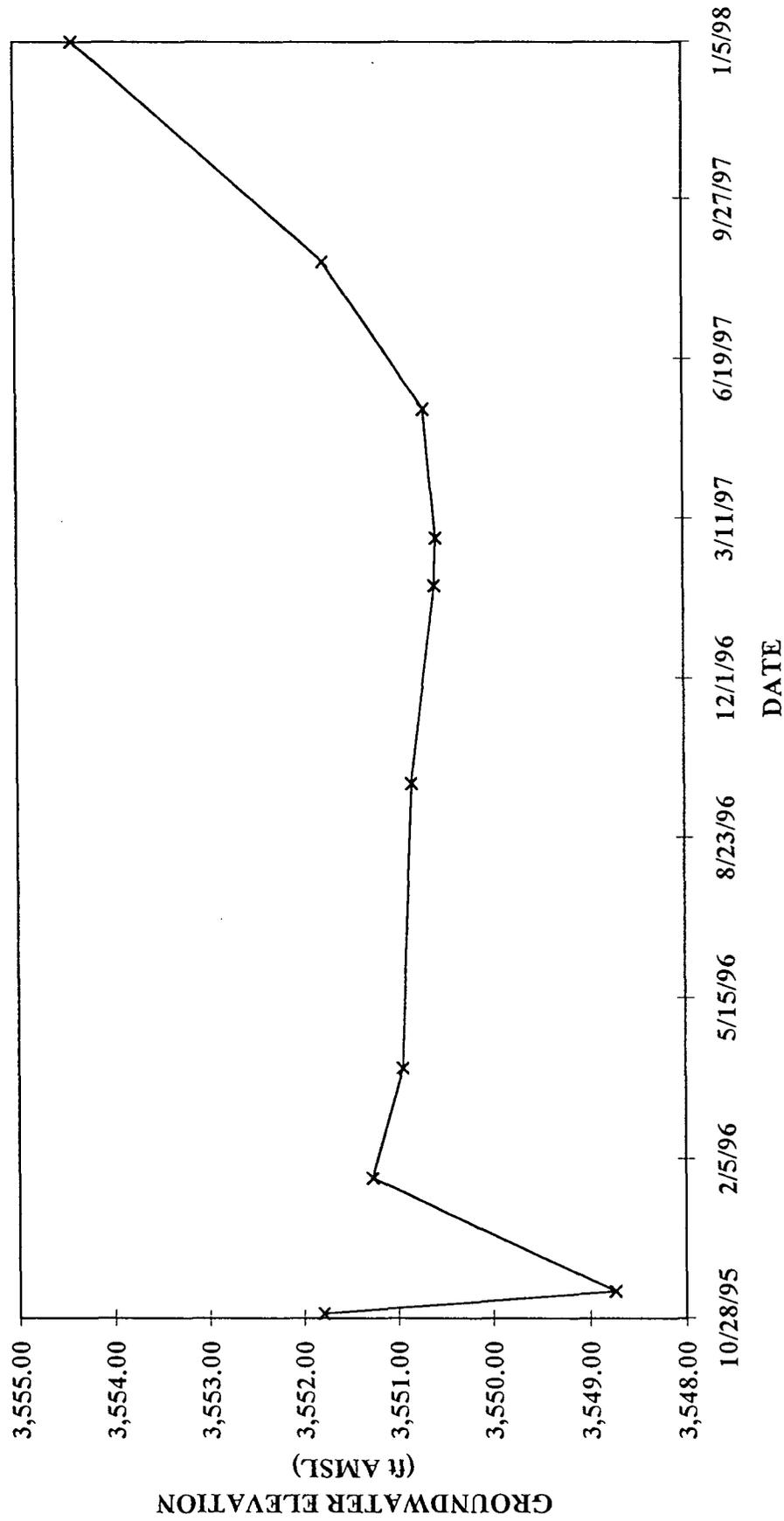
--x-- Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-6



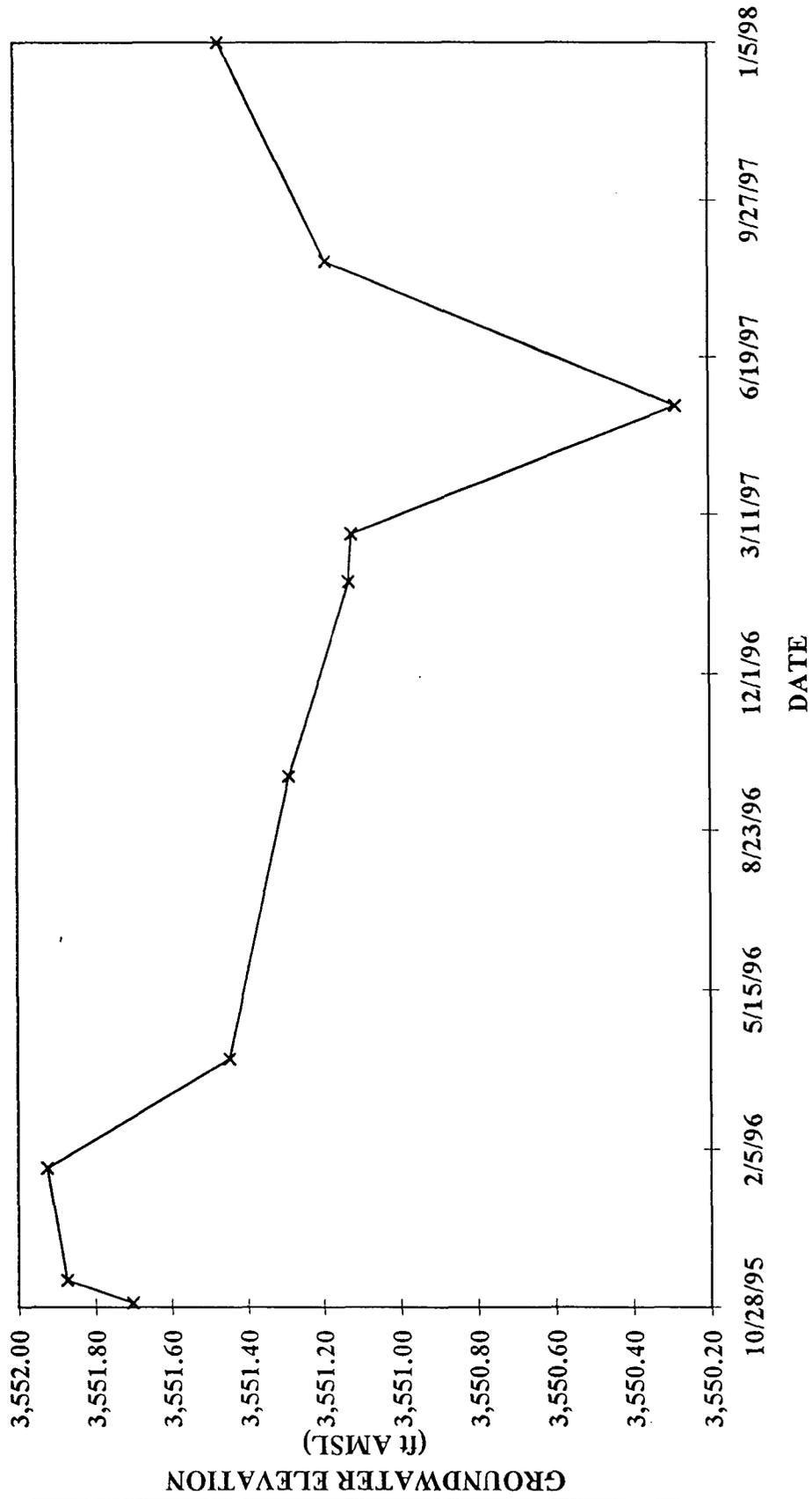
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-7



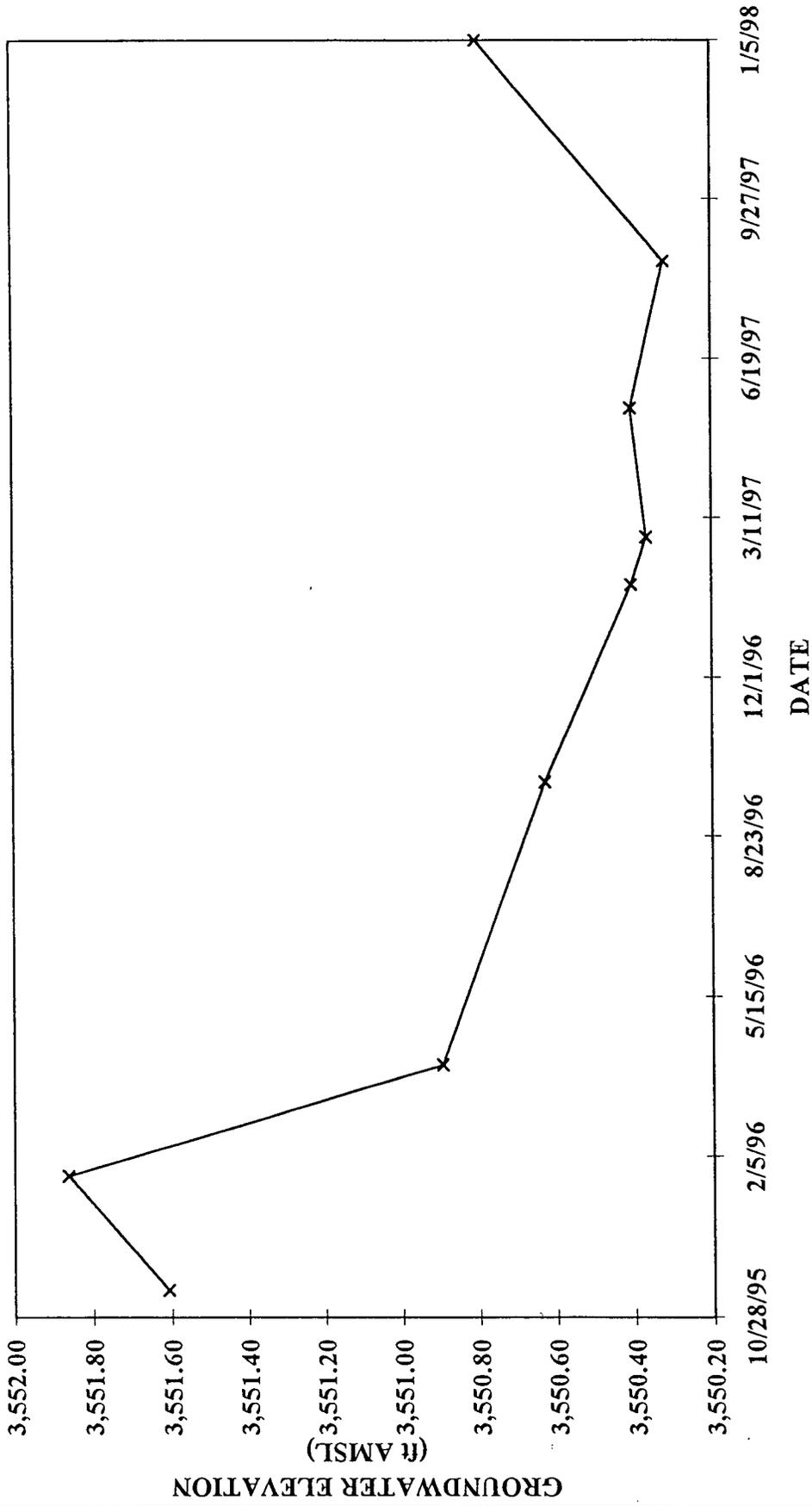
-*- Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-10



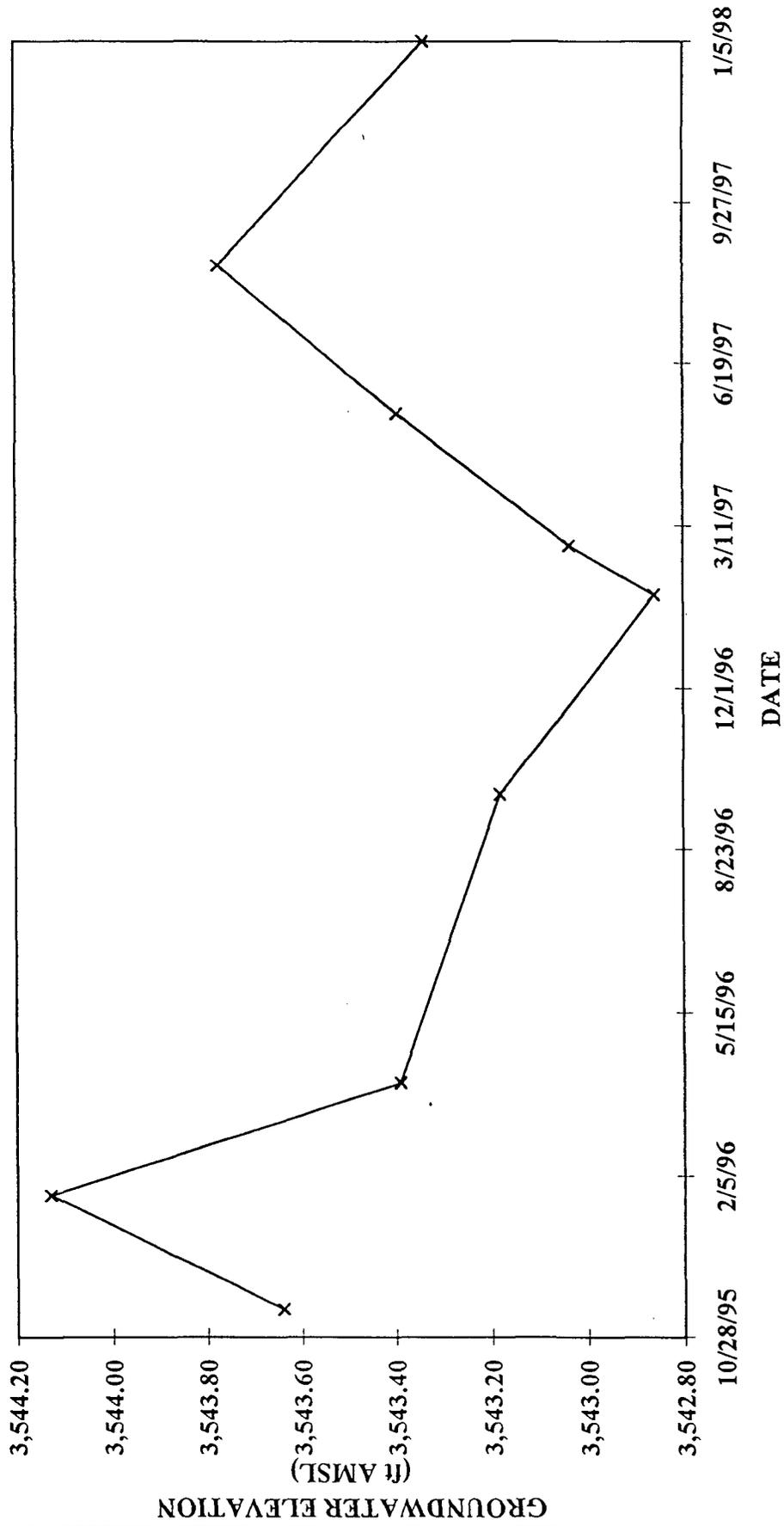
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-11



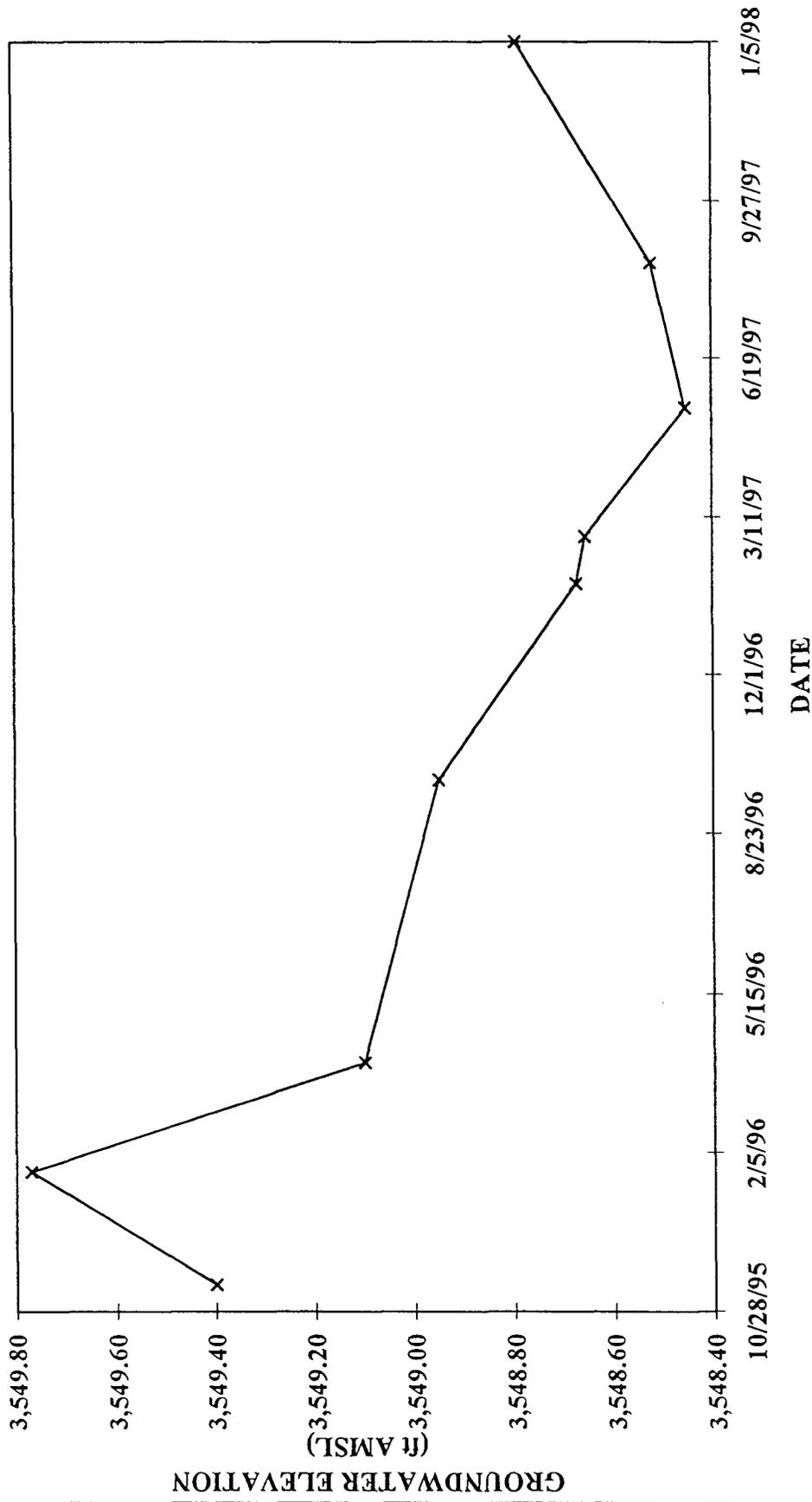
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-12



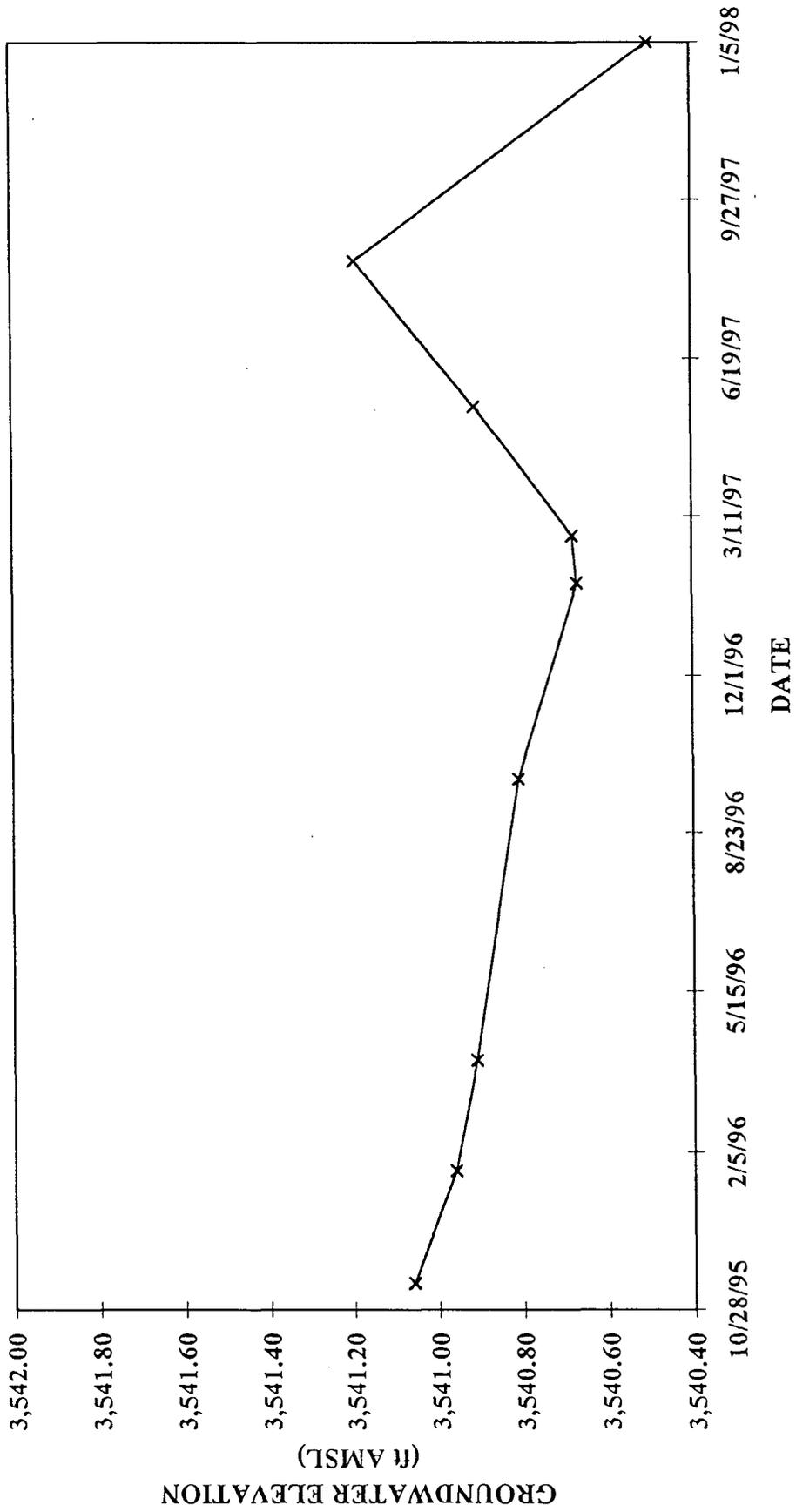
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13



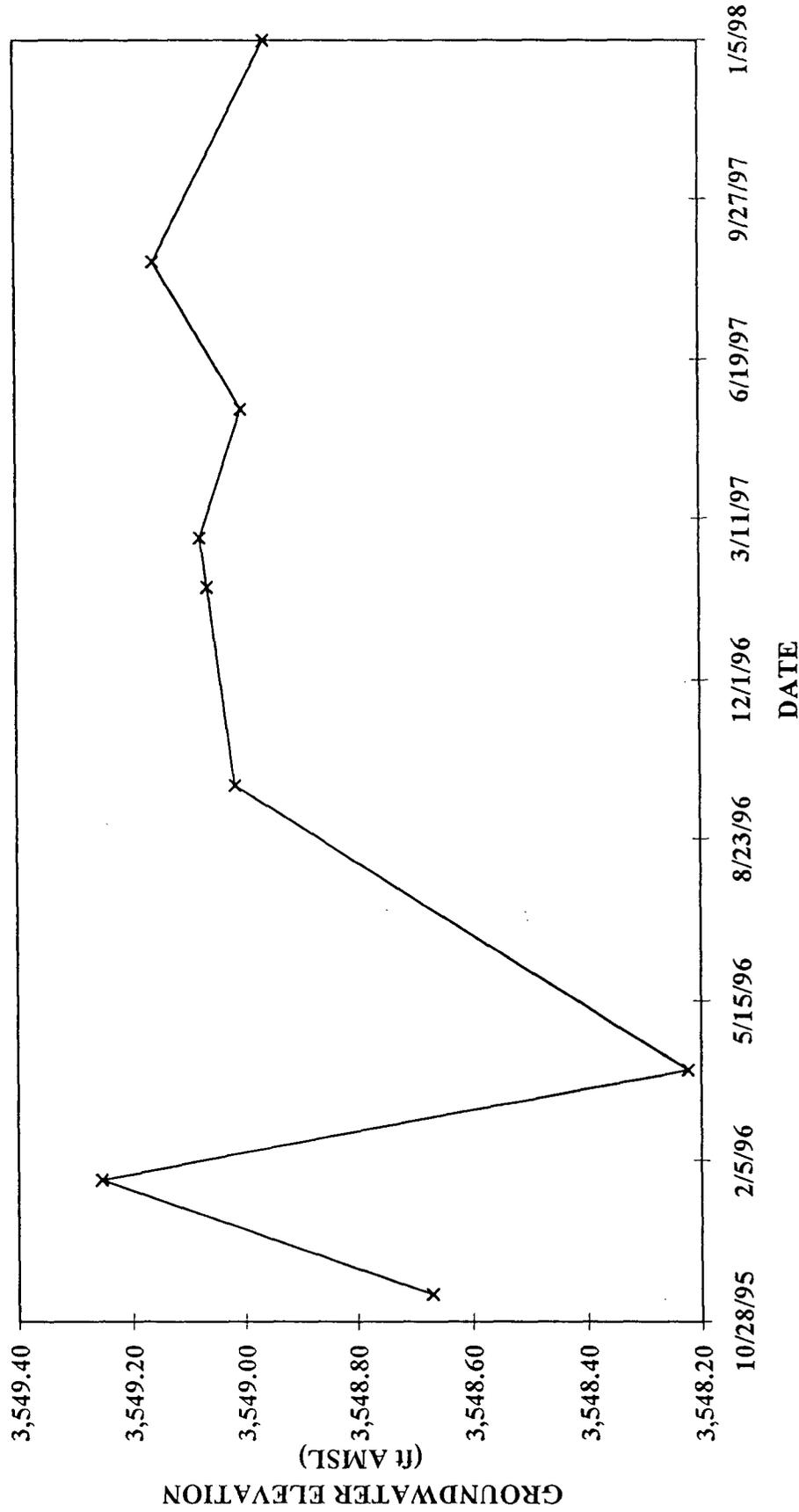
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14



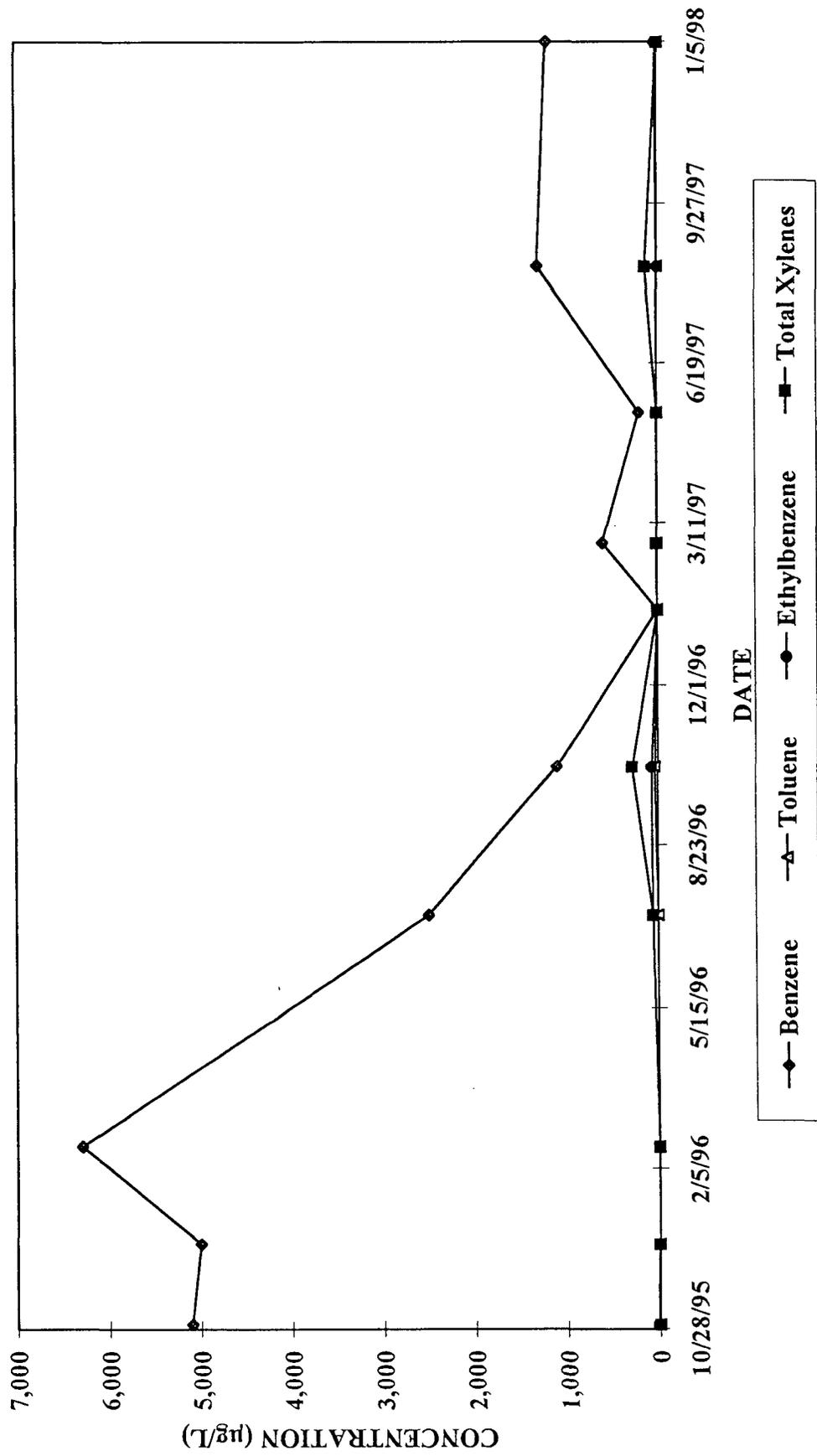
--x-- Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-15

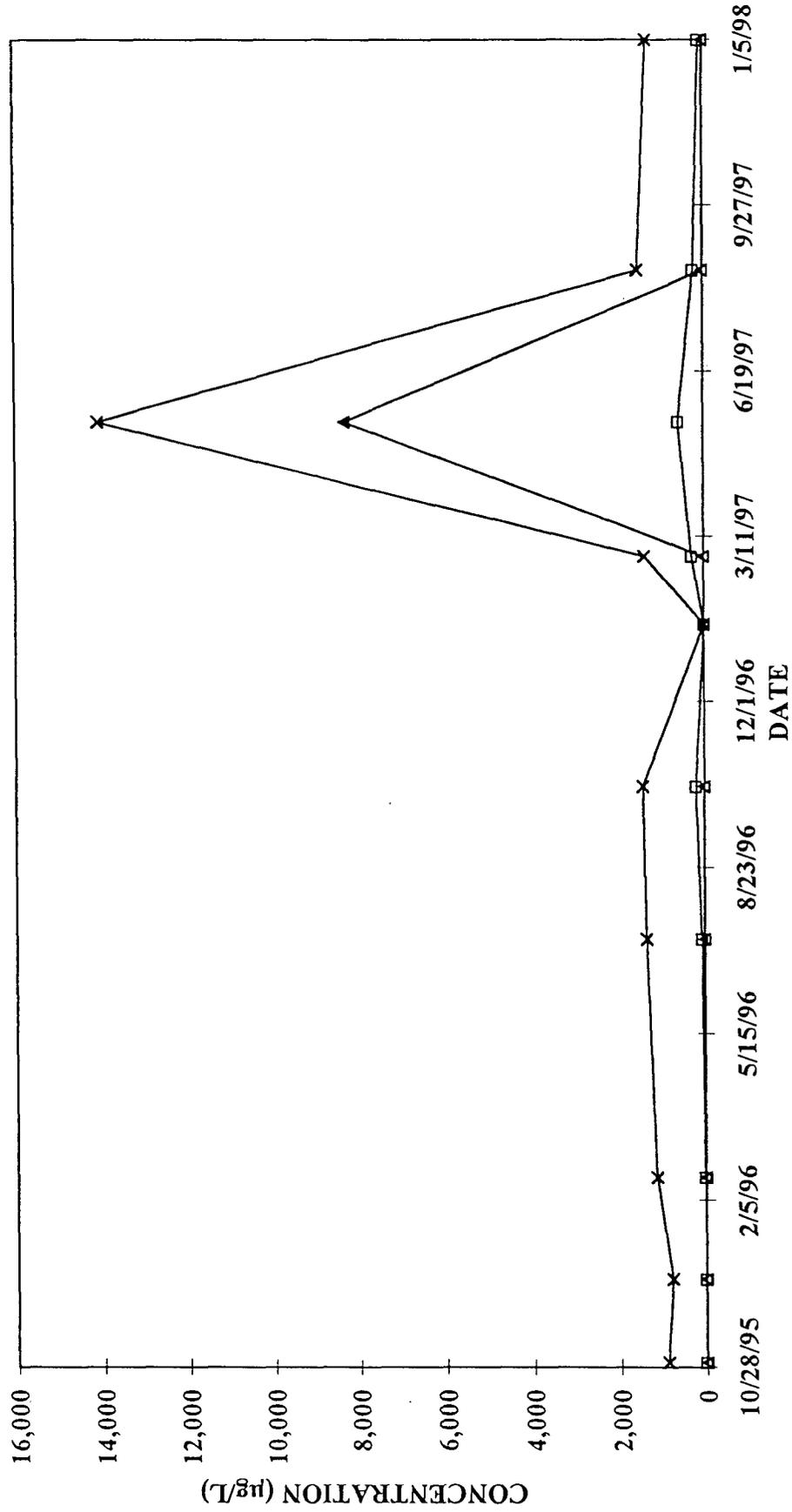


—*— Corrected Groundwater Elevation

ORGANIC GROUNDWATER QUALITY vs. TIME
 WARREN MONUMENT, NEW MEXICO
 WARREN PETROLEUM, INC.
 WELL WP-1

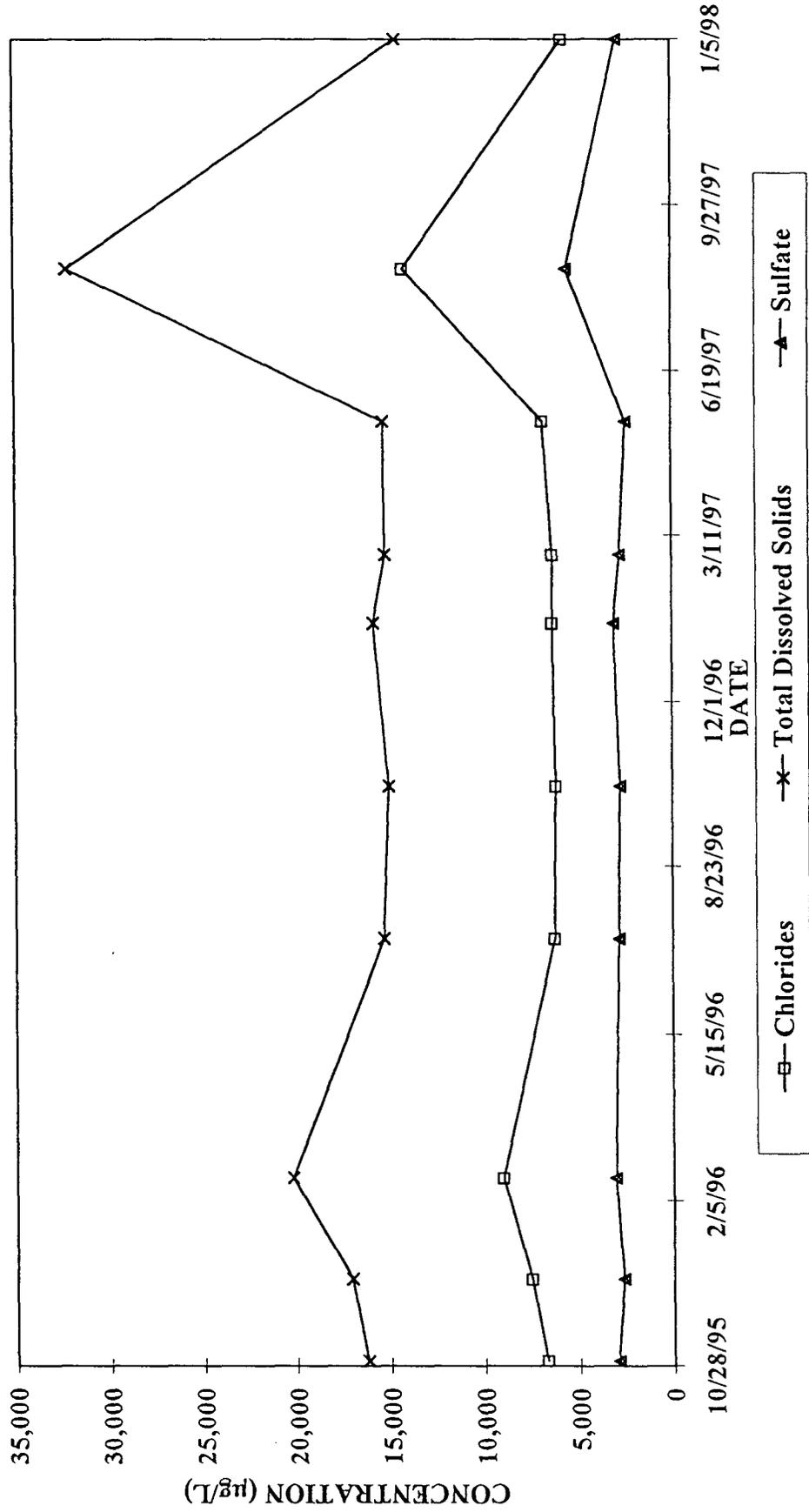


INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-1

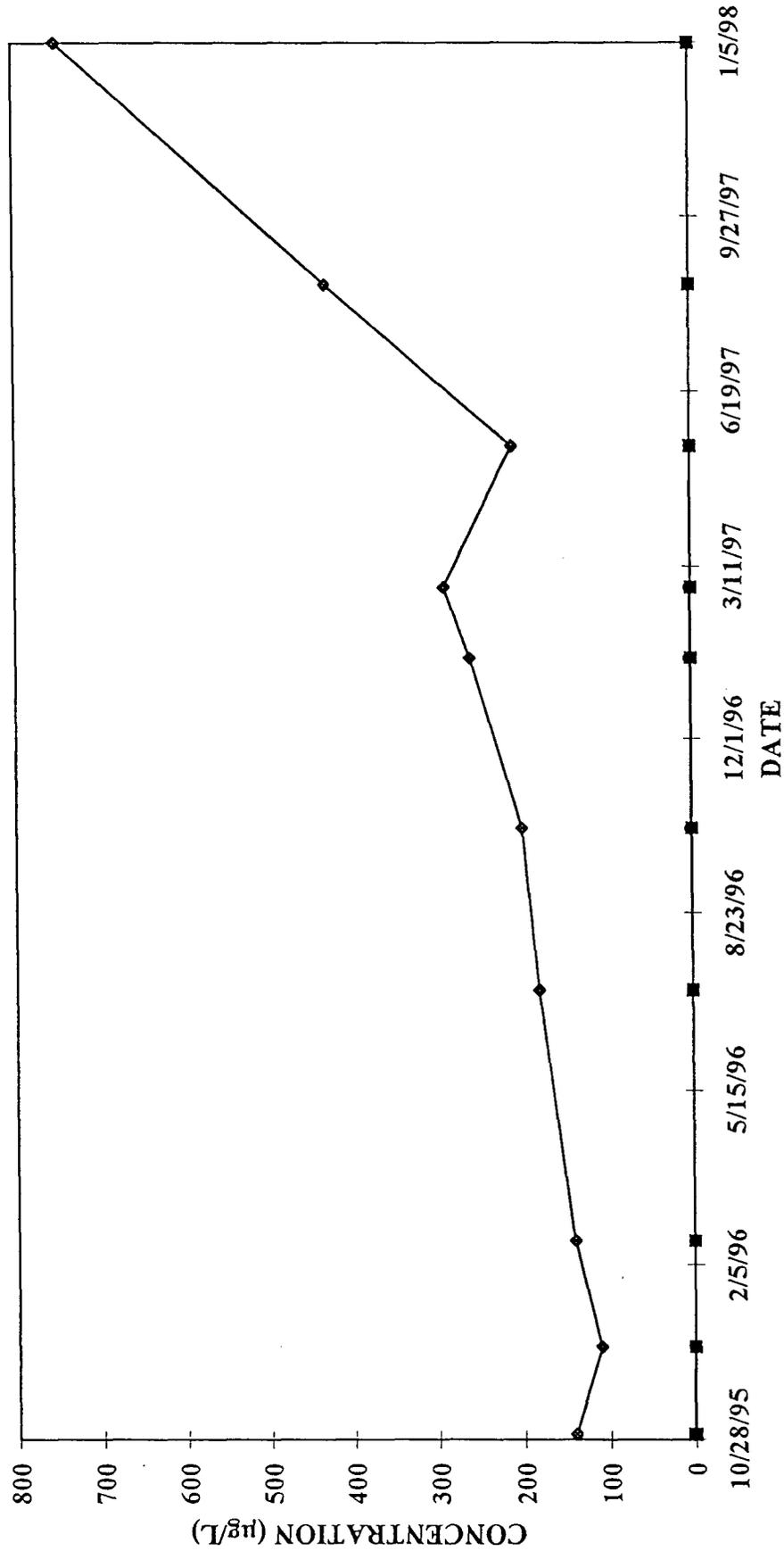


—□— Chlorides —×— Total Dissolved Solids —▲— Sulfate

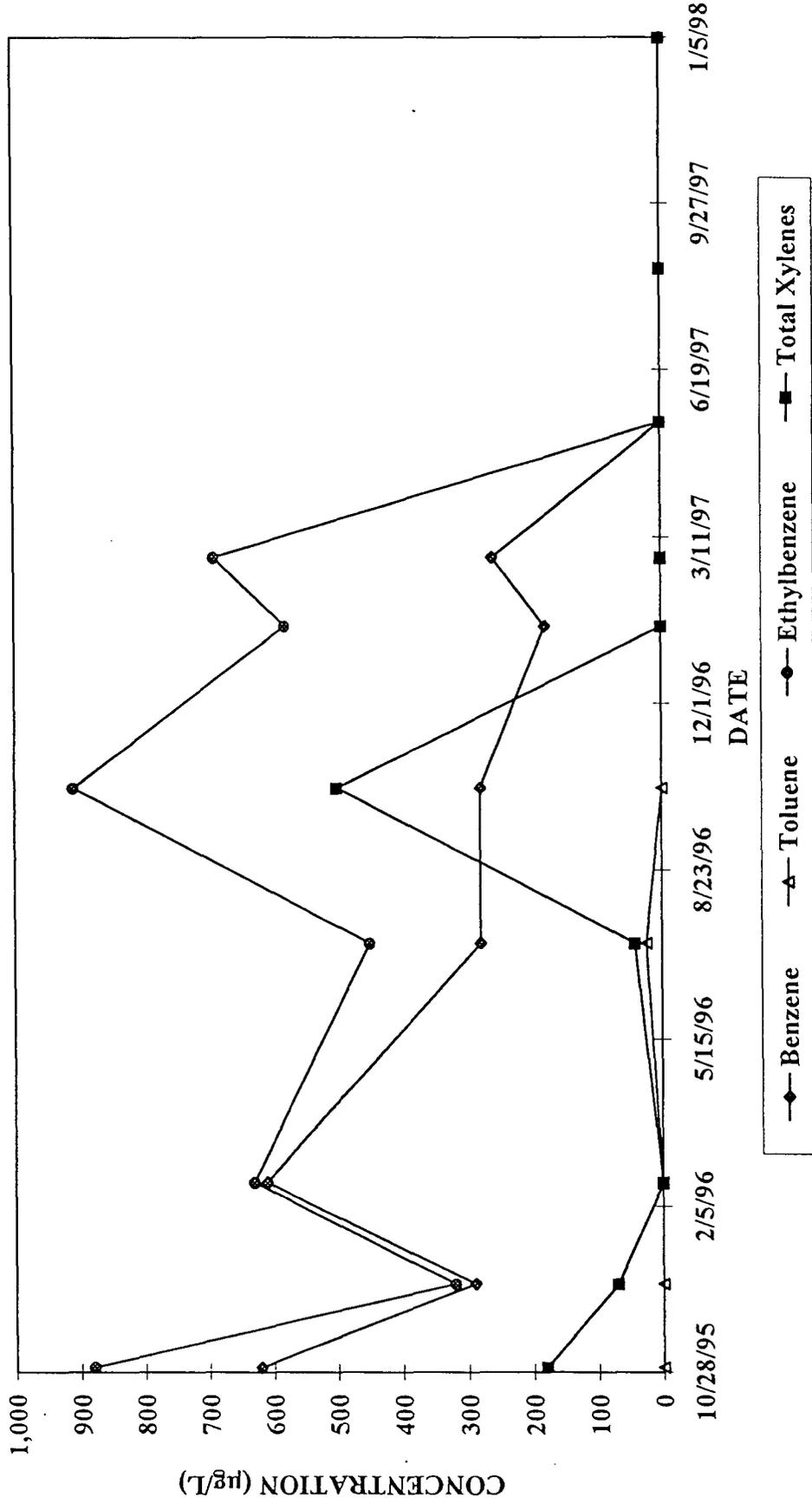
INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



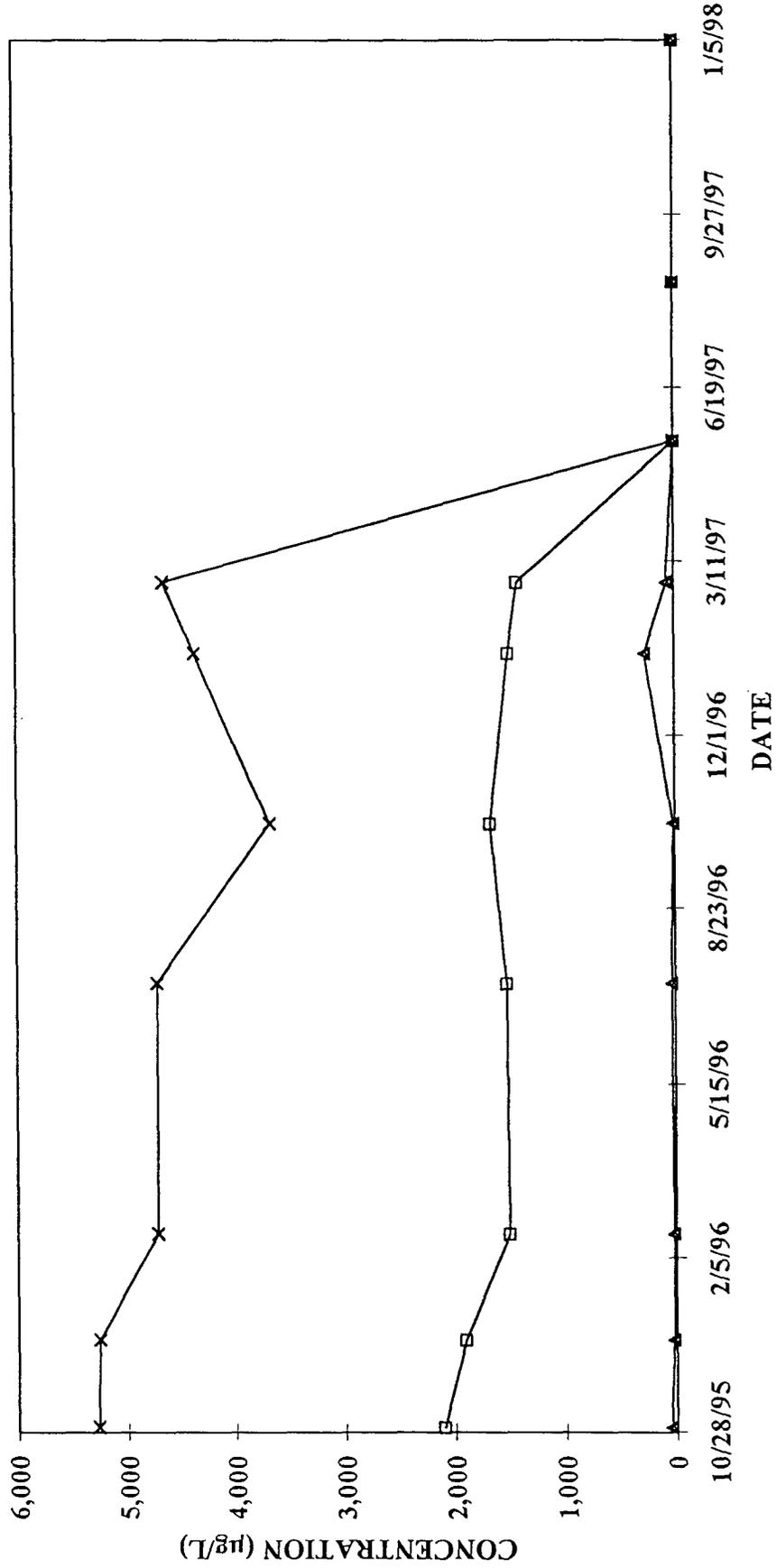
ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



ORGANIC GROUNDWATER QUALITY vs. TIME
 WARREN MONUMENT, NEW MEXICO
 WARREN PETROLEUM, INC.
 WELL WP-6

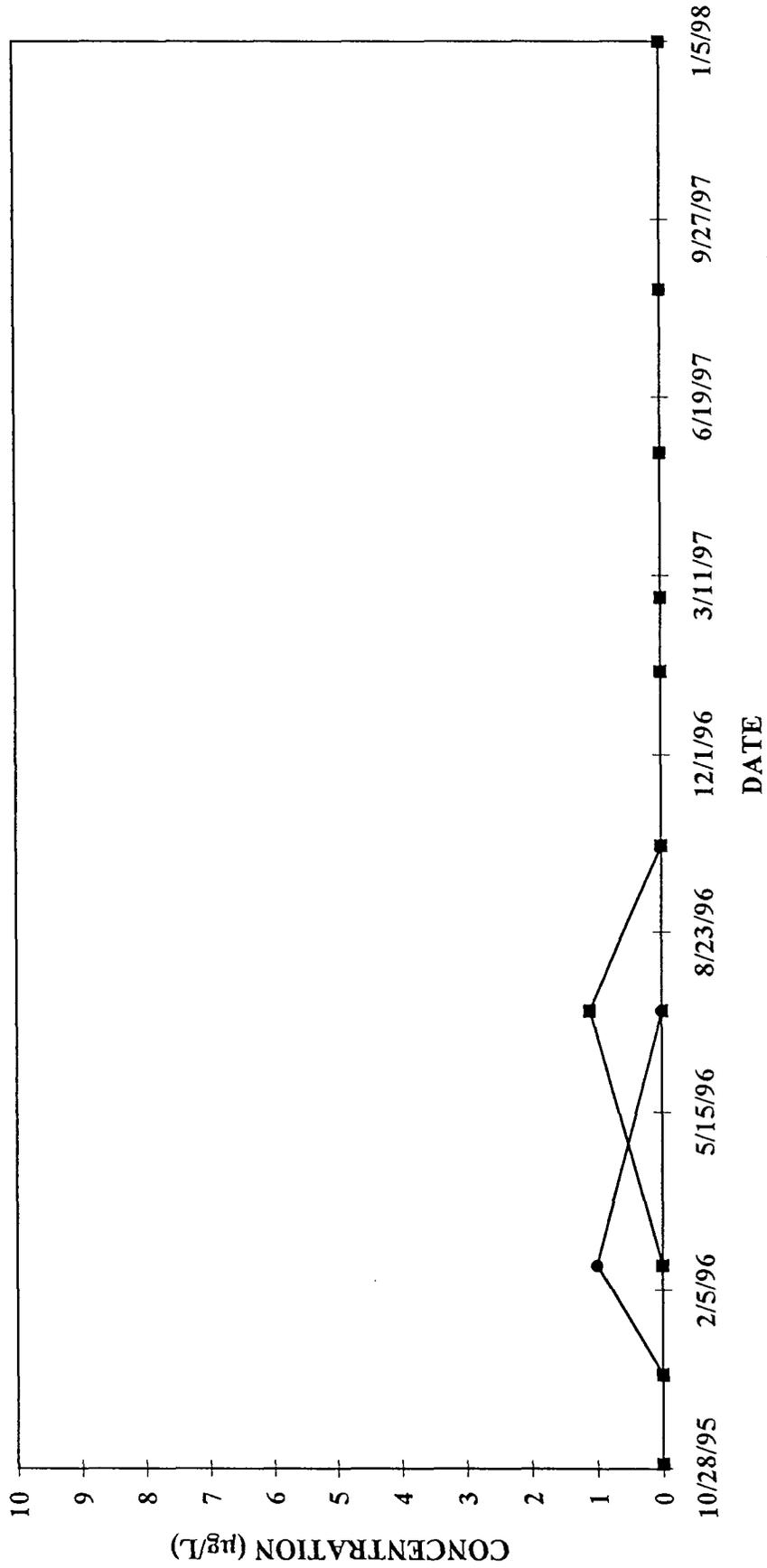


INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-6



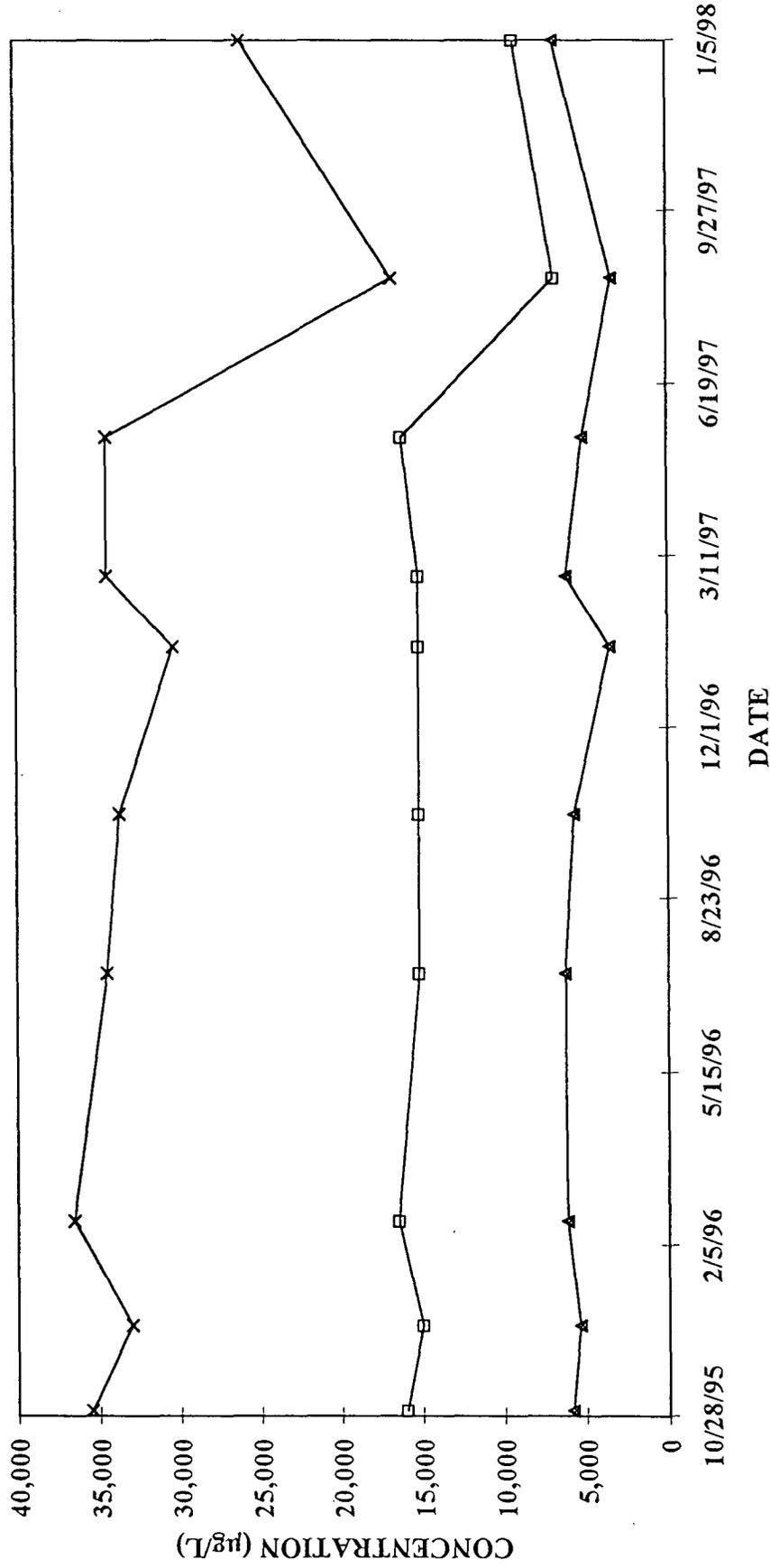
—□— Chlorides —x— Total Dissolved Solids —▲— Sulfate

ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-7



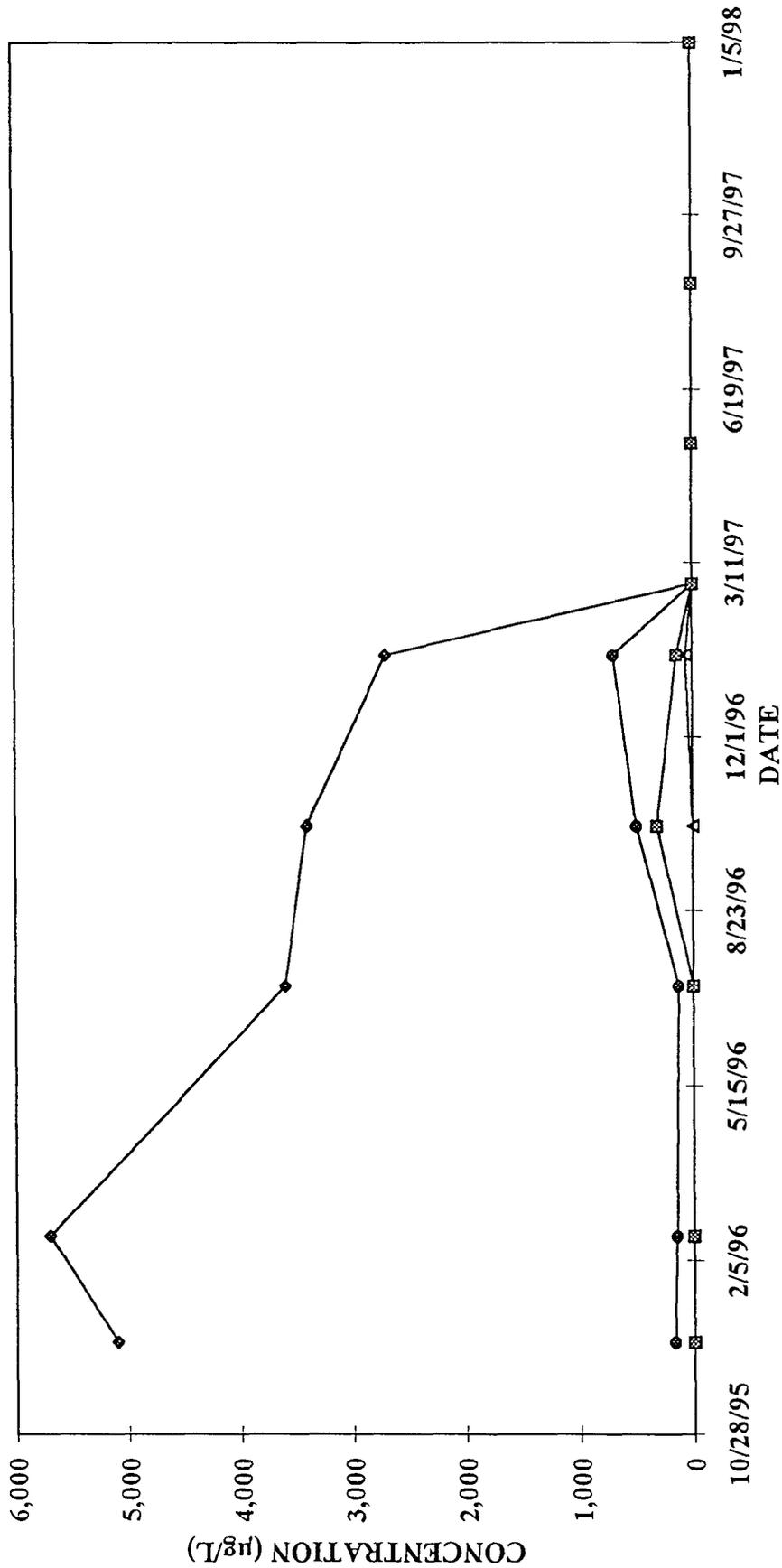
Legend:
◆ Benzene
▲ Toluene
● Ethylbenzene
■ Total Xylenes

INORGANIC GROUNDWATER QUALITY vs. TIME
 WARREN MONUMENT, NEW MEXICO
 WARREN PETROLEUM, INC.
 WELL WP-7



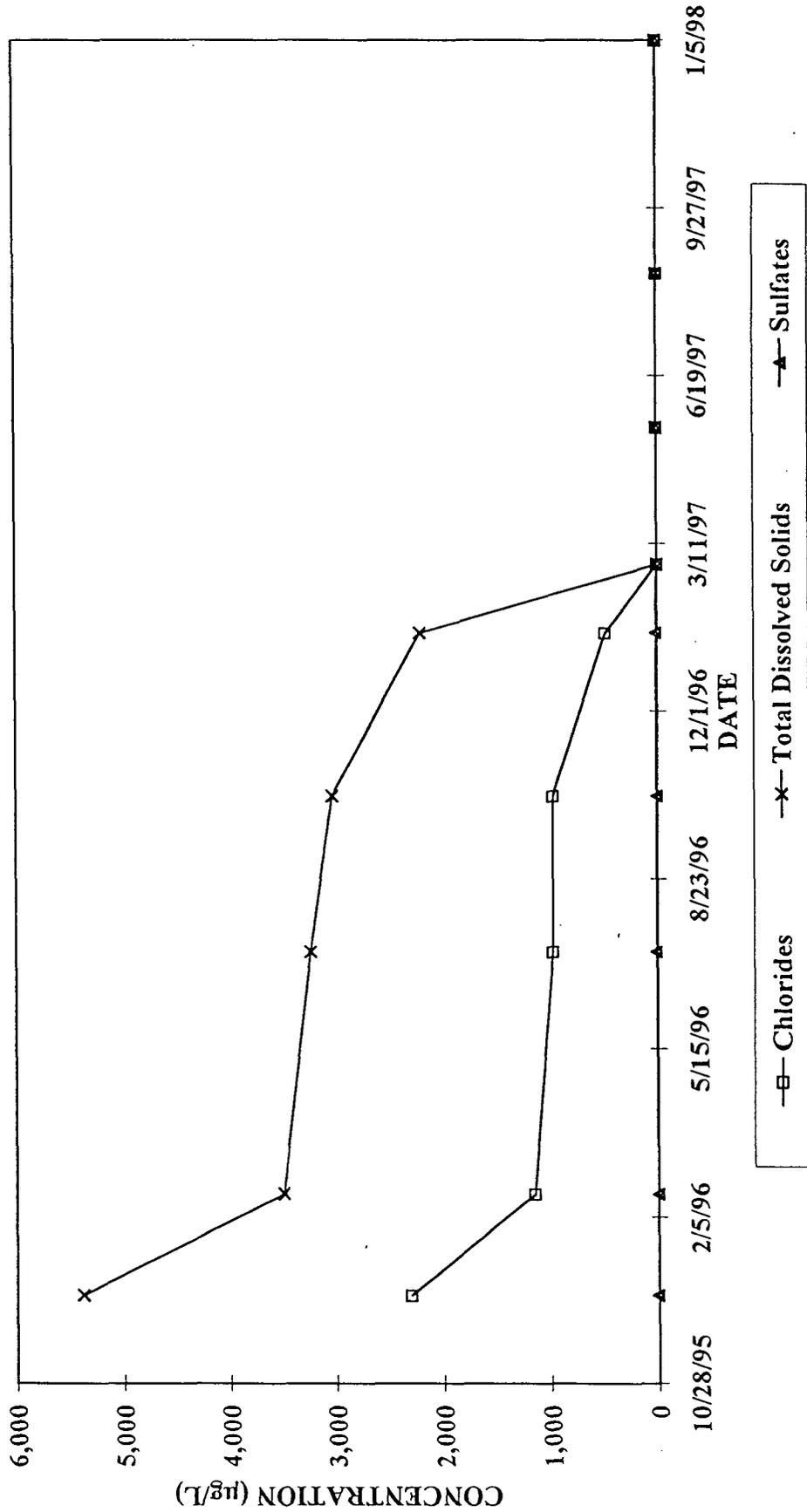
-□- Chlorides -x- Total Dissolved Solids -▲- Sulfate

ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13

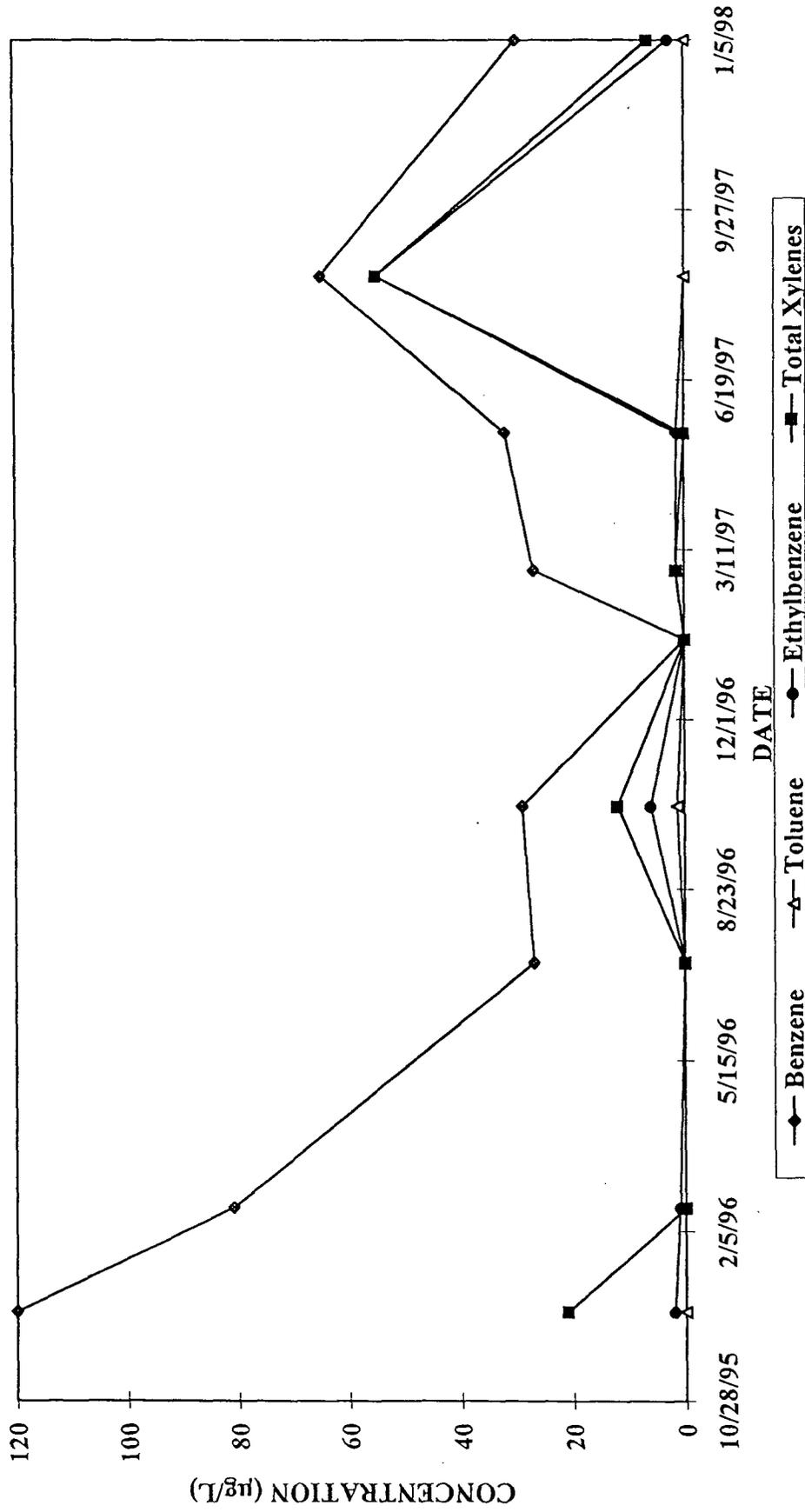


—◆— Benzene —▲— Toluene —●— Ethylbenzene - - - □ - - - Total Xylenes

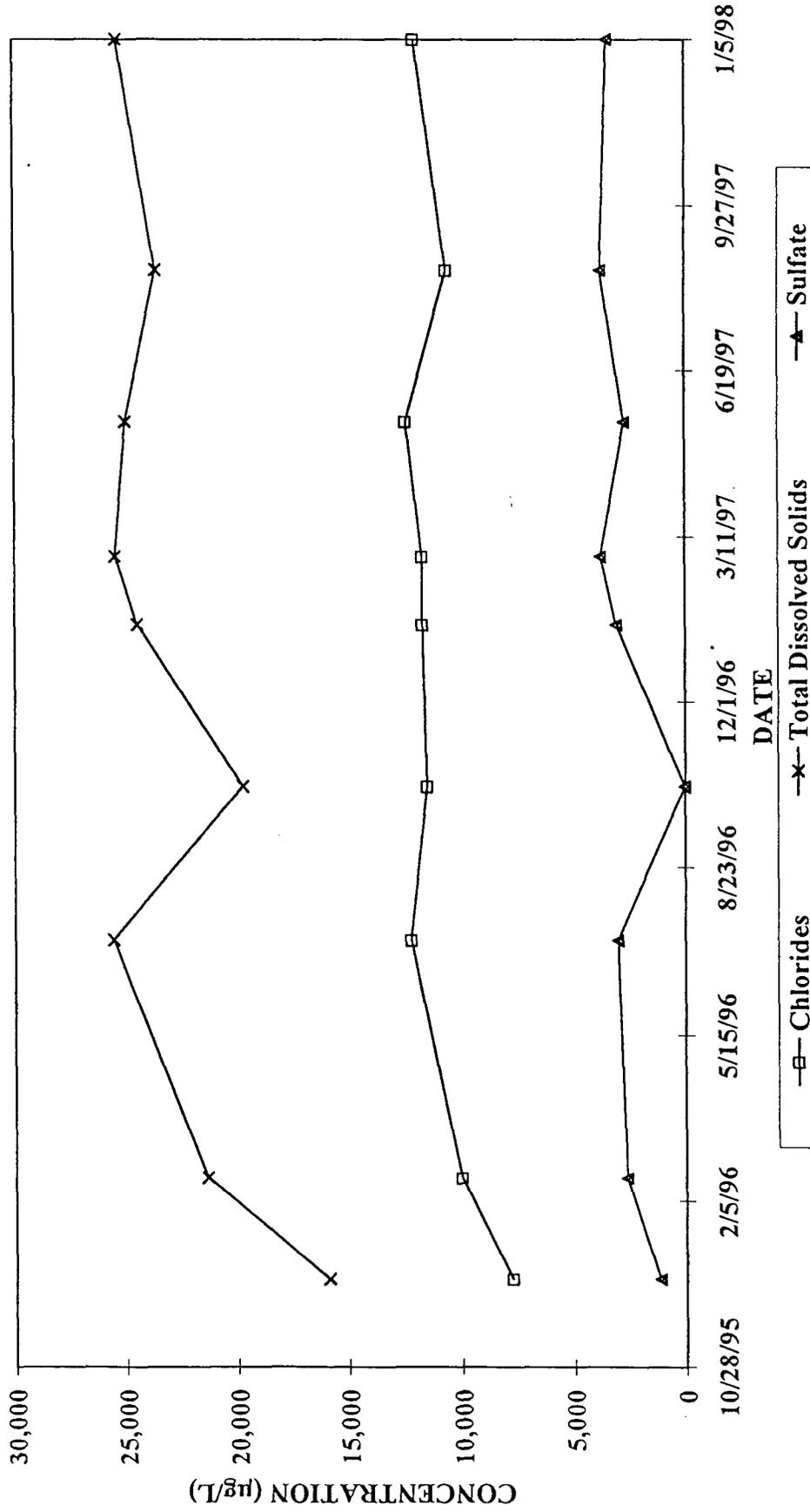
INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13



ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14



INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

March 14, 1997

Mr. Buddy Marley
WARREN PETROLEUM
P.O. Box 67
Monument, NM 88265

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on February 28, 1997. The samples were assigned to Certificate of Analysis No. 9702C74 and analyzed for all parameters as listed on the chain of custody.

Based on the conditions of the sample, procedures performed and quality controls implemented for this project, the following exceptions were noted for this data package.

The Matrix Spike Duplicate recovery was out of QC limits for Total Iron and Total Sodium analysis, due to matrix interference. The Matrix Spike recovery was out of QC limits for Total Sodium analysis, due to matrix interference. The sample spike was not from your sampling batch. The laboratory control sample and standard recoveries are in, verifying that the calibration is still valid.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script that reads "Bernadette A. Fini".

Bernadette A. Fini
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-02-C74

Approved for Release by:


Bernadette A. Fini, Project Manager

3-14-97
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 11:20:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	590	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	12	5.0 P	µg/L
TOTAL XYLENE	5.0	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	607		µg/L
Surrogate		% Recovery	
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	80		
Method 8020A ***			
Analyzed by: fab			
Date: 03/07/97			
Silver, Total	ND	0.01	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:37:15			
Arsenic, Total	ND	0.1	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:37:15			
Barium, Total	1.32	0.005	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:37:15			
Calcium, Total	120	0.1	mg/L
Method 6010A ***			
Analyzed by: JR			
Date: 03/06/97			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 11:20:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	0.02	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	27.9	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 03/03/97	ND	0.0008	mg/L
Potassium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	5	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	38.9	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 11:20:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 03/03/97	03/03/97		
Lead, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:37:15	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 03/01/97	277	5	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	ND	1	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	700	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 11:20:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 03/11/97	210	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 02/28/97	7.18		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 02/28/97	0.444		Mohms-cm
Sulfate Method 375.4 * Analyzed by: DSE Date: 03/07/97	9	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 02/28/97	1.000		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 03/11/97	1389	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:40:00
 DATE RECEIVED: 02/28/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Calcium, Total Method 6010A *** Analyzed by: JR Date: 03/06/97		508	1	mg/L
Cadmium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40		ND	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40		7.10	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 03/03/97		ND	0.0008	mg/L
Potassium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40		56	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 10:40:00
DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Magnesium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40	125	0.1	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 03/03/97	03/03/97		
Lead, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:40:40	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 03/01/97	6300	100	mg/L
Carbonate, as CaCO ₃ Method SM 4500-CO ₂ D ** Analyzed by: LAR Date: 02/28/97	ND	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:40:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	600	1	mg/L	
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 03/11/97	4794	1	mg/L	
pH Method 150.1 * Analyzed by: LAR Date: 02/28/97	7.24		pH units	
Resistivity Method 120.1 * Analyzed by: LAR Date: 02/28/97	0.046		Mohms-cm	
Sulfate Method 375.4 * Analyzed by: DSE Date: 03/07/97	2800	250	mg/L	
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 02/28/97	1.010			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:40:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 03/11/97	15190	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

03/14/97

PROJECT: 1st Quarter Analysis 97' PROJECT NO:
 SITE: Monument, NM 88265 MATRIX: WATER
 SAMPLED BY: Warren Petroleum Company DATE SAMPLED: 02/27/97 10:40:00
 SAMPLE ID: MW #5 A-G DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	0.1	0.09	ug/L
Acenaphthylene	ND	0.05	ug/L
Acenaphthene	ND	0.1	ug/L
Fluorene	0.8	0.2	ug/L
Phenanthrene	ND	0.2	ug/L
Anthracene	ND	0.1	ug/L
Fluoranthene	ND	0.1	ug/L
Pyrene	ND	0.1	ug/L
Chrysene	ND	0.08	ug/L
Benzo (a) anthracene	ND	0.08	ug/L
Benzo (b) fluoranthene	ND	0.06	ug/L
Benzo (k) fluoranthene	ND	0.07	ug/L
Benzo (a) pyrene	ND	0.03	ug/L
Dibenzo (a,h) anthracene	ND	0.07	ug/L
Benzo (g,h,i) perylene	ND	0.1	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.08	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Biphenyl	200 ug/L	112	50	150
Coronene	200 ug/L	358 MI	50	150

ANALYZED BY: KA DATE/TIME: 03/05/97 00:12:49
 EXTRACTED BY: SW DATE/TIME: 03/03/97 13:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 MI - Matrix Interference.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	ND	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	73		
4-Bromofluorobenzene	93		
Method 8020A ***			
Analyzed by: fab			
Date: 03/05/97			
Silver, Total	ND	0.01	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:44:05			
Arsenic, Total	ND	0.1	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:44:05			
Barium, Total	0.055	0.005	mg/L
Method 6010A ***			
Analyzed by: JM			
Date: 03/05/97 14:44:05			
Calcium, Total	909	1	mg/L
Method 6010A ***			
Analyzed by: JR			
Date: 03/06/97			

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05	ND	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05	1.35	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 03/03/97	ND	0.0004	mg/L
Potassium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05	123	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05	358	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9702C74-03

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 10:00:00
DATE RECEIVED: 02/28/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 03/03/97		03/03/97		
Lead, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05		ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:44:05		ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 03/01/97		15200	500	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97		ND	1	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97		500	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 10:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 03/11/97	11206	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 02/28/97	7.26		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 02/28/97	0.022		Mohms-cm
Sulfate Method 375.4 * Analyzed by: DSE Date: 03/07/97	6170	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 02/28/97	1.023		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 03/11/97	34468	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9702C74-03

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 10:00:00
DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	0.09	ug/L
Acenaphthylene	ND	0.05	ug/L
Acenaphthene	ND	0.1	ug/L
Fluorene	ND	0.2	ug/L
Phenanthrene	ND	0.2	ug/L
Anthracene	ND	0.1	ug/L
Fluoranthene	ND	0.1	ug/L
Pyrene	ND	0.1	ug/L
Chrysene	ND	0.08	ug/L
Benzo (a) anthracene	ND	0.08	ug/L
Benzo (b) fluoranthene	ND	0.06	ug/L
Benzo (k) fluoranthene	ND	0.07	ug/L
Benzo (a) pyrene	ND	0.03	ug/L
Dibenzo (a,h) anthracene	ND	0.07	ug/L
Benzo (g,h,i) perylene	ND	0.1	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.08	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Biphenyl	200 ug/L	84	50	150
Coronene	200 ug/L	81	50	150

ANALYZED BY: KA DATE/TIME: 03/05/97 00:54:08
EXTRACTED BY: SW DATE/TIME: 03/03/97 13:00:00
METHOD: 8310 Polynuclear Aromatic Hydrocarbons
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 14:10:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	260	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	690	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	950		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

73
 73

Method 8020A ***

Analyzed by: HS

Date: 03/08/97

Silver, Total

ND

0.01

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:56:36

Arsenic, Total

ND

0.1

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:56:36

Barium, Total

0.658

0.005

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:56:36

Calcium, Total

189

0.1

mg/L

Method 6010A ***

Analyzed by: JR

Date: 03/06/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #6 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 14:10:00
DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	0.14	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	22.5	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 03/03/97	ND	0.0008	mg/L
Potassium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	26	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	134	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 14:10:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 03/03/97	03/03/97		
Lead, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:56:36	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 03/01/97	1420	50	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	ND	1	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	1700	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9702C74-04

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #6 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 14:10:00
DATE RECEIVED: 02/28/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total	Method CALCULATION Analyzed by: DAM Date: 03/11/97	1091	1	mg/L
pH	Method 150.1 * Analyzed by: LAR Date: 02/28/97	7.70		pH units
Resistivity	Method 120.1 * Analyzed by: LAR Date: 02/28/97	0.151		Mohms-cm
Sulfate	Method 375.4 * Analyzed by: DSE Date: 03/07/97	71	5	mg/L
Specific Gravity	ASTM D1429 Analyzed by: LAR Date: 02/28/97	1.001		
Total Dissolved Solids	Method CALCULATION Analyzed by: DAM Date: 03/11/97	4654	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 14:10:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	4.50	ug/L
Acenaphthylene	ND	2.50	ug/L
Acenaphthene	ND	5.0	ug/L
Fluorene	ND	10.0	ug/L
Phenanthrene	ND	10.0	ug/L
Anthracene	ND	5.0	ug/L
Fluoranthene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Chrysene	ND	4.00	ug/L
Benzo (a) anthracene	ND	4.00	ug/L
Benzo (b) fluoranthene	ND	3.00	ug/L
Benzo (k) fluoranthene	ND	3.50	ug/L
Benzo (a) pyrene	ND	1.50	ug/L
Dibenzo (a,h) anthracene	ND	3.50	ug/L
Benzo (g,h,i) perylene	ND	5.0	ug/L
Indeno (1,2,3-cd) pyrene	ND	4.00	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Biphenyl	200 ug/L	D	50	150
Coronene	200 ug/L	D	50	150

ANALYZED BY: KA DATE/TIME: 03/07/97 12:46:23
 EXTRACTED BY: SW DATE/TIME: 03/03/97 13:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 D - Diluted, control limits not applicable.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 13:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	27	1.0 P	µg/L
TOLUENE	1.5	1.0 P	µg/L
ETHYLBENZENE	1.6	1.0 P	µg/L
TOTAL XYLENE	1.6	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	31.7		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

77

4-Bromofluorobenzene

90

Method 8020A ***

Analyzed by: HS

Date: 03/08/97

Silver, Total

ND

0.01

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:59:59

Arsenic, Total

ND

0.1

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:59:59

Barium, Total

0.456

0.005

mg/L

Method 6010A ***

Analyzed by: JM

Date: 03/05/97 14:59:59

Calcium, Total

890

1

mg/L

Method 6010A ***

Analyzed by: JR

Date: 03/06/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14 A-G

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 02/27/97 13:00:00
DATE RECEIVED: 02/28/97

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	ND	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	5.23	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 03/03/97	ND	0.0008	mg/L
Potassium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	78	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	314	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 13:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 03/03/97	03/03/97		
Lead, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: JM Date: 03/05/97 14:59:59	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 03/01/97	11700	500	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	ND	1	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 02/28/97	700	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A-G

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97 13:00:00
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 03/11/97	7996	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 02/28/97	7.27		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 02/28/97	0.029		Mohms-cm
Sulfate Method 375.4 * Analyzed by: DSE Date: 03/07/97	3780	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 02/28/97	1.016		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 03/11/97	25463	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9702C74-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 03/14/97

PROJECT: 1st Quarter Analysis 97'
 SITE: Monument, NM 88265
 SAMPLED BY: Provided By SPL
 SAMPLE ID: Trip Blank

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 02/27/97
 DATE RECEIVED: 02/28/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	77
4-Bromofluorobenzene	90

Method 8020A ***
 Analyzed by: fab
 Date: 03/05/97

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE970307100400

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	35	70.0	63 - 120
Benzene	ND	50	39	78.0	62 - 121
Toluene	ND	50	47	94.0	66 - 136
EthylBenzene	ND	50	47	94.0	70 - 136
O Xylene	ND	50	50	100	74 - 134
M & P Xylene	ND	100	100	100	77 - 140

M A T R I X S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	1.1	20	19	89.5	20	94.5	5.43	20	39 - 150
BENZENE	ND	20	19	95.0	19	95.0	0	25	39 - 150
TOLUENE	ND	20	19	95.0	19	95.0	0	26	56 - 134
ETHYLBENZENE	ND	20	20	100	20	100	0	38	61 - 128
O XYLENE	ND	20	19	95.0	18	90.0	5.41	29	40 - 130
M & P XYLENE	ND	40	38	95.0	39	97.5	2.60	20	43 - 152

Analyst: fab

Sequence Date: 03/07/97

SPL ID of sample spiked: 9702D20-01A

Sample File ID: E_C7197.TX0

Method Blank File ID:

Blank Spike File ID: E_C7193.TX0

Matrix Spike File ID: E_C7194.TX0

Matrix Spike Duplicate File ID: E_C7195.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $[(<4> - <5>) / [(<4> + <5>) \times 0.5]] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9702C92-06A 9702D20-02A 9702D20-03A 9702C74-01A
 9702C36-02A 9703185-01A 9703195-01A 9703187-02A
 9702C44-02A 9702D33-01B 9702C44-01A 9702D33-02B
 9703187-01A 9703187-03A 9702D20-04A 9702D20-01A
 9702C40-08A 9703086-05A



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE970308120900

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
MTBE	ND	50	39	78.0	63 - 120
Benzene	ND	50	37	74.0	62 - 121
Toluene	ND	50	46	92.0	66 - 136
EthylBenzene	ND	50	46	92.0	70 - 136
O Xylene	ND	50	49	98.0	74 - 134
M & P Xylene	ND	100	98	98.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	ND	20	20		100	20
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	20	100	20	100	0	26	56 - 134
ETHYLBENZENE	ND	20	20	100	20	100	0	38	61 - 128
O XYLENE	ND	20	19	95.0	19	95.0	0	29	40 - 130
M & P XYLENE	ND	40	39	97.5	39	97.5	0	20	43 - 152

Analyst: fab

Sequence Date: 03/08/97

SPL ID of sample spiked: 9702C44-08A

Sample File ID: E_C7225.TX0

Method Blank File ID:

Blank Spike File ID: E_C7220.TX0

Matrix Spike File ID: E_C7221.TX0

Matrix Spike Duplicate File ID: E_C7222.TX0

* = Values Outside QC Range. † = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS ‡ Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) | / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH (SPL ID):

9702C44-01A 9702C44-03A 9702C44-04A 9702C44-06A
 9702C44-09A 9702C44-05A 9702C74-02A 9702C51-04A
 9702C51-05A 9702C44-02A 9702C44-07A 9702C51-02A
 9702C51-01A 9702C51-03A 9702C44-01A 9702C44-04A
 9702C44-10A 9702C44-08A 9702C44-07A



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE970305082500

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	42	84.0	63 - 120
Benzene	ND	50	42	84.0	62 - 121
Toluene	ND	50	49	98.0	66 - 136
EthylBenzene	ND	50	48	96.0	70 - 136
O Xylene	ND	50	49	98.0	74 - 134
M & P Xylene	ND	100	96	96.0	77 - 140

M A T R I X S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	ND	20	18		90.0	18
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	20	100	20	100	0	26	56 - 134
ETHYLBENZENE	ND	20	20	100	20	100	0	38	61 - 128
O XYLENE	ND	20	20	100	20	100	0	29	40 - 130
M & P XYLENE	ND	40	41	102	41	102	0	20	43 - 152

Analyst: fab

Sequence Date: 03/05/97

SPL ID of sample spiked: 9702B66-06A

Sample File ID: E_C7114.TX0

Method Blank File ID:

Blank Spike File ID: E_C7109.TX0

Matrix Spike File ID: E_C7112.TX0

Matrix Spike Duplicate File ID: E_C7113.TX0

* = Values Outside QC Range. < = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) | / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9702D19-06A 9702C74-03A 9702D19-03A 9702D19-05A
 9702C74-06A 9702B66-07A 9702B66-08A 9702B66-04A
 9702B66-01A 9702B66-02A 9702B66-09A 9702B66-10A
 9702B66-03A 9702B66-05A 9703071-02A 9703071-03A
 9702B66-06A



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE970308165700

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	34	68.0	63 - 120
Benzene	ND	50	32	64.0	62 - 121
Toluene	ND	50	42	84.0	66 - 136
EthylBenzene	ND	50	44	88.0	70 - 136
O Xylene	ND	50	44	88.0	74 - 134
M & P Xylene	ND	100	90	90.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	ND	20	20	100	22	110	9.52	20	39 - 150
BENZENE	27	20	53	130	55	140	7.41	25	39 - 150
TOLUENE	1.5	20	28	132	26	122	7.87	26	56 - 134
ETHYLBENZENE	1.6	20	23	107	23	107	0	38	61 - 128
O XYLENE	ND	20	21	93.0	23	103	10.2	29	40 - 130
M & P XYLENE	1.6	40	40	96.0	43	104	8.00	20	43 - 152

Analyst: HS

Sequence Date: 03/08/97

SPL ID of sample spiked: 9702C74-05A

Sample File ID: E_C7252.TX0

Method Blank File ID:

Blank Spike File ID: E_C7248.TX0

Matrix Spike File ID: E_C7249.TX0

Matrix Spike Duplicate File ID: E_C7250.TX0

* = Values Outside QC Range. < = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $[(<4> - <5>) / [(<4> + <5>) \times 0.5]] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9703018-05A 9703018-06A 9703018-07A 9703018-08A
 9703018-09A 9703170-01A 9703170-02A 9703170-07A
 9703170-03A 9703170-05A 9703170-06A 9703171-01A
 9703171-03A 9703170-04A 9703171-02A 9703171-04A
 9703171-05A 9702C74-05A 9702C74-04A 9703018-03A



Matrix: Aqueous
Units: ug/L

Batch Id: 1970307091600

B L A N K S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(**) (Advisory)	
			Result	Recovery	Result	Recovery		RPD Max.	Recovery Range
			<1>	<4>	<1>	<5>			
NAPHTHALENE	ND	0.5	0.35	70.0	0.35	70.0	0	30	1 - 122
ACENAPHTHYLENE	ND	0.5	0.33	66.0	0.32	64.0	3.08	30	1 - 124
ACENAPHTHENE	ND	0.5	0.36	72.0	0.37	74.0	2.74	30	1 - 124
FLUORENE	ND	0.5	0.39	78.0	0.39	78.0	0	30	1 - 142
PHENANTHRENE	ND	0.5	0.36	72.0	0.37	74.0	2.74	30	1 - 155
ANTHRACENE	ND	0.5	0.26	52.0	0.26	52.0	0	30	1 - 126
FLUORANTHENE	ND	0.5	0.38	76.0	0.38	76.0	0	30	14 - 123
PYRENE	ND	0.5	0.37	74.0	0.37	74.0	0	30	1 - 140
CHRYSENE	ND	0.5	0.40	80.0	0.40	80.0	0	30	1 - 199
BENZO (A) ANTHRACENE	ND	0.5	0.36	72.0	0.36	72.0	0	30	12 - 135
BENZO (B) FLUORANTHENE	ND	0.5	0.38	76.0	0.38	76.0	0	30	6 - 150
BENZO (K) FLUORANTHENE	ND	0.5	0.38	76.0	0.38	76.0	0	30	1 - 159
BENZO (A) PYRENE	ND	0.5	0.38	76.0	0.38	76.0	0	30	1 - 128
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.37	74.0	0.37	74.0	0	30	1 - 110
BENZO (G,H,I) PERYLENE	ND	0.5	0.37	74.0	0.37	74.0	0	30	1 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.39	78.0	0.38	76.0	2.60	30	1 - 116

Analyst: KA

Sequence Date: 03/04/97

Method Blank File ID:

Sample File ID:

Blank Spike File ID: 970304A\005-0101

Matrix Spike File ID:

Matrix Spike Duplicate File ID:

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

Relative Percent Difference = [(<4> - <5>) / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL Temporary Limits

SAMPLES IN BATCH (SPL ID) :

9702C74-02C 9702C74-03C 9702C74-05C 9702C74-01C
9702C74-04C

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Date: 030597 Time: 0753 File Name: 030597M3

Checked

Jm 3/6/97

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.94	97	1.60	2.40
Aluminum						
Arsenic	ND	4.00	3.98	99	3.20	4.80
Barium	ND	2.00	1.90	95	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.91	96	1.60	2.40
Cobalt						
Chromium	ND	2.00	1.91	95	1.60	2.40
Copper	ND	2.00	1.92	96	1.60	2.40
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium	ND	20.00	18.91	95	16.00	24.00
Magnesium	ND	20.00	19.46	97	16.00	24.00
Manganese						
Sodium						
Nickel	ND	2.00	1.97	99	1.60	2.40
Lead	ND	2.00	2.00	100	1.60	2.40
Antimony						
Selenium	ND	4.00	3.89	97	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	1.99	99	1.60	2.40

Work Orders in Batch

Work Order	Fractions
97-02-D24	01B
97-02-C64	01B,03B 04B,06B 08B,10B
97-02-C65	04D-09D
97-02-C74	01B-05B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 97-02-D24 01B

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver	ND	1.0	0.8594	85.9	0.8379	83.8	80	120	2.5	20.0
Aluminum										
Arsenic	ND	2.0	1.768	88.4	1.743	87.2	80	120	1.4	20.0
Barium	0.0626	1.0	0.8961	83.4	0.8816	81.9	80	120	1.8	20.0
Beryllium										
Calcium										
Cadmium	ND	1.0	0.8406	84.1	0.8225	82.3	80	120	2.2	20.0
Cobalt										
Chromium	ND	1.0	0.8442	84.4	0.8252	82.5	80	120	2.3	20.0
Copper	ND	1.0	0.8464	84.6	0.8299	83.0	80	120	2.0	20.0
Iron	0.4266	1.0	1.254	82.7	1.219	79.2	80	120	4.3	20.0
Potassium	ND	10.0	8.985	89.9	8.637	86.4	80	120	3.9	20.0
Magnesium	101.3	10.0	112.3	110.0	112.5	112.0	80	120	1.8	20.0
Manganese										
Sodium										
Nickel	ND	1.0	0.8532	85.3	0.8473	84.7	80	120	0.7	20.0
Lead	ND	1.0	0.8715	87.2	0.843	84.3	80	120	3.3	20.0
Antimony										
Selenium	ND	2.0	1.705	85.3	1.711	85.6	80	120	0.4	20.0
Thallium										
Vanadium										
Zinc	0.0394	1.0	0.907	86.8	0.8953	85.6	80	120	1.4	20.0

* Spike Results Outside Method Limits

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JR

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 860-0900

Date: 030697 Time: 0735 File Name: 030697R4

Checked

3/7/97

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	19.94	100	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium	ND	20.00	18.77	94	16.00	24.00
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
97-02-C65	04D-09D
97-02-C74	01B-05B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 97-02-D24 01B

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	60.42	10.0	69.23	88.1	69.63	92.1	80 120	4.4	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium	75.94	10.0	83.81	78.7 *	82.65	67.1 *	80 120	15.9	20.0
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/03/97

Analyzed on: 03/03/97

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.95	97.5	80 - 120

-9703040

Samples in batch:

9702947-01A 9702A70-08E 9702A70-09E 9702A86-05E
9702A91-01A 9702C60-01C 9702C74-01B 9702C74-02B
9702C74-03B 9702C74-04B 9702C74-05B

COMMENTS:

LCS= SPL ID# 94-452-30-8



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/03/97
 Analyzed on: 03/03/97
 Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
 Method 7470 A***

SPL Sample ID Number	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9702C74-02B	ND	ND	2.00	1.93	96.5	1.89	94.5	2.1	20	75	-125

-9703040

Samples in batch:

9702947-01A 9702A70-08E 9702A70-09E 9702A86-05E
 9702A91-01A 9702C60-01C 9702C74-01B 9702C74-02B
 9702C74-03B 9702C74-04B 9702C74-05B

COMMENTS:

LCS= SPL ID# 94-452-30-8



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/03/97

Analyzed on: 03/01/97

Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	27.23	27.49	101	90 - 110

-9703024

Samples in batch:

9702B62-01C 9702B62-02C 9702B62-04C 9702B62-05C
9702C65-04E 9702C65-05E 9702C65-06E 9702C65-07E
9702C65-08E 9702C65-09E 9702C65-10A 9702C74-01D
9702C74-02D 9702C74-03D 9702C74-04D 9702C74-05D
9703003-03A

COMMENTS:

LCS= SPL ID#94463290-18



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/03/97

Analyzed on: 03/01/97

Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
				Result	Recovery	Result	Recovery		RPD	% REC	Max
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	Max
9702C74-05D	ND	23.49	50.00	72.48	98.0	72.48	98.0	0	2.7	93.2	-109.3

-9703026

Samples in batch:

9702B62-01C 9702B62-02C 9702B62-04C 9702B62-05C
9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/28/97

Analyzed on: 02/28/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9702C74-01D	ND	ND	0	2.2

-9702918

Samples in batch:

9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/28/97

Analyzed on: 02/28/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9702C74-01D	700	700	0	3

-9702920

Samples in batch:

9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/28/97

Analyzed on: 02/28/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
Method 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9702C74-01D	7.18	7.18	0	1.0

-9702913

Samples in batch:

9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/06/97

Analyzed on: 02/28/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
Method 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9702C74-01D	0.444	0.444	0	1.0

-9703167

Samples in batch:

9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/07/97

Analyzed on: 03/07/97

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	9.38	92.4	90 - 110

-9703201

Samples in batch:

9702A95-02C 9702A95-03C 9702B62-01C 9702B62-02C
9702B62-04C 9702B62-05C 9702B76-01A 9702C65-04E
9702C65-05E 9702C65-06E 9702C65-07E 9702C65-08E
9702C65-09E 9702C65-10A 9702C66-35A 9702C74-01D
9702C74-03D 9702C74-04D 9702C74-05D 9703270-01B

COMMENTS:

LCS = SPL I.D.#9553592-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/07/97

Analyzed on: 03/07/97

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	10.03	98.8	90 - 110

-9703200

Samples in batch:

9702C74-02D

COMMENTS:

LCS = SPL I.D.#9553592-21



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/07/97

Analyzed on: 03/07/97

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
 Method 375.4 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC
9702C65-08E	ND	10.16	10.00	22.24	121	21.73	116	4.2	11.8	79.6 -122

-9703198

Samples in batch:

9702C65-06E 9702C65-07E 9702C65-08E 9702C65-09E
 9702C65-10A 9702C66-35A 9702C74-01D 9702C74-03D
 9702C74-04D 9702C74-05D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 03/07/97
Analyzed on: 03/07/97
Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC
9702C74-02D	ND	12.94	10.00	24.85	119	24.02	111	7.0	11.8	79.6 -122

-9703199

Samples in batch:

9702C74-02D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/28/97

Analyzed on: 02/28/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9702C74-01D	1.000	1.000	0	1.0

-9702915

Samples in batch:

9702C74-01D 9702C74-02D 9702C74-03D 9702C74-04D
9702C74-05D

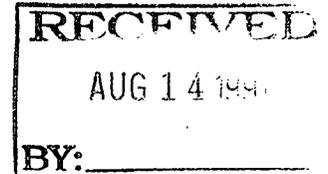
COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

June 11, 1997

Mr. Buddy Marley
WARREN PETROLEUM
P. O. Box 67
Monument, NM 88265



The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on May 20, 1997. The samples were assigned to Certificate of Analysis No(s).9705958 and analyzed for the parameters specified on the chain of custody.

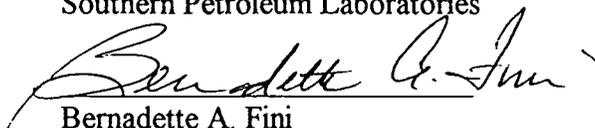
Based on the conditions of the sample, procedures performed and quality controls implemented for this project, the following exceptions were noted for this data package.

Your sample MW #7 A-E (SPL ID# 9705958-01) was randomly selected for the use in SPL's quality control program for Total Metals by 6010. The Matrix Spike, Matrix Spike Duplicate and Relative Percent Difference (%RPD) recoveries were out of QC limits for various spiked compounds in the Total Metals (6010) analysis, due to matrix interference. The laboratory control sample and standard recoveries are in, verifying that the calibration is still valid.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis Number(s) during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Bernadette A. Fini
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-05-958

Approved for Release by:


Bernadette A. Fini, Project Manager

6-11-97
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #7 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 10:50:00
 DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	ND	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

100
 100

Method 8020A ***
 Analyzed by: VHZ
 Date: 05/28/97

Silver, Total ND 0.01 mg/L
 Method 6010A ***
 Analyzed by: DQ
 Date: 05/29/97

Arsenic, Total ND 0.1 mg/L
 Method 6010A ***
 Analyzed by: DQ
 Date: 05/29/97

Barium, Total 0.522 0.005 mg/L
 Method 6010A ***
 Analyzed by: DQ
 Date: 05/29/97

Calcium, Total 1350 1 mg/L
 Method 6010A ***
 Analyzed by: DQ
 Date: 06/05/97

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #7 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 10:50:00
 DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA		RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97			ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97			0.04	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97			14.6	0.1	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 05/27/97			ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97			119	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97			377	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #7 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 10:50:00
 DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 05/21/97	05/21/97		
Lead, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 05/22/97	16200	100	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	ND	1	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	448	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #7 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 10:50:00
DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 06/09/97	10801	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 05/20/97	7.00		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 05/20/97	0.021	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 05/29/97	5160	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 05/23/97	1.028		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 06/09/97	34470	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #14 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 11:50:00
 DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	32	1.0 P	µg/L
TOLUENE	1.4	1.0 P	µg/L
ETHYLBENZENE	1.3	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	34.7		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	103		
Method 8020A ***			
Analyzed by: VHZ			
Date: 05/29/97			
Silver, Total	ND	0.01	mg/L
Method 6010A ***			
Analyzed by: DQ			
Date: 05/29/97			
Arsenic, Total	ND	0.1	mg/L
Method 6010A ***			
Analyzed by: DQ			
Date: 05/29/97			
Barium, Total	0.682	0.005	mg/L
Method 6010A ***			
Analyzed by: DQ			
Date: 05/29/97			
Calcium, Total	1160	1	mg/L
Method 6010A ***			
Analyzed by: DQ			
Date: 06/05/97			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 11:50:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		0.01	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		6.7	0.1	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 05/27/97		ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		79	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		325	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #14 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 11:50:00
 DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA		DETECTION LIMIT	UNITS
	RESULTS			
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 05/21/97	05/21/97			
Lead, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.05		mg/L
Selenium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.1		mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 05/22/97	12400	200		mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	ND	2		mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	684	2		mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 11:50:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 06/09/97		7613	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 05/20/97		7.08		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 05/20/97		0.028	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 05/29/97		2740	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 05/23/97		1.022		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 06/09/97		25009	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #1 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 13:15:00
 DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	200	1.0 P	µg/L
TOLUENE	1.1	1.0 P	µg/L
ETHYLBENZENE	8.3	1.0 P	µg/L
TOTAL XYLENE	1.0	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	210.4		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

83

4-Bromofluorobenzene

93

Method 8020A ***

Analyzed by: VHZ

Date: 05/29/97

Silver, Total

ND

0.01

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Arsenic, Total

ND

0.1

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Barium, Total

2.57

0.005

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Calcium, Total

676

1

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 06/05/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 13:15:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		0.15	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		134	0.1	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 05/27/97		ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		28	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		90.3	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #1 A-E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 05/19/97 13:15:00
 DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 05/21/97	05/21/97		
Lead, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	0.09	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 05/22/97	594	10	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	ND	2	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	708	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 13:15:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 06/09/97		3556	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 05/20/97		7.72		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 05/20/97		0.353	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 05/29/97		8310	2500	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 05/23/97		1.006		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 06/09/97		14099	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 12:45:00
DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	210	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	210		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

97

4-Bromofluorobenzene

97

Method 8020A ***

Analyzed by: VHZ

Date: 05/28/97

Silver, Total

ND

0.01

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Arsenic, Total

ND

0.1

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Barium, Total

1.26

0.005

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 05/29/97

Calcium, Total

2330

1

mg/L

Method 6010A ***

Analyzed by: DQ

Date: 06/05/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 12:45:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Cadmium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		0.08	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		69.6	0.1	mg/L
Mercury, Total Method 7470 A*** Analyzed by: PB Date: 05/27/97		ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		75	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97		249	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 12:45:00
DATE RECEIVED: 05/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 05/21/97	05/21/97		
Lead, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: DQ Date: 05/29/97	ND	0.1	mg/L
Chloride Method 325.3 * Analyzed by: PT Date: 05/22/97	6820	100	mg/L
Carbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	ND	2	mg/L
Bicarbonate, as CaCO3 Method SM 4500-CO2D ** Analyzed by: LAR Date: 05/20/97	696	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9705958-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 06/10/97

PROJECT: 2nd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/19/97 12:45:00
DATE RECEIVED: 05/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 06/09/97		2607	1	mg/L
pH Method 150.1 * Analyzed by: LAR Date: 05/20/97		7.53		pH units
Resistivity Method 120.1 * Analyzed by: LAR Date: 05/20/97		0.045	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 05/29/97		2440	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 05/23/97		1.014		
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 06/09/97		15288	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_J970528144200

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	100	81.3	81.3	63 - 120
Benzene	ND	100	89.0	89.0	62 - 121
Toluene	ND	100	89.2	89.2	66 - 136
EthylBenzene	ND	100	87.7	87.7	70 - 136
O Xylene	ND	100	88.2	88.2	74 - 134
M & P Xylene	ND	200	175.5	87.8	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	1.0	20	21	100	22	105	4.88	20	39 - 150
BENZENE	ND	20	19	95.0	19	95.0	0	25	39 - 150
TOLUENE	ND	20	19	95.0	18	90.0	5.41	26	56 - 134
ETHYLBENZENE	ND	20	18	90.0	18	90.0	0	38	61 - 128
O XYLENE	ND	20	19	95.0	18	90.0	5.41	29	40 - 130
M & P XYLENE	ND	40	37	92.5	36	90.0	2.74	20	43 - 152

Analyst: VHZ

Sequence Date: 05/28/97

SPL ID of sample spiked: 9705A38-01A

Sample File ID: J_E7911.TX0

Method Blank File ID:

Blank Spike File ID: J_E7903.TX0

Matrix Spike File ID: J_E7905.TX0

Matrix Spike Duplicate File ID: J_E7906.TX0

* = Values Outside QC Range. < = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9705A38-01A 9705A38-02A 9705B42-02A 9705B72-03A
 9705B72-04A 9705A60-01A 9705958-02A 9705958-03A
 9705A60-03A 9705A60-02A 9705B26-03A 9705B26-02A
 9705B26-06A 9705B71-02A 9705B42-02A 9705B69-02A
 9705B26-04A 9705A38-03A



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_J970527212200

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
MTBE	ND	100.0	87	87.0	63 - 120
Benzene	ND	100.0	89	89.0	62 - 121
Toluene	ND	100.0	90	90.0	66 - 136
EthylBenzene	ND	100.0	89	89.0	70 - 136
O Xylene	ND	100.0	89	89.0	74 - 134
M & P Xylene	ND	200.0	178	89.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	254	20	270	NC	270	NC	NC	20	39 - 150
BENZENE	ND	20	22	110	22	110	0	25	39 - 150
TOLUENE	ND	20	22	110	21	105	4.65	26	56 - 134
ETHYLBENZENE	ND	20	22	110	20	100	9.52	38	61 - 128
O XYLENE	ND	20	22	110	20	100	9.52	29	40 - 130
M & P XYLENE	ND	40	44	110	40	100	9.52	20	43 - 152

Analyst: VHZ

Sequence Date: 05/28/97

SPL ID of sample spiked: 9705C60-01A

Sample File ID: J_E7874.TX0

Method Blank File ID:

Blank Spike File ID: J_E7899.TX0

Matrix Spike File ID: J_E7871.TX0

Matrix Spike Duplicate File ID: J_E7872.TX0

* = Values Outside QC Range. † = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS ‡ Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $|(<4> - <5> | / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9705B69-03A 9705B69-04A 9705B72-01A 9705B72-04A
 9705B72-08A 9705958-04A 9705B72-05A 9705958-01A
 9705B72-06A 9705B42-05A 9705B69-05A 9705C60-01A
 9705B42-04A 9705B69-05A



** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: ug/L

Batch Id: 1970527184910

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
Naphthalene	ND	0.50	0.39	78.0	33 - 122
Acenaphthylene	ND	0.50	0.53	106	42 - 138
Acenaphthene	ND	0.50	0.41	82.0	25 - 123
Fluorene	ND	0.50	0.43	86.0	19 - 142
Phenanthrene	ND	0.50	0.40	80.0	40 - 121
Anthracene	ND	0.50	0.35	70.0	32 - 121
Fluoranthene	ND	0.50	0.41	82.0	51 - 115
Pyrene	ND	0.50	0.42	84.0	45 - 117
Chrysene	ND	0.50	0.55	110	44 - 122
Benzo (a) anthracene	ND	0.50	0.40	80.0	57 - 118
Benzo (b) fluoranthene	ND	0.50	0.43	86.0	62 - 121
Benzo (k) fluoranthene	ND	0.50	0.42	84.0	63 - 117
Benzo (a) pyrene	ND	0.50	0.41	82.0	42 - 120
Dibenzo (a,h) anthracene	ND	0.50	0.43	86.0	53 - 118
Benzo (g,h,i) perylene	ND	0.50	0.44	88.0	51 - 116
Indeno (1,2,3-cd) pyrene	ND	0.50	0.45	90.0	60 - 116

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			NAPHTHALENE	ND	0.5	0.38		76.0	0.39
ACENAPHTHYLENE	ND	0.5	0.33	66.0	0.34	68.0	2.99	30	1 - 124
ACENAPHTHENE	ND	0.5	0.48	96.0	0.49	98.0	2.06	30	1 - 124
FLUORENE	ND	0.5	0.38	76.0	0.39	78.0	2.60	30	1 - 142
PHENANTHRENE	ND	0.5	0.40	80.0	0.40	80.0	0	30	1 - 155
ANTHRACENE	ND	0.5	0.32	64.0	0.33	66.0	3.08	30	1 - 126
FLUORANTHENE	ND	0.5	0.41	82.0	0.47	94.0	13.6	30	14 - 123
PYRENE	ND	0.5	0.40	80.0	0.43	86.0	7.23	30	1 - 140
CHRYSENE	ND	0.5	0.53	106	0.60	120	12.4	30	1 - 199
BENZO (A) ANTHRACENE	ND	0.5	0.40	80.0	0.43	86.0	7.23	30	12 - 135
BENZO (B) FLUORANTHENE	ND	0.5	0.43	86.0	0.49	98.0	13.0	30	6 - 150
BENZO (K) FLUORANTHENE	ND	0.5	0.43	86.0	0.52	104	18.9	30	1 - 159
BENZO (A) PYRENE	ND	0.5	0.23	46.0	0.26	52.0	12.2	30	1 - 128
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.46	92.0	0.52	104	12.2	30	1 - 110
BENZO (G,H,I) PERYLENE	ND	0.5	0.43	86.0	0.48	96.0	11.0	30	1 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.52	104	0.48	96.0	8.00	30	1 - 116



** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: ug/L

Batch Id: 1970527184910

Analyst: KA

Sequence Date: 05/28/97

SPL ID of sample spiked: 970522SFB1

Sample File ID: 970523A\015-1101

Method Blank File ID:

Blank Spike File ID: 970528A\LC_A0006

Matrix Spike File ID: 970523A\016-1101

Matrix Spike Duplicate File ID: 970523A\017-1101 (***) = Source: Temporary Limits

* = Values Outside QC Range. < = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = [(<4> - <5>) / [(<4> + <5>) x 0.5]] x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '96)

SAMPLES IN BATCH(SPL ID):

9705B74-05C	9705B74-07C	9705B74-06C	9705958-01D
9705958-04D	9705958-02D	9705A73-02C	9705A73-05C
9705A78-02B	9705A78-03B	9705B74-03C	9705B74-04C



ICP Spectroscopy Method 6010 Quality Control Report

Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713)660-0901

Anlyst: DQ

Date:060597 Time: 17:01 File Name: 060597W4

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	20.29	101	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	ND	0	1.60	2.40

Work Orders in Batch

Work Order Fractions
97-05-958 01B-04B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9705958-01B

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	134.8	10.0	154.4	196.0 *	159.7	249.0 *	80 120	23.8 **	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Checked: 6/8/97



Matrix: Water

Units: mg/L

Analyst: DQ

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE: 281.540.0900

Date: 052997 Time: 0753 File Name: 052997S3

Checked: *02 5/30/97*

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.99	100	1.60	2.40
Aluminum						
Arsenic	ND	4.00	3.95	99	3.20	4.80
Barium	ND	2.00	1.99	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.86	93	1.60	2.40
Cobalt						
Chromium	ND	2.00	1.92	96	1.60	2.40
Copper						
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium	ND	20.00	19.52	98	16.00	24.00
Magnesium	ND	20.00	19.88	99	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.93	96	1.60	2.40
Antimony						
Selenium	ND	4.00	3.94	99	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
97-05-958	01B-04B
97-05-A22	01C-06C
97-05-A35	03A

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9705958-01B

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver	ND	1.0	1.03	103.0	1.026	102.6	80	120	0.4	20.0
Aluminum										
Arsenic	ND	2.0	2.017	100.9	2.032	101.6	80	120	0.7	20.0
Barium	0.5222	1.0	1.414	89.2	1.394	87.2	80	120	2.3	20.0
Beryllium										
Calcium										
Cadmium	ND	1.0	1.014	101.4	1.028	102.8	80	120	1.4	20.0
Cobalt										
Chromium	0.0422	1.0	0.8812	83.9	0.8902	84.8	80	120	1.1	20.0
Copper										
Iron	14.58	1.0	16.99	241.0 *	17.3	272.0 *	80	120	12.1	20.0
Potassium	119	10.0	136.2	172.0 *	133.1	141.0 *	80	120	19.8	20.0
Magnesium	376.7	10.0	397	203.0 *	402.6	259.0 *	80	120	24.2 **	20.0
Manganese										
Sodium										
Nickel										
Lead	ND	1.0	0.9459	94.6	0.9456	94.6	80	120	0.0	20.0
Antimony										
Selenium	ND	2.0	2.09	104.5	2.111	105.6	80	120	1.0	20.0
Thallium										
Vanadium										
Zinc										

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/27/97
Analyzed on: 05/27/97
Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9705854-10A	ND	ND	2.00	1.95	97.5	1.93	96.5	1.0	20	75	-125

-9705A16

Samples in batch:

9705854-10A 9705958-01B 9705958-02B 9705958-03B
9705958-04B 9705A37-01E

COMMENTS:

LCS= SPL ID# 94-452-29-6



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/27/97

Analyzed on: 05/27/97

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.08	104	80 - 120

-9705A16

Samples in batch:

9705854-10A 9705958-01B 9705958-02B 9705958-03B
9705958-04B 9705A37-01E

COMMENTS:

LCS= SPL ID# 94-452-29-6



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/22/97

Analyzed on: 05/20/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9705972-01A	336	336	0	5

-9705878

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705972-01A 9705975-01B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/22/97

Analyzed on: 05/20/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9705972-01A	ND	ND	0	5

-9705880

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705972-01A 9705975-01B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/23/97
Analyzed on: 05/22/97
Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Method mg/L	Sample mg/L	Spike mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9705B20-01B	ND	266	500	771	101	771	101	0	5	92	-109

-9705918

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705B20-01B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/23/97

Analyzed on: 05/22/97

Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	27.23	27.47	101	94 - 106

-9705917

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705B20-01B

COMMENTS:

LCS= SPL ID# 95535108-7



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/20/97

Analyzed on: 05/20/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
Method 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9705946-01B	5.39	5.39	0	1.0

-9705793

Samples in batch:

9705876-01A 9705946-01B 9705958-01C 9705958-02C
9705958-03C 9705958-04C 9705972-01A 9705975-01B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/22/97

Analyzed on: 05/20/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
Method 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9705972-01A	0.012	0.012	0	1.0

-9705885

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705972-01A 9705975-01B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/23/97

Analyzed on: 05/23/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9705972-01A	1.049	1.047	0.2	1.0

-9705968

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705972-01A 9705975-01B

COMMENTS:



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/02/97
 Analyzed on: 05/29/97
 Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
 Method 375.4 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9705958-02C	ND	10.98	10.00	20.99	100	21.42	104	3.9	9.5	84	-120

-9706042

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
 9705D56-01A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/02/97

Analyzed on: 05/29/97

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	9.97	98.2	82 - 111

-9706043

Samples in batch:

9705958-01C 9705958-02C 9705958-03C 9705958-04C
9705D56-01A

COMMENTS:

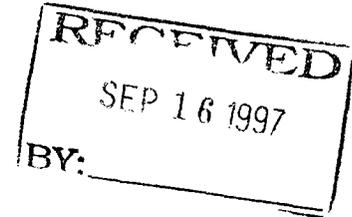
SPL LCS#: 95535108-7



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

September 4, 1997

COPY



Buddy Marley
WARREN PETROLEUM
P.O. Box 67
Monument, NM 88265

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on August 20, 1997. The samples were assigned to Certificate of Analysis No.(s) 9708811 and analyzed for all parameters as listed on the chain of custody.

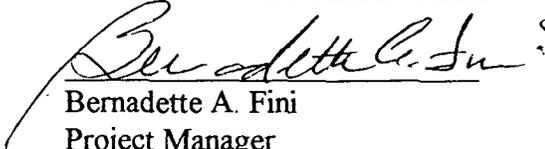
Based on the conditions of the sample, procedures performed and quality controls implemented for this project, the following exceptions were noted for this data package.

The Matrix Spike and Matrix Spike Duplicate recoveries were out of QC limits for Total Calcium and Magnesium (6010) analysis, due to matrix interference. Sample spiked was not from your batch of samples. The laboratory control sample and standard recoveries are in, verifying that the calibration is still valid.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Bernadette A. Fini
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-08-811

Approved for Release by:


Bernadette A. Fini, Project Manager

9-4-97
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



Certificate of Analysis No.
9708811-01

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 9/4/97

Attn: Buddy Marley
PROJECT: 3rd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-F

PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 8/19/97 0:00
DATE RECEIVED: 8/20/97

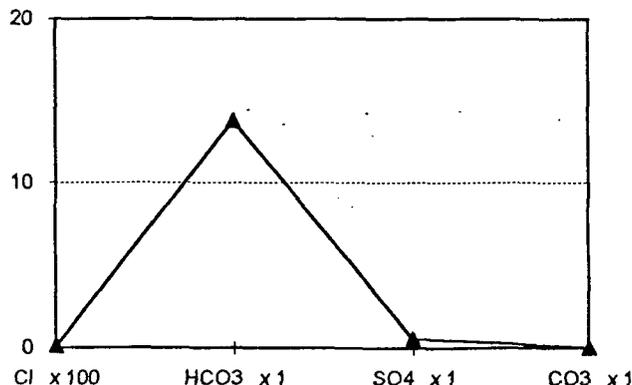
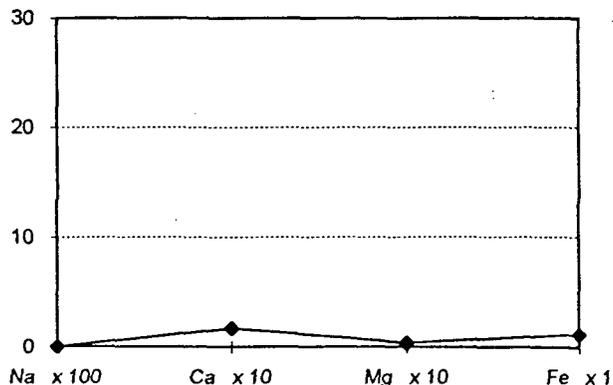
ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>
Sodium, Na (Calc.)	0	0.00
Calcium, Ca	346	17.27
Magnesium, Mg	44.8	3.69
Chloride, Cl	226	6.38
Bicarbonate, CaCO	840	13.77
Sulfate SO4	29	0.60
Carbonate, CaCO3	0	0.00
Iron, Fe(Total)	32.4	1.16
Barium, Ba	1.45	0.02

<u>WET CHEMISTRY</u>	<u>RESULT</u>
Total Dissolved Solids (calc.) mg/L	1529.65
Specific Gravity 60/60 deg. F.	1.0047
Resistivity (Mohm-cm) 75 deg. F.	0.4800
pH pH units	7.69

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9708811-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 9/4/97

Attn: Buddy Marley
PROJECT: 3rd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-F

PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 8/19/97 0:00
DATE RECEIVED: 8/20/97

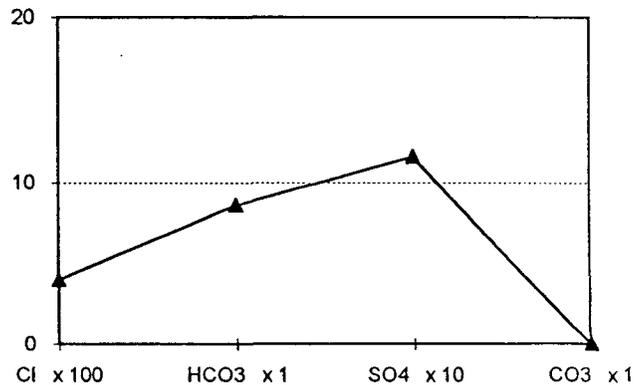
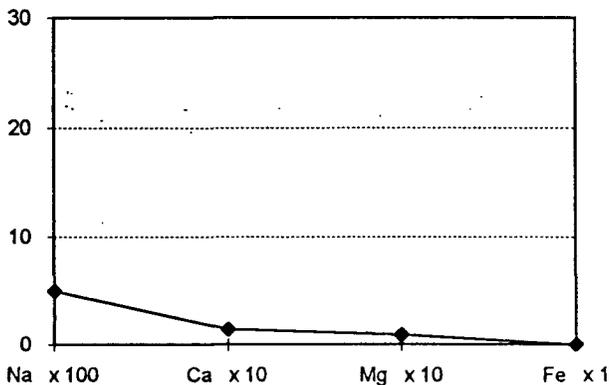
ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>
Sodium, Na (Calc.)	11510.8626	500.69
Calcium, Ca	278	13.87
Magnesium, Mg	108	8.88
Chloride, Cl	14200	400.56
Bicarbonate, CaCO ₃	525	8.60
Sulfate SO ₄	5550	115.55
Carbonate, CaCO ₃	0	0.00
Iron, Fe(Total)	0.64	0.02
Barium, Ba	0.052	0.00

<u>WET CHEMISTRY</u>	<u>RESULT</u>
Total Dissolved Solids (calc.) mg/L	32221.5546
Specific Gravity 60/60 deg. F.	1.0503
Resistivity (Mohm-cm) 75 deg. F.	0.0230
pH pH units	7.41

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9708811-03

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 9/4/97

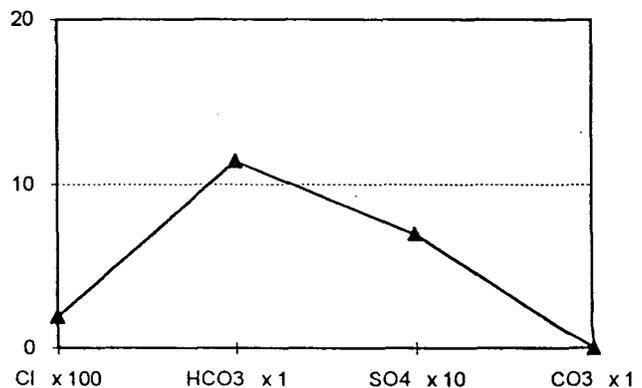
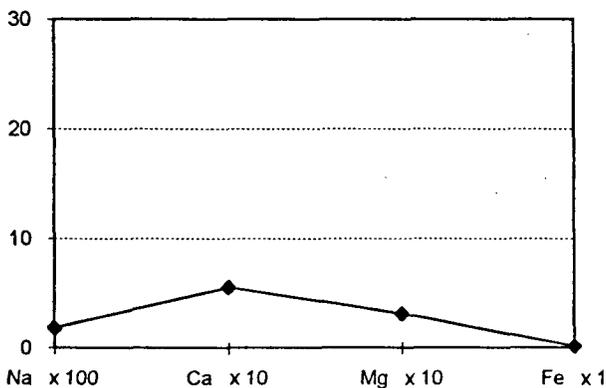
Attn: Buddy Marley
PROJECT: 3rd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #7 A-F

PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 8/19/97 0:00
DATE RECEIVED: 8/20/97

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	4256.01589	185.12	Total Dissolved Solids	
Calcium, Ca	1110	55.39	(calc.) mg/L	16780.8689
Magnesium, Mg	381	31.34	Specific Gravity	
Chloride, Cl	6870	193.79	60/60 deg. F.	1.0401
Bicarbonate, CaCO ₃	695	11.39	Resistivity	
Sulfate SO ₄	3350	69.75	(Mohm-cm) 75 deg. F.	0.0420
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	4.68	0.17	pH units	7.47
Barium, Ba	0.173	0.00		

MINERAL ANALYSIS PATTERN
(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9708811-04

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 9/4/97

Attn: Buddy Marley
PROJECT: 3rd Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-F

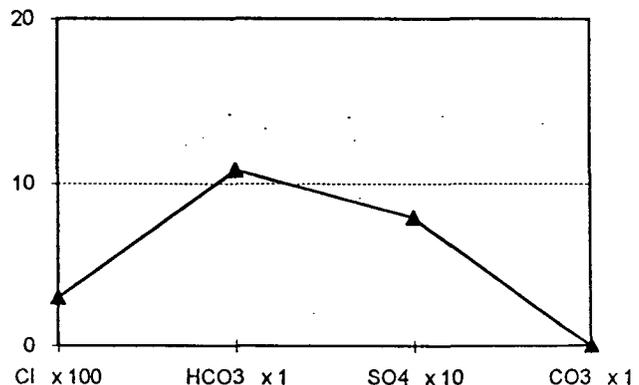
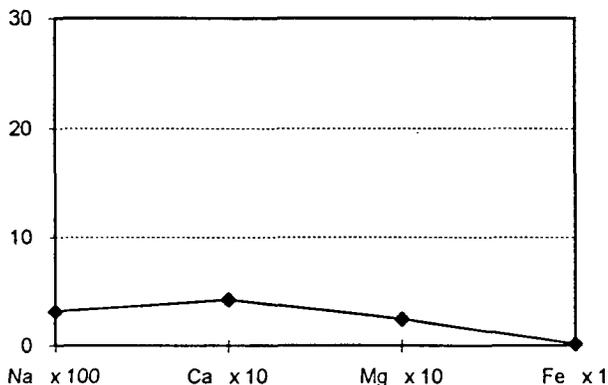
PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 8/19/97 0:00
DATE RECEIVED: 8/20/97

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	7332.17694	318.93	Total Dissolved Solids	
Calcium, Ca	859	42.86	(calc.) mg/L	23619.4659
Magnesium, Mg	304	25.01	Specific Gravity	
Chloride, Cl	10600	299.01	60/60 deg. F.	1.0211
Bicarbonate, CaCO ₃	660	10.82	Resistivity	
Sulfate SO ₄	3790	78.91	(Mohm-cm) 75 deg. F.	0.0290
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	4.84	0.17	pH units	7.15
Barium, Ba	0.449	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #1 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97 10:00:00
 DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	1300	25 P	µg/L
TOLUENE	ND	25 P	µg/L
ETHYLBENZENE	ND	25 P	µg/L
TOTAL XYLENE	130	25 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1430		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

92
 97

Method 8020A ***
 Analyzed by: RL
 Date: 08/26/97

Chloride 226 5 mg/L

Method 325.3 *
 Analyzed by: PT
 Date: 08/20/97

Carbonate, as CaCO3 ND 1 mg/L

Method SM 4500-CO2D **
 Analyzed by: DAM
 Date: 08/20/97

Bicarbonate, as CaCO3 840 1 mg/L

Method SM 4500-CO2D **
 Analyzed by: DAM
 Date: 08/20/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 10:00:00
DATE RECEIVED: 08/20/97

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: IP Date: 09/03/97	ND	1	mg/L
pH Method 150.1 * Analyzed by: DAM Date: 08/20/97	7.69		pH units
Resistivity Method 120.1 * Analyzed by: EM Date: 08/21/97	0.480	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 09/02/97	29	2	mg/L
Specific Gravity ASTM D1429 Analyzed by: DSE Date: 09/02/97	1.0047		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: IP Date: 09/03/97	1530	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 10:00:00
DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.01	mg/L
Arsenic, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.1	mg/L
Barium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		1.45	0.005	mg/L
Calcium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		346	0.1	mg/L
Cadmium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		0.03	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 10:00:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	32.4	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/97	ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	10	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	44.8	0.1	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 08/27/97	08/27/97		
Lead, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.05	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 10:00:00
DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Selenium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97 09:30:00
 DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	430	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	430		µg/L
Surrogate		% Recovery	
1,4-Difluorobenzene		133MI	
4-Bromofluorobenzene		130	
Method 8020A ***			
Analyzed by: RL			
Date: 08/26/97			
Chloride	14200	500	mg/L
Method 325.3 *			
Analyzed by: PT			
Date: 08/20/97			
Carbonate, as CaCO3	ND	1	mg/L
Method SM 4500-CO2D **			
Analyzed by: DAM			
Date: 08/20/97			
Bicarbonate, as CaCO3	525	1	mg/L
Method SM 4500-CO2D **			
Analyzed by: DAM			
Date: 08/20/97			

(P) - Practical Quantitation Limit ND - Not detected.
 MI - Matrix interference.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 09:30:00
DATE RECEIVED: 08/20/97

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: IP Date: 09/03/97	11511	1	mg/L
pH Method 150.1 * Analyzed by: DAM Date: 08/20/97	7.41		pH units
Resistivity Method 120.1 * Analyzed by: EM Date: 08/21/97	0.023	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 09/02/97	5550	500	mg/L
Specific Gravity ASTM D1429 Analyzed by: DSE Date: 09/02/97	1.0503		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: IP Date: 09/03/97	32222	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 09:30:00
DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.01	mg/L
Arsenic, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.1	mg/L
Barium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		0.052	0.005	mg/L
Calcium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		278	0.1	mg/L
Cadmium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 09:30:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	0.64	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/97	ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	49	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	108	0.1	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 08/27/97	08/27/97		
Lead, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.05	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #5 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 09:30:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Selenium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #7 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97 08:30:00
 DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

100
 77

Method 8020A ***

Analyzed by: RL

Date: 08/26/97

Chloride

6870

250

mg/L

Method 325.3 *

Analyzed by: PT

Date: 08/20/97

Carbonate, as CaCO3

ND

1

mg/L

Method SM 4500-CO2D **

Analyzed by: DAM

Date: 08/20/97

Bicarbonate, as CaCO3

695

1

mg/L

Method SM 4500-CO2D **

Analyzed by: DAM

Date: 08/20/97

Sodium, Total

4256

1

mg/L

Method CALCULATION

Analyzed by: IP

Date: 09/03/97

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #7 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 08:30:00
DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
pH		7.47		pH units
	Method 150.1 * Analyzed by: DAM Date: 08/20/97			
Resistivity		0.042	0.001	Mohms-cm
	Method 120.1 * Analyzed by: EM Date: 08/21/97			
Sulfate		3350	250	mg/L
	Method 375.4 * Analyzed by: EM Date: 09/02/97			
Specific Gravity		1.0401		g/cm3
	ASTM D1429 Analyzed by: DSE Date: 09/02/97			
Total Dissolved Solids		16781	1	mg/L
	Method CALCULATION Analyzed by: IP Date: 09/03/97			
Silver, Total		ND	0.01	mg/L
	Method 6010A *** Analyzed by: PS Date: 08/29/97			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #7 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 08:30:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Arsenic, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.1	mg/L
Barium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	0.173	0.005	mg/L
Calcium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	1110	1	mg/L
Cadmium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.01	mg/L
Iron, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	4.68	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #7 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 08:30:00
DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/97		ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		114	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		381	0.1	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 08/27/97	08/27/97			
Lead, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.05	mg/L
Selenium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97		ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 11:00:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	65	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	55	1.0 P	µg/L
TOTAL XYLENE	55	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	175		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	83		
4-Bromofluorobenzene	150MI		
Method 8020A *** Analyzed by: RL Date: 08/26/97			
Chloride	10600	250	mg/L
Method 325.3 * Analyzed by: PT Date: 08/20/97			
Carbonate, as CaCO ₃	ND	1	mg/L
Method SM 4500-CO ₂ D ** Analyzed by: DAM Date: 08/20/97			
Bicarbonate, as CaCO ₃	660	1	mg/L
Method SM 4500-CO ₂ D ** Analyzed by: DAM Date: 08/20/97			

(P) - Practical Quantitation Limit ND - Not detected.
MI - Matrix interference.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 11:00:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: IP Date: 09/03/97	7332	1	mg/L
pH Method 150.1 * Analyzed by: DAM Date: 08/20/97	7.15		pH units
Resistivity Method 120.1 * Analyzed by: EM Date: 08/21/97	0.029	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 09/02/97	3790	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: DSE Date: 09/02/97	1.0211		g/cm ³
Total Dissolved Solids Method CALCULATION Analyzed by: IP Date: 09/03/97	23619	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #14 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97 11:00:00
 DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.01	mg/L
Arsenic, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.1	mg/L
Barium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	0.449	0.005	mg/L
Calcium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	859	1	mg/L
Cadmium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.01	mg/L
Chromium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 11:00:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	4.84	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/97	ND	0.0002	mg/L
Potassium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	69	2	mg/L
Magnesium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	304	0.1	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MM Date: 08/27/97	08/27/97		
Lead, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.05	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/19/97 11:00:00
DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Selenium, Total Method 6010A *** Analyzed by: PS Date: 08/29/97	ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #14 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97 11:00:00
 DATE RECEIVED: 08/20/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	2.5	ug/L
Acenaphthylene	ND	2.5	ug/L
Acenaphthene	ND	7.5	ug/L
Fluorene	ND	7.5	ug/L
Phenanthrene	6	2.5	ug/L
Anthracene	ND	2.5	ug/L
Fluoranthene	ND	2.5	ug/L
Pyrene	ND	2.5	ug/L
Chrysene	ND	2.5	ug/L
Benzo (a) anthracene	ND	2.5	ug/L
Benzo (b) fluoranthene	ND	2.5	ug/L
Benzo (k) fluoranthene	ND	2.5	ug/L
Benzo (a) pyrene	ND	2.5	ug/L
Dibenzo (a,h) anthracene	ND	2.5	ug/L
Benzo (g,h,i) perylene	ND	2.5	ug/L
Indeno (1,2,3-cd) pyrene	ND	2.5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	105	50	150
Phenanthrene d-10	0.20 ug/L	1800MI	50	150

ANALYZED BY: KA DATE/TIME: 08/28/97 01:34:48
 EXTRACTED BY: DR DATE/TIME: 08/21/97 15:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 MI - Matrix Interference.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

Certificate of Analysis No. H9-9708811-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 09/04/97

PROJECT: 3rd Quarter Sampling (97)
 SITE: Monument, NM 88265
 SAMPLED BY: Provided By SPL
 SAMPLE ID: Trip Blank

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 08/19/97
 DATE RECEIVED: 08/20/97

PARAMETER	ANALYTICAL DATA		DETECTION LIMIT	UNITS
	RESULTS			
BENZENE	ND		1.0 P	µg/L
TOLUENE	ND		1.0 P	µg/L
ETHYLBENZENE	ND		1.0 P	µg/L
TOTAL XYLENE	ND		1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND			µg/L
Surrogate	% Recovery			
1,4-Difluorobenzene	97			
4-Bromofluorobenzene	73			
Method 8020A ***				
Analyzed by: RL				
Date: 08/26/97				

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020***

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_P970826114000

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	56	112	62 - 121
Toluene	ND	50	56	112	66 - 136
EthylBenzene	ND	50	57	114	70 - 136
O Xylene	ND	50	57	114	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	20	20			
TOLUENE	ND	20	19	95.0	22	110	14.6	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	21	105	10.0	38	61 - 128
O XYLENE	ND	20	18	90.0	21	105	15.4	29	40 - 130
M & P XYLENE	ND	40	37	92.5	42	105	12.7	20	43 - 152

Analyst: RL

Sequence Date: 08/27/97

SPL ID of sample spiked: 9708A37-09A

Sample File ID: P_H7091.TX0

Method Blank File ID:

Blank Spike File ID: P_H7115.TX0

Matrix Spike File ID: P_H7089.TX0

Matrix Spike Duplicate File ID: P_H7090.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9708A37-10A 9708A37-11A 9708A37-07A 9708A37-08A
9708811-02A 9708811-03A 9708811-04A 9708811-01A
9708A37-09A 9708811-05A



** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

PAGE

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

Matrix: Aqueous
Units: ug/L

Batch Id: 1970825035900

B L A N K S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(**) (Advisory)	
			Result	Recovery	Result	Recovery		RPD	Recovery Range
			<1>	<4>	<1>	<5>		Max.	
NAPHTHALENE	ND	0.5	0.33	66.0	0.33	66.0	0	30	33 - 122
ACENAPHTHYLENE	ND	0.5	0.30	60.0	0.33	66.0	9.52	30	42 - 138
ACENAPHTHENE	ND	0.5	0.36	72.0	0.37	74.0	2.74	30	25 - 123
FLUORENE	ND	0.5	0.34	68.0	0.32	64.0	6.06	30	19 - 142
PHENANTHRENE	ND	0.5	0.35	70.0	0.34	68.0	2.90	30	40 - 121
ANTHRACENE	ND	0.5	0.30	60.0	0.30	60.0	0	30	32 - 121
FLUORANTHENE	ND	0.5	0.36	72.0	0.35	70.0	2.82	30	51 - 115
PYRENE	ND	0.5	0.35	70.0	0.35	70.0	0	30	45 - 117
CHRYSENE	ND	0.5	0.38	76.0	0.38	76.0	0	30	44 - 122
BENZO (A) ANTHRACENE	ND	0.5	0.36	72.0	0.35	70.0	2.82	30	57 - 118
BENZO (B) FLUORANTHENE	ND	0.5	0.41	82.0	0.41	82.0	0	30	62 - 121
BENZO (K) FLUORANTHENE	ND	0.5	0.42	84.0	0.38	76.0	10.0	30	63 - 117
BENZO (A) PYRENE	ND	0.5	0.42	84.0	0.39	78.0	7.41	30	42 - 120
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.47	94.0	0.53	106	12.0	30	53 - 118
BENZO (G,H,I) PERYLENE	ND	0.5	0.36	72.0	0.38	76.0	5.41	30	51 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.43	86.0	0.43	86.0	0	30	60 - 116

Analyst: KA

Sequence Date: 08/25/97

Method Blank File ID:

Sample File ID:

Blank Spike File ID: 970825A\008-0801

Matrix Spike File ID:

Matrix Spike Duplicate File ID:

* = Values Outside QC Range. < = Data outside Method Specification Limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

Relative Percent Difference = $[(<4> - <5> | / [(<4> + <5>) \times 0.5]] \times 100$

(**) = Source: SPL Temporary Limits

SAMPLES IN BATCH(SPL ID):

9708811-01D 9708811-03D 9708811-04D 9708811-02D

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analysis by: JPL LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Checked: (713)660-0901

Date:082997 Time:1030 File Name: 082997C5

m 9/2/97

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.06	103	1.60	2.40
Aluminum						
Arsenic	ND	4.00	3.93	98	3.20	4.80
Barium	ND	2.00	2.03	101	1.60	2.40
Beryllium						
Calcium	ND	20.00	20.83	104	16.00	24.00
Cadmium	ND	2.00	1.93	97	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.04	102	1.60	2.40
Copper	ND	2.00	2.02	101	1.60	2.40
Iron	ND	2.00	2.05	103	1.60	2.40
Potassium	ND	20.00	19.89	99	16.00	24.00
Magnesium	ND	20.00	20.73	104	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.98	99	1.60	2.40
Antimony						
Selenium	ND	4.00	4.16	104	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.08	104	1.60	2.40

Work Orders in Batch

Work Order	Fractions
97-08-858	01A-02A
97-08-861	01A-02A
97-08-811	01C-04C
97-08-A81	01B
97-08-B10	01A

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9708858-01A

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver	ND	1.0	0.899	89.9	0.8992	89.9	80	120	0.0	20.0
Aluminum										
Arsenic	ND	2.0	1.8	90.0	1.812	90.6	80	120	0.7	20.0
Barium	0.0814	1.0	0.9483	86.7	0.9494	86.8	80	120	0.1	20.0
Beryllium										
Calcium	233.1	10.0	276.8	437.0 *	260.9	278.0 *	80	120	44.5 **	20.0
Cadmium	ND	1.0	0.8457	84.6	0.8451	84.5	80	120	0.1	20.0
Cobalt										
Chromium	0.0131	1.0	0.8693	85.6	0.8711	85.8	80	120	0.2	20.0
Copper	ND	1.0	0.8789	87.9	0.8797	88.0	80	120	0.1	20.0
Iron	0.3013	1.0	1.229	92.8	1.19	88.9	80	120	4.3	20.0
Potassium	3.7	10.0	13.34	96.4	13.77	100.7	80	120	4.4	20.0
Magnesium	53.65	10.0	69.65	160.0 *	66.88	132.3 *	80	120	19.0	20.0
Manganese										
Sodium										
Nickel										
Lead	ND	1.0	0.871	87.1	0.8516	85.2	80	120	2.3	20.0
Antimony										
Selenium	ND	2.0	1.867	93.4	1.85	92.5	80	120	0.9	20.0
Thallium										
Vanadium										
Zinc	0.0213	1.0	0.9673	94.6	0.935	91.4	80	120	3.5	20.0

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/97
Analyzed on: 08/26/97
Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.01	100	80 - 120

-9708947

Samples in batch:

9708811-01C 9708811-02C 9708811-03C 9708811-04C
9708826-04D 9708858-01A 9708858-02A

COMMENTS:

LCS = SPL ID# 94-452-29-6



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/97
Analyzed on: 08/26/97
Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9708826-04D	ND	ND	2.00	1.84	92.0	1.78	89.0	3.3	20	75	-125

-9708947

Samples in batch:

9708811-01C 9708811-02C 9708811-03C 9708811-04C
9708826-04D 9708858-01A 9708858-02A

COMMENTS:

LCS = SPL ID# 94-452-29-6



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/97
 Analyzed on: 08/20/97
 Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	27.23	27.47	101	94 - 106

-9708757

Samples in batch:

- 9707E37-03A 9708677-02G 9708750-01C 9708753-01A
- 9708787-08A 9708811-01B 9708811-02B 9708811-03B
- 9708811-04B

COMMENTS:

LCS= SPL ID# 95535126-07.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/97

Analyzed on: 08/20/97

Analyst: PT

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9708753-01A	ND	31.91	50.00	82.42	101	82.42	101	0	5	92	-109

-9708756

Samples in batch:

9707E37-03A 9708677-02G 9708750-01C 9708753-01A
9708787-08A 9708811-01B 9708811-02B 9708811-03B
9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/97

Analyzed on: 08/20/97

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9708811-04B	ND	ND	0	5

-9708765

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/97

Analyzed on: 08/20/97

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9708811-04B	660	650	1.5	5

-9708764

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/22/97

Analyzed on: 08/20/97

Analyst: dam

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
Method 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9708811-01B	7.69	7.71	0.3	1.0

-9708831

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/97

Analyzed on: 08/21/97

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
Method 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mohms-cm	Duplicate Sample Mohms-cm	RPD	RPD Max.
9708811-03B	0.042	0.042	0	1.0

-9708780

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 09/02/97

Analyzed on: 09/02/97

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	11.01	108	82 - 111

-9709012

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B
9708C19-03C

COMMENTS:

SPL LCS#: 95535126-7.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 09/02/97
Analyzed on: 09/02/97
Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9708C19-03C	ND	8.73	10.00	20.49	118	20.32	116	1.7	9.5	84	-120

-9709011

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B
9708C19-03C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713)660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 09/02/97

Analyzed on: 09/02/97

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration g/cm ³	Duplicate Sample g/cm ³	RPD	RPD Max.
9708811-01B	1.0047	1.0052	0	1.0

-9709005

Samples in batch:

9708811-01B 9708811-02B 9708811-03B 9708811-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

January 21, 1998

Mr. Buddy Marley
WARREN PETROLEUM
P.O. Box 67
Monument, NM 88265

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on January 7, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9801174 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script that reads 'Sonia West' is written over a horizontal line.

Sonia West
Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-01-174

Approved for Release by:

Sonia West

Sonia West, Client Services Representative

1-21-98

Date

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#1 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	1200	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	24	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1224		µg/L
Surrogate		% Recovery	
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	100		
Method 8020A ***			
Analyzed by: DN			
Date: 01/09/98			
Chloride	92	2	mg/L
Method 325.3 *			
Analyzed by: TV			
Date: 01/09/98			
Carbonate, as CaCO3	ND	5	mg/L
Method SM 4500-CO2D **			
Analyzed by: JS			
Date: 01/08/98			
Bicarbonate, as CaCO3	864	5	mg/L
Method SM 4500-CO2D **			
Analyzed by: JS			
Date: 01/08/98			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 13:00:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 01/20/98	182	1	mg/L
pH Method 150.1 * Analyzed by: JS Date: 01/08/98	8.23		pH units
Resistivity Method 120.1 * Analyzed by: JS Date: 01/08/98	0.546	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 01/14/98	9	2	mg/L
Specific Gravity ASTM D1429 Analyzed by: KS Date: 01/16/98	1.006		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 01/20/98	1319	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#1 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Barium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	0.783	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	122	0.1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#1 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Chromium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	0.03	0.01	mg/L
Iron, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	16.2	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 01/09/98	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	7	2	mg/L
Magnesium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	26.3	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#1 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 01/07/98	01/07/98		
Lead, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.05	mg/L
Selenium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9801174-01

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#1 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 13:00:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	7	2.00	ug/L
Acenaphthylene	ND	2.00	ug/L
Acenaphthene	ND	6.00	ug/L
Fluorene	8	6.00	ug/L
Phenanthrene	11	2.00	ug/L
Anthracene	ND	2.00	ug/L
Fluoranthene	ND	2.00	ug/L
Pyrene	ND	2.00	ug/L
Chrysene	ND	2.00	ug/L
Benzo (a) anthracene	ND	2.00	ug/L
Benzo (b) fluoranthene	ND	2.00	ug/L
Benzo (k) fluoranthene	ND	2.00	ug/L
Benzo (a) pyrene	ND	2.00	ug/L
Dibenzo (a,h) anthracene	3	2.00	ug/L
Benzo (g,h,i) perylene	ND	2.00	ug/L
Indeno (1,2,3-cd) pyrene	ND	2.00	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	D	50	150
Phenanthrene d-10	0.20 ug/L	D	50	150

ANALYZED BY: KA DATE/TIME: 01/15/98 15:19:26
 EXTRACTED BY: PC DATE/TIME: 01/08/98 08:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 D - Diluted, control limits not applicable.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:30:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	750	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	ND	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	750		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	93		
Method 8020A *** Analyzed by: DN/ Date: 01/07/98			
Chloride	5760	250	mg/L
Method 325.3 * Analyzed by: TV Date: 01/09/98			
Carbonate, as CaCO3	ND	5	mg/L
Method SM 4500-CO2D ** Analyzed by: JS Date: 01/08/98			
Bicarbonate, as CaCO3	674	5	mg/L
Method SM 4500-CO2D ** Analyzed by: JS Date: 01/08/98			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#5 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 13:30:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 01/20/98	4690	1	mg/L
pH Method 150.1 * Analyzed by: JS Date: 01/08/98	7.74		pH units
Resistivity Method 120.1 * Analyzed by: JS Date: 01/08/98	0.050	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 01/14/98	2900	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: KS Date: 01/16/98	1.025		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 01/20/98	14579	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:30:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Barium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	0.207	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	393	0.1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:30:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Chromium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.01	mg/L
Iron, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	3.01	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 01/09/98	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	51	2	mg/L
Magnesium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	108	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:30:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 01/07/98	01/07/98		
Lead, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.05	mg/L
Selenium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#5 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 13:30:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	0.50	ug/L
Acenaphthylene	ND	0.50	ug/L
Acenaphthene	ND	1.50	ug/L
Fluorene	ND	1.50	ug/L
Phenanthrene	0.9	0.50	ug/L
Anthracene	ND	0.50	ug/L
Fluoranthene	ND	0.50	ug/L
Pyrene	ND	0.50	ug/L
Chrysene	ND	0.50	ug/L
Benzo (a) anthracene	ND	0.50	ug/L
Benzo (b) fluoranthene	ND	0.50	ug/L
Benzo (k) fluoranthene	ND	0.50	ug/L
Benzo (a) pyrene	ND	0.50	ug/L
Dibenzo (a,h) anthracene	ND	0.50	ug/L
Benzo (g,h,i) perylene	ND	0.50	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	95	50	150
Phenanthrene d-10	0.20 ug/L	0 MI	50	150

ANALYZED BY: KA DATE/TIME: 01/15/98 15:55:32
 EXTRACTED BY: PC DATE/TIME: 01/08/98 08:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 MI - Matrix Interference.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#7 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 11:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L
Surrogate		% Recovery	
1,4-Difluorobenzene	97		
4-Bromofluorobenzene	93		
Method 8020A ***			
Analyzed by: DN/			
Date: 01/07/98			
Chloride	9300	250	mg/L
Method 325.3 *			
Analyzed by: TV			
Date: 01/09/98			
Carbonate, as CaCO3	ND	5	mg/L
Method SM 4500-CO2D **			
Analyzed by: JS			
Date: 01/08/98			
Bicarbonate, as CaCO3	570	5	mg/L
Method SM 4500-CO2D **			
Analyzed by: JS			
Date: 01/08/98			

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#7 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 11:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 01/20/98	8478	1	mg/L
pH Method 150.1 * Analyzed by: JS Date: 01/08/98	7.52		pH units
Resistivity Method 120.1 * Analyzed by: JS Date: 01/08/98	0.030	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 01/14/98	6900	500	mg/L
Specific Gravity ASTM D1429 Analyzed by: KS Date: 01/16/98	1.018		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 01/20/98	26116	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#7 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 11:00:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Arsenic, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	1	mg/L
Barium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	0.20	0.05	mg/L
Calcium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	634	1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.05	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#7 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 11:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Chromium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Iron, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	6.5	0.2	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 01/09/98	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	70	20	mg/L
Magnesium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	157	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#7 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 11:00:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 01/07/98	01/07/98		
Lead, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.5	mg/L
Selenium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#7 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 11:00:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	0.1	0.10	ug/L	
Acenaphthylene	ND	0.10	ug/L	
Acenaphthene	ND	0.30	ug/L	
Fluorene	ND	0.30	ug/L	
Phenanthrene	0.5	0.10	ug/L	
Anthracene	ND	0.10	ug/L	
Fluoranthene	ND	0.10	ug/L	
Pyrene	ND	0.10	ug/L	
Chrysene	ND	0.10	ug/L	
Benzo (a) anthracene	ND	0.10	ug/L	
Benzo (b) fluoranthene	ND	0.10	ug/L	
Benzo (k) fluoranthene	ND	0.10	ug/L	
Benzo (a) pyrene	ND	0.10	ug/L	
Dibenzo (a,h) anthracene	ND	0.10	ug/L	
Benzo (g,h,i) perylene	ND	0.10	ug/L	
Indeno (1,2,3-cd) pyrene	ND	0.10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	65	50	150
Phenanthrene d-10	0.20 ug/L	150	50	150

ANALYZED BY: KA DATE/TIME: 01/14/98 18:19:10
 EXTRACTED BY: PC DATE/TIME: 01/08/98 08:00:00
 METHOD: 8310 Polynuclear Aromatic Hydrocarbons
 NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#14 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 14:15:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	30	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	2.9	1.0 P	µg/L
TOTAL XYLENE	6.5	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	39.4		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	93		
4-Bromofluorobenzene	107		
Method 8020A *** Analyzed by: TB Date: 01/12/98			
Chloride	12000	250	mg/L
Method 325.3 * Analyzed by: TV Date: 01/09/98			
Carbonate, as CaCO3	ND	5	mg/L
Method SM 4500-CO2D ** Analyzed by: JS Date: 01/08/98			
Bicarbonate, as CaCO3	559	5	mg/L
Method SM 4500-CO2D ** Analyzed by: JS Date: 01/08/98			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 14:15:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method CALCULATION Analyzed by: DAM Date: 01/20/98	7978	1	mg/L
pH Method 150.1 * Analyzed by: JS Date: 01/08/98	7.04		pH units
Resistivity Method 120.1 * Analyzed by: JS Date: 01/08/98	0.029	0.001	Mohms-cm
Sulfate Method 375.4 * Analyzed by: EM Date: 01/14/98	3500	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: KS Date: 01/16/98	1.023		g/cm3
Total Dissolved Solids Method CALCULATION Analyzed by: DAM Date: 01/20/98	25345	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9801174-04

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 14:15:00
DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Arsenic, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	1	mg/L
Barium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	0.36	0.05	mg/L
Calcium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	923	1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.05	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW#14 A-F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98 14:15:00
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Chromium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	ND	0.1	mg/L
Iron, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	4.6	0.2	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 01/09/98	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	70	20	mg/L
Magnesium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98	310	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#14 A-F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/05/98 14:15:00
DATE RECEIVED: 01/07/98

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 01/07/98		01/07/98		
Lead, Total Method 6010B *** Analyzed by: PS Date: 01/09/98		ND	0.5	mg/L
Selenium, Total Method 6010B *** Analyzed by: PS Date: 01/09/98		ND	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

COMMENTS: All samples for Carbonate, Bicarbonate, and pH were received expired at SPL, Inc.. Per Buddy Marley on 01/07/98, analyze samples outside of holding time.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9801174-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/21/98

PROJECT: 4th Quarter Sampling
 SITE: Monument, NM 88265
 SAMPLED BY: Provided By SPL
 SAMPLE ID: Trip Blank

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/05/98
 DATE RECEIVED: 01/07/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1.0 P	µg/L
TOLUENE	ND	1.0 P	µg/L
ETHYLBENZENE	ND	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	97
4-Bromofluorobenzene	90

Method 8020A ***
 Analyzed by: DN
 Date: 01/08/98

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



* SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Batch Id: HP_U980109010200

Units: µg/L

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	49	98.0	72 - 128
Benzene	ND	50	46	92.0	61 - 119
Toluene	ND	50	47	94.0	65 - 125
EthylBenzene	ND	50	47	94.0	70 - 118
O Xylene	ND	50	48	96.0	72 - 117
M & P Xylene	ND	100	96	96.0	72 - 116

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	1.6	20	20		92.0	24
BENZENE	ND	20	17	85.0	17	85.0	0	21	32 - 164
TOLUENE	ND	20	17	85.0	17	85.0	0	20	38 - 159
ETHYLBENZENE	ND	20	17	85.0	17	85.0	0	19	52 - 142
O XYLENE	ND	20	17	85.0	17	85.0	0	18	53 - 143
M & P XYLENE	ND	40	36	90.0	36	90.0	0	17	53 - 144

* = Values outside QC Range due to Matrix Interference (except RPD)

Analyst: DN

* = Data outside Method Specification limits.

Sequence Date: 01/09/98

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

SPL ID of sample spiked: 9801216-03A

ND = Not Detected/Below Detection Limit

Sample File ID: U_A2129.TX0

% Recovery = $[(<1> - <2>) / <3>] \times 100$

Method Blank File ID:

LCS % Recovery = $(<1> / <3>) \times 100$

Blank Spike File ID: U_A2126.TX0

Relative Percent Difference = $|(<4> - <5> | / [(<4> + <5>) \times 0.5] \times 100$

Matrix Spike File ID: U_A2127.TX0

(**) = Source: SPL-Houston Historical Data (1st Q '97)

Matrix Spike Duplicate File ID: U_A2128.TX0

(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9801217-05A 9801217-06A 9801219-01A 9801217-02A
 9801219-02A 9801219-03A 9801219-04A 9801174-01A
 9801217-03A 9801216-03A 9801216-02A 9801216-05A
 9801217-01A



SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Batch Id: HP_U980107152800

Units: µg/L

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	47	94.0	72 - 128
Benzene	ND	50	47	94.0	61 - 119
Toluene	ND	50	47	94.0	65 - 125
EthylBenzene	ND	50	47	94.0	70 - 118
O Xylene	ND	50	48	96.0	72 - 117
M & P Xylene	ND	100	98	98.0	72 - 116

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	2.4	20	21		93.0	18
BENZENE	ND	20	14	70.0	14	70.0	0	21	32 - 164
TOLUENE	ND	20	14	70.0	13	65.0	7.41	20	38 - 159
ETHYLBENZENE	ND	20	13	65.0	13	65.0	0	19	52 - 142
O XYLENE	ND	20	14	70.0	14	70.0	0	18	53 - 143
M & P XYLENE	ND	40	28	70.0	25	62.5	11.3	17	53 - 144

* = Values outside QC Range due to Matrix Interference (except RPD)

Analyst: DN/

◀ = Data outside Method Specification limits.

Sequence Date: 01/07/98

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

SPL ID of sample spiked: 9712E08-06A

ND = Not Detected/Below Detection Limit

Sample File ID: U_A2071.TX0

% Recovery = $[(<1> - <2>) / <3>] \times 100$

Method Blank File ID:

LCS % Recovery = $(<1> / <3>) \times 100$

Blank Spike File ID: U_A2066.TX0

Relative Percent Difference = $| (<4> - <5>) | / [(<4> + <5>) \times 0.5] \times 100$

Matrix Spike File ID: U_A2068.TX0

(**) = Source: SPL-Houston Historical Data (1st Q '97)

Matrix Spike Duplicate File ID: U_A2069.TX0

(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9712E08-04A 9712E08-05A 9712E08-07A 9801187-02B
9801179-01A 9801184-01A 9801174-03A 9801174-02A
9801187-01B 9712E08-06A 9712E08-08A 9712E08-09A



SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Batch Id: HP_U980112043000

Units: µg/L

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
MTBE	ND	50	49	98.0	72 - 128
Benzene	ND	50	47	94.0	61 - 119
Toluene	ND	50	47	94.0	65 - 125
EthylBenzene	ND	50	47	94.0	70 - 118
O Xylene	ND	50	47	94.0	72 - 117
M & P Xylene	ND	100	94	94.0	72 - 116

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	6.4	20	17		53.0	20
BENZENE	ND	20	17	85.0	18	90.0	5.71	21	32 - 164
TOLUENE	ND	20	17	85.0	18	90.0	5.71	20	38 - 159
ETHYLBENZENE	ND	20	17	85.0	18	90.0	5.71	19	52 - 142
O XYLENE	ND	20	17	85.0	18	90.0	5.71	18	53 - 143
M & P XYLENE	ND	40	34	85.0	36	90.0	5.71	17	53 - 144

* = Values outside QC Range due to Matrix Interference (except RPD)

◀ = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS ‡ Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (1st Q '97)

(***) = Source: SPL-Houston Historical Data (1st Q '97)

Analyst: TB

Sequence Date: 01/12/98

SPL ID of sample spiked: 9801342-08A

Sample File ID: U_A2200.TX0

Method Blank File ID:

Blank Spike File ID: U_A2188.TX0

Matrix Spike File ID: U_A2197.TX0

Matrix Spike Duplicate File ID: U_A2198.TX0

SAMPLES IN BATCH(SPL ID):

9801116-03A 9801116-06A 9801116-01A 9801342-07A
 9801325-04A 9801325-01A 9801325-03A 9801325-02A
 9801324-01A 9801324-13A 9801324-02A 9801324-03A
 9801324-04A 9801324-05A 9801324-06A 9801324-07A
 9801342-08A 9801174-04A 9801218-04A 9801114-03A



SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Batch Id: HP_U980108134200

Units: µg/L

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	55	110	72 - 128
Benzene	ND	50	46	92.0	61 - 119
Toluene	ND	50	47	94.0	65 - 125
EthylBenzene	ND	50	46	92.0	70 - 118
O Xylene	ND	50	47	94.0	72 - 117
M & P Xylene	ND	100	96	96.0	72 - 116

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	6.6	20	24	87.0	29	112	25.1 *	20	39 - 150
BENZENE	ND	20	19	95.0	19	95.0	0	21	32 - 164
TOLUENE	ND	20	18	90.0	19	95.0	5.41	20	38 - 159
ETHYLBENZENE	ND	20	18	90.0	19	95.0	5.41	19	52 - 142
O XYLENE	ND	20	19	95.0	19	95.0	0	18	53 - 143
M & P XYLENE	ND	40	38	95.0	39	97.5	2.60	17	53 - 144

* = Values outside QC Range due to Matrix Interference (except RPD)

Analyst: DN

◀ = Data outside Method Specification limits.

Sequence Date: 01/08/98

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

SPL ID of sample spiked: 9801216-04A

ND = Not Detected/Below Detection Limit

Sample File ID: U_A2098A.TX0

% Recovery = $[(<1> - <2>) / <3>] \times 100$

Method Blank File ID:

LCS % Recovery = $(<1> / <3>) \times 100$

Blank Spike File ID: U_A2091A.TX0

Relative Percent Difference = $| (<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

Matrix Spike File ID: U_A2093A.TX0

(**) = Source: SPL-Houston Historical Data (1st Q '97)

Matrix Spike Duplicate File ID: U_A2094A.TX0

(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9801194-01A 9801194-02A 9801199-01A 9801216-01A
9801202-01A 9801202-02A 9801174-05A 9801202-03A
9801216-04A 9801188-01A



Batch Id: 2980113220120

Units: ug/L

B L A N K S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(**) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			NAPHTHALENE	ND	0.50	0.44			
ACENAPHTHYLENE	ND	0.50	0.51	102	0.39	78.0	26.7	30	42 - 138
ACENAPHTHENE	ND	0.50	0.43	86.0	0.44	88.0	2.30	30	25 - 123
FLUORENE	ND	0.50	0.42	84.0	0.45	90.0	6.90	30	19 - 142
PHENANTHRENE	ND	0.50	0.45	90.0	0.50	100	10.5	30	40 - 121
ANTHRACENE	ND	0.50	0.42	84.0	0.43	86.0	2.35	30	32 - 121
FLUORANTHENE	ND	0.50	0.46	92.0	0.48	96.0	4.26	30	51 - 115
PYRENE	ND	0.50	0.48	96.0	0.48	96.0	0	30	45 - 117
CHRYSENE	ND	0.50	0.48	96.0	0.47	94.0	2.11	30	44 - 122
BENZO (A) ANTHRACENE	ND	0.50	0.46	92.0	0.47	94.0	2.15	30	57 - 118
BENZO (B) FLUORANTHENE	ND	0.50	0.49	98.0	0.48	96.0	2.06	30	62 - 121
BENZO (K) FLUORANTHENE	ND	0.50	0.49	98.0	0.47	94.0	4.17	30	63 - 117
BENZO (A) PYRENE	ND	0.50	0.52	104	0.50	100	3.92	30	42 - 120
DIBENZO (A,H) ANTHRACENE	ND	0.50	0.47	94.0	0.46	92.0	2.15	30	53 - 118
BENZO (G,H,I) PERYLENE	ND	0.50	0.48	96.0	0.44	88.0	8.70	30	51 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.50	0.51	102	0.49	98.0	4.00	30	60 - 116

Analyst: KA

Sequence Date: 01/13/98

Method Blank File ID:

Sample File ID:

Blank Spike File ID: 980113A\003-0301

Matrix Spike File ID:

Matrix Spike Duplicate File ID:

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

Relative Percent Difference = [(<4> - <5>) / ((<4> + <5>) x 0.5)] x 100

(**) = Source: SPL Temporary Limits

SAMPLES IN BATCH(SPL ID):

9801061-01C 9801174-01D 9801174-02D 9801174-03D
9801174-04D

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analysis: HOPKINSON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Checked: (713) 660-0901

Date: 010998 Time: 1035 File Name: 010998C7

1/12/98

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.16	108	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.37	109	3.20	4.80
Barium	ND	2.00	2.05	103	1.60	2.40
Beryllium						
Calcium	ND	20.00	23.52	118	16.00	24.00
Cadmium	ND	2.00	2.06	103	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.14	107	1.60	2.40
Copper	ND	2.00	2.09	104	1.60	2.40
Iron	ND	2.00	2.19	109	1.60	2.40
Potassium	ND	20.00	20.52	103	16.00	24.00
Magnesium	ND	20.00	21.57	108	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.16	108	1.60	2.40
Antimony						
Selenium	ND	4.00	4.26	107	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.22	111	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-01-092	01B
98-01-174	01C-04C
98-01-187	01C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9801092-01B

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver	ND	10.0	10.49	104.9	10.69	106.9	80	120	1.9	20.0
Aluminum										
Arsenic	ND	20.0	22.13	110.7	22.19	111.0	80	120	0.3	20.0
Barium	0.032	10.0	9.96	99.3	10.09	100.6	80	120	1.3	20.0
Beryllium										
Calcium	9.575	100.0	128.7	119.1	130.5	120.9	80	120	1.5	20.0
Cadmium	0.0126	10.0	10.61	106.0	10.86	108.5	80	120	2.3	20.0
Cobalt										
Chromium	ND	10.0	10.75	107.5	10.89	108.9	80	120	1.3	20.0
Copper	0.0157	10.0	10.44	104.2	10.57	105.5	80	120	1.2	20.0
Iron	0.4443	10.0	11.34	109.0	11.56	111.2	80	120	2.0	20.0
Potassium	7.547	100.0	114.9	107.4	110.5	103.0	80	120	4.2	20.0
Magnesium	2.622	100.0	107.2	104.6	108.4	105.8	80	120	1.1	20.0
Manganese										
Sodium										
Nickel										
Lead	ND	10.0	11.12	111.2	11.23	112.3	80	120	1.0	20.0
Antimony										
Selenium	ND	20.0	21.95	109.8	22.17	110.9	80	120	1.0	20.0
Thallium										
Vanadium										
Zinc	0.2914	10.0	11.51	112.2	11.64	113.5	80	120	1.2	20.0

* Values Outside QC Range Due To Matrix Interference.

Elements Bench Spiked: ALL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/98

Analyzed on: 01/16/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration g/cm3	Duplicate Sample g/cm3	RPD	RPD Max.
9801174-01B	1.006	1.009	0.3	1.0

-9801530

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B
9801557-02A 9801558-02A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98

Analyzed on: 01/09/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.08	104	80 - 120

-9801257

Samples in batch:

9801159-01C 9801174-01C 9801174-02C 9801174-03C
9801174-04C

COMMENTS:

LCS = SPL ID# 94-452-39-6

* VALUE OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98
 Analyzed on: 01/09/98
 Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
 Method 7470 A***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC
9801174-02C	ND	ND	2.00	0.51	25.5*	0.53	26.5*	3.8	20	75 -125

-9801257

Samples in batch:

9801159-01C 9801174-01C 9801174-02C 9801174-03C
 9801174-04C

COMMENTS:

LCS = SPL ID# 94-452-39-6

* VALUE OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/10/98

Analyzed on: 01/09/98

Analyst: TV

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value MG/L	LCS Concentration MG/L	Measured Concentration MG/L	% Recovery	QC Limits Recovery
LCS	ND	27.25	26.59	97.6	94 - 106

-9801281

Samples in batch:

9801117-03A 9801174-01B 9801174-02B 9801174-03B
9801174-04B 9801205-01M 9801205-02M 9801245-01K
9801290-01A

COMMENTS:

LCS =SPL ID#95535160-11



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 01/10/98
 Analyzed on: 01/09/98
 Analyst: TV

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 Method 325.3 *

SPL Sample ID Number	Method Blank MG/L	Sample Result MG/L	Spike Added MG/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result MG/L	Recovery %	Result MG/L	Recovery %		RPD Max	% REC
9801290-01A	ND	53.18	50	101.03	95.7	102.80	99.2	3.6	5	92 -109

-9801280

Samples in batch:

9801117-03A 9801174-01B 9801174-02B 9801174-03B
 9801174-04B 9801205-01M 9801205-02M 9801245-01K
 9801290-01A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98

Analyzed on: 01/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9801174-04B	ND	ND	0	5

-9801262

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98

Analyzed on: 01/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
Method SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9801174-04B	559	554	0.9	5

-9801261

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/12/98

Analyzed on: 01/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
Method 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9801247-01D	7.87	7.88	0.1	1.0

-9801293

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B
9801247-01D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98

Analyzed on: 01/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Resistivity
Method 120.1 *

SPL Sample ID Number	Blank Value umhos-cm	LCS Concentration umhos-cm	Measured Concentration umhos-cm	% Recovery	QC Limits Recovery
LCS	ND	1408.8	1384.5	98.3	90 - 110

-9801264

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B

COMMENTS:

LCS ID#: 94453175-8



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/09/98

Analyzed on: 01/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
Method 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9801174-02B	0.050	0.050	0	1.0

-9801263

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/14/98

Analyzed on: 01/14/98

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	9.09	89.6	82 - 111

-9801439

Samples in batch:

9801117-03A 9801174-01B 9801174-02B 9801174-03B
9801174-04B 9801283-01C 9801283-02C 9801283-05C
9801283-06C 9801287-01C 9801287-02C 9801287-04C
9801287-05C

COMMENTS:

SPL LCS#: 95535160-5



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 01/14/98
Analyzed on: 01/14/98
Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9801117-03A	ND	6.80	10.00	17.12	103	17.43	106	2.9	9.5	84	-120

-9801438

Samples in batch:

9801117-03A 9801174-01B 9801174-02B 9801174-03B
9801174-04B 9801283-06C 9801287-01C 9801287-02C
9801287-04C 9801287-05C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/98
Analyzed on: 01/16/98
Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration g/cm3	Duplicate Sample g/cm3	RPD	RPD Max.
9801174-01B	1.006	1.009	0.3	1.0

-9801530

Samples in batch:

9801174-01B 9801174-02B 9801174-03B 9801174-04B
9801557-02A 9801558-02A

COMMENTS:



February 14, 1997

William C. Olson
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505

RECEIVED

FEB 17 1996

Environmental Bureau
Oil Conservation Division

Re: Annual Summary Report for 1996 Groundwater Monitoring Activities at Warren Monument Gas Plant, Lea County, New Mexico

Dear Mr. Olson:

On behalf of Warren Petroleum Company L.P. (Warren), please find the annual summary report for 1996 groundwater monitoring activities at the Warren Monument Gas Plant in Lea County, New Mexico. Groundwater monitoring activities for 1996 were conducted by Warren plant personnel. This annual summary report has been prepared jointly by Warren and Geraghty & Miller, Inc. to satisfy the reporting requirements outlined in the New Mexico Oil Conservation District (NMOCD) letter to Warren dated August 9, 1996.

SUMMARY OF MONITORING ACTIVITIES

The 1996 monitoring activities consisted of conducting quarterly groundwater gauging and sampling events. The following monitoring activities were conducted during each referenced quarterly event. Any deviations, problems, or deficiencies encountered during the monitoring period are also reported.

FIRST QUARTER 1996

- Gauged fluid levels in 13 monitoring wells on January 24, 1996.
- Sampled all six monitoring wells (WP-1, WP-5, WP-6, WP-7, WP-13, WP-14) on February 19, 1996 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents using USEPA Method 8020A and the inorganic constituents chlorides, total dissolved solids (TDS), and sulfates.
- No problems were encountered during the monitoring period.



SECOND QUARTER 1996

- Gauged fluid levels in 13 monitoring wells on April 2, 1996.
- Sampled six monitoring wells (WP-1, WP-5, WP-6, WP-7, WP-13, WP-14) on July 11, 1996 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A and the inorganic constituents chlorides, TDS, and sulfates.
- Second quarter groundwater sampling was delayed until July 1996 due to changes in plant personnel. Well WP-2 was essentially dry and thus, could not be sampled.

THIRD QUARTER 1996

- Gauged fluid levels in 13 monitoring wells on September 26, 1996.
- Sampled six monitoring wells (WP-1, WP-5, WP-6, WP-7, WP-13, WP-14) on October 11, 1996 which did not contain measurable free-phase hydrocarbons. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A and the inorganic constituents chlorides, TDS, and sulfates.
- Third quarter groundwater sampling was delayed until October 1996. Well WP-2 was essentially dry and thus, could not be sampled.

FOURTH QUARTER 1996

- Gauged fluid levels in 13 monitoring wells on January 28, 1996.
- Sampled five monitoring wells (WP-5, WP-6, WP-7, WP-13, and WP-14) on January 17, 1997. All groundwater samples were analyzed by SPL Laboratory for BTEX constituents using USEPA Method 8020A and the inorganic constituents chlorides, TDS, and sulfates.
- Fourth quarter groundwater gauging and sampling was delayed until January 1997. Well WP-1 did not recover after purging and Well WP-2 was essentially dry; therefore, both wells were not be sampled during the fourth quarter event.
- A groundwater quality sample was inadvertently collected from Well WP-13 during the fourth quarter even though liquid hydrocarbons were detected in the well for the first time.
- A review of the 1996 data indicates the sampling program was not changed during the third and fourth quarters to include polynuclear aromatic hydrocarbons and heavy metals



as discussed in the OCD letter dated August 9, 1996. This deficiency will be addressed during the February 1997 sampling event.

SUMMARY OF MONITORING AND ANALYTICAL RESULTS

FLUID LEVEL MEASUREMENTS

Results of the 1996 fluid-level monitoring activities are summarized below. A site map with monitoring well locations is presented as Figure 1.

- Field measurements, water-level elevations, and liquid hydrocarbon thickness are presented in Tables 1A, 1B, and 1C, respectively. A summary table of groundwater elevations corrected for the presence of liquid hydrocarbons is presented in Table 1D. Based on previous results of liquid hydrocarbon characterization conducted at the site, an average specific gravity of 0.72 was used to calculate corrected groundwater elevations. Graphs of groundwater elevations versus time are presented as Attachment A.
- A significant decreasing trend (i.e. greater than 0.5 ft) in water-level elevations was observed across the site during 1996 with the exception of water-level elevations from Wells WP-6, WP-14, and WP-15. All three of these wells are located along the extreme north or eastern portions of the site (Figure 1). Well WP-2 was essentially dry during 1996.
- Groundwater was encountered at approximately 28 ft to 40 ft below the measuring point elevations (Table 1A). The saturated thickness of the alluvial sediments beneath the site ranged from being near dry in Well WP-2 to 10.52 ft in Well WP-10. The saturated thickness was less than 5 ft in eight of the 13 wells at the site.
- Groundwater elevation contour maps for each quarterly monitoring period are presented as Figures 2 through 5. Groundwater flow beneath the eastern half of the site is predominantly towards the southeast while groundwater flow beneath the western portion of the site is toward the south. An apparent area of groundwater mounding is present east of the processing area. The configuration of the water table appears to be consistent throughout each monitoring event in 1996.
- Anomalous high water-level elevations were recorded in Well WP-1 during the January, April, and September 1996 gauging events. These values were not used in the construction of the groundwater elevation contour maps. The cause of the anomalous data is unknown; however, the likely explanation is groundwater mounding due to localized recharge or erroneous water-level measurements.

ANALYTICAL RESULTS

Analytical results for the 1996 monitoring program are summarized below.

- A summary of groundwater quality data for the six wells (WP-1, WP-5, WP-6, WP-7, WP-13, and WP-14) sampled on a quarterly basis is presented in Table 2. A series of graphs showing BTEX concentrations versus time and inorganic parameter (chlorides, TDS, and sulfate) concentrations versus time are presented as Attachment B. The analytical data sheets for samples collected during the 1996 monitoring program are presented as Attachment C.
- BTEX levels were detected in all samples from monitoring wells except Well WP-7. Benzene is the predominant constituent detected in four of the five groundwater samples with detectable concentrations of BTEX. During the 1996 monitoring period, the highest concentrations of benzene were detected in Wells WP-1 and WP-13. Ethylbenzene was the predominant constituent detected in Well WP-6.
- Inorganic groundwater quality indicates elevated concentrations of chlorides, TDS, and sulfates are present in the groundwater beneath the site. The highest concentrations of chlorides, TDS, and sulfates were detected in Well WP-7 which is located in the northwest portion of the site. The elevated concentrations do not appear to be related to gas plant operations but are likely related to former operations at the Climax Chemical Company located approximately one-half mile northwest (upgradient) of the Warren site.

DISTRIBUTION OF LIQUID HYDROCARBONS

The approximate extent of liquid hydrocarbons is shown for each quarterly monitoring event on Figures 6 through 9. A brief summary of findings is presented below.

- During January 1996, liquid hydrocarbons were detected in eight (Wells WP-2, WP-3, WP-4, WP-6, WP-10, WP-11, and WP-12) of the 13 wells (Figure 6). Liquid hydrocarbon thickness in wells ranged from 0.03 ft in Well WP-3 to 1.27 ft in Well WP-4.
- During April 1996, liquid hydrocarbons were detected in only six (Wells WP-3, WP-4, WP-6, WP-10, WP-11, and WP-12) of the 13 wells (Figure 7). Liquid hydrocarbon thickness in wells ranged from 0.05 ft in Well WP-12 to 1.90 ft in Well WP-4.
- During September 1996, liquid hydrocarbons were detected in only six (Wells WP-3, WP-4, WP-6, WP-10, WP-11, and WP-12) of the 13 wells (Figure 8). Liquid hydrocarbon thickness in wells ranged from 0.10 ft in Well WP-3 to 1.65 ft in Well WP-4.



- During January 1997, liquid hydrocarbons were detected in seven (Wells WP-3, WP-4, WP-6, WP-10, WP-11, WP-12, and WP-13) of the 13 wells (Figure 9). Liquid hydrocarbons were detected in Well WP-13 for the first time since installation. Liquid hydrocarbon thickness in wells ranged from 0.26 ft in Well WP-10 to 1.35 ft in Well WP-4.

SUMMARY OF HYDROCARBON RECOVERY OPERATIONS

Hydrocarbon recovery operations in 1996 consisted of periodically pumping three wells using pneumatic skimming pumps. Produced fluids are pumped to the onsite oil/water separator and plant wastewater system. Recovered volumes of produced water and hydrocarbons for each recovery well are presented in Tables 3A, 3B, and 3C and can be summarized as follows.

- Hydrocarbons could not be recovered from Well WP-2 because it was essentially dry during 1996 due to decreased water-table conditions.
- Approximately 4,840 gallons of hydrocarbon product and 2,045 gallons of produced water were recovered from Well WP-3 during 1996. Hydrocarbon recovery operations were ceased in October 1996 due to low water-table conditions.
- Approximately 1,111 gallons of hydrocarbon product and 1,115 gallons of produced water were recovered from Well WP-4 during 1996. Hydrocarbon recovery operations were ceased in August 1996 because of the low water-table conditions.
- Approximately 200 gallons of hydrocarbon product and 780 gallons of produced water were recovered from Well WP-10 during 1996. Hydrocarbon recovery operations were ceased in February 1996 because of the reduced hydrocarbon thickness in the well.
- No product was present in Well WP-13 until January 1997 and thus, no product was recovered in 1996.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 1996 monitoring program, the following conclusions can be made.

- The 1996 monitoring program was conducted generally according to plan with the exception of inadvertently not changing the sampling program during the third and fourth quarter to include PAHs and heavy metals. The OCD was informed of the oversight and the additional samples will be collected during the February 1997 sampling event.



- A significant decreasing trend (i.e. greater than 0.5 ft) in water-level elevations was observed across the site during 1996 with the exception of water-level elevations from Wells WP-6, WP-14, and WP-15. All three of these wells are located along the extreme north or eastern portions of the site (Figure 1). Well WP-2 was essentially dry during 1996.
- Groundwater flow beneath the eastern half of the site is predominantly towards the southeast while groundwater flow beneath the western portion of the site is toward the south. An apparent area of groundwater mounding is present east of the processing area. The configuration of the water table appears to be consistent throughout each monitoring event in 1996.
- BTEX levels were detected in all samples from monitoring wells except Well WP-7. Benzene is the predominant constituent detected in four of the five groundwater samples with detectable concentrations of BTEX. During the 1996 monitoring period, the highest concentrations of benzene were detected in Wells WP-1 and WP-13. Ethylbenzene was the predominant constituent detected in Well WP-6.
- Inorganic groundwater quality indicates elevated concentrations of chlorides, TDS, and sulfates are present in the groundwater beneath the site. The highest concentrations of chlorides, TDS, and sulfates were detected in Well WP-7 which is located in the northwest portion of the site. The elevated concentrations do not appear to be related to gas plant operations but are likely related to former operations at the Climax Chemical Company located approximately one-half mile northwest (upgradient) of the Warren site.
- Two separate hydrocarbon plumes were detected at the site during 1996. The northern plume is larger and occurs southeast (downgradient) of the gas processing area and condensate storage area. The southern plume occurs southeast (downgradient) of the former produced water pond and burn pit.
- A total of 6,151 gallons of hydrocarbons were recovered in 1996 from Wells WP-3, WP-4, and WP-10. Low water-table conditions prevented recovery well operation in the third and fourth quarters of 1996.

Based on the results to the 1996 monitoring program the following recommendations can be made.

1. Fluid level gauging and well sampling should be performed together as a single field activity.
2. During the February 1997 sampling event, samples should be collected for analysis of PAHs and heavy metals in addition to BTEX, chlorides, TDS, and sulfates. The results of



the PAH and heavy metal analysis should be discussed with the OCD to determine the necessity of collecting this data on a quarterly basis.

3. The existing hydrocarbon recovery system should be expanded to include Wells WP-11 and WP-13.

The first quarter 1997 monitoring event is scheduled for the week of February 24, 1997. The remaining quarterly events are tentatively scheduled for the third or fourth weeks of May, August, and November 1997. Please contact J. Dee Morris of Warren at (713) 507-6752 if you have any questions regarding this annual summary report package.

Sincerely,

GERAGHTY & MILLER, INC.



John P. Shonfelt, P.G.
Project Scientist/Project Manager



Brian Guillette, P.G.
Associate/Office Manager

JPS:ndf

Enclosures

cc: J. Dee Morris (Warren Petroleum)
Jerry Sexton (NMOCD Hobbs District)



e Elevations and Hydrocarbon Thickness Measurements

Water Table Elevations and Hydrocarbon Thickness must be measured every three months for all Monitoring Wells. Measurements should be taken during the first half of each quarter. All wells should be gauged at the same time with the date noted in the space provided in the table. Surveyed elevations are recorded on the Sheet labeled Well Information. MSL water elevations and product thickness are automatically calculated in Tables 1-B and 1-C, respectively.

Table 1-A, ACTUAL FIELD MEASUREMENTS, from reference point on north side of casing, feet											
Monitor Well ID		1995		1996				1997			
		3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 6/26/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1	Product	32.00	25.80	28.00	29.95	30.45	31.08				
	Water	32.00	25.80	28.00	29.95	30.45	31.08				
WP-2	Product	30.70	30.95	31.53	31.71	31.71	31.71				
	Water	31.00	31.35	31.71	31.71	31.71	31.71				
WP-3	Product	29.40	29.30	29.17	29.53	29.85	29.94				
	Water	29.60	29.55	29.45	29.77	29.95	30.26				
WP-4	Product	33.60	33.75	33.96	34.70	35.20	35.65				
	Water	35.00	35.10	35.23	36.60	36.85	37.00				
WP-5	Product	31.90	32.10	32.62	33.60	34.00	34.57				
	Water	31.90	32.10	32.62	33.60	34.00	34.57				
WP-6	Product	28.80	28.80	28.75	28.80	28.80	28.78				
	Water	28.80	28.80	28.78	28.80	28.80	28.78				
WP-7	Product	31.25	34.30	31.77	32.10	32.20	32.45				
	Water	31.25	34.30	31.77	32.10	32.20	32.45				
WP-8	Product	NA	NA	NA	NA	NA	NA				
	Water	NA	NA	NA	NA	NA	NA				
WP-9	Product	NA	NA	NA	NA	NA	NA				
	Water	NA	NA	NA	NA	NA	NA				
WP-10	Product	28.35	28.15	28.10	28.60	28.75	28.88				
	Water	28.45	28.35	28.30	28.72	28.90	29.14				
WP-11	Product	NA	29.60	29.32	30.30	30.45	30.61				
	Water	NA	29.68	29.49	30.43	31.00	31.39				
WP-12	Product	NA	38.08	37.54	38.45	38.60	38.95				
	Water	NA	38.25	37.76	38.50	39.00	39.24				
WP-13	Product	NA	30.25	29.88	30.55	30.70	30.81				
	Water	NA	30.25	29.88	30.55	30.70	31.42				
WP-14	Product	NA	40.75	40.85	40.90	41.00	41.14				
	Water	NA	40.75	40.85	40.90	41.00	41.14				
WP-15	Product	NA	33.60	32.96	33.95	33.20	33.10				
	Water	NA	33.60	33.16	34.30	33.40	33.49				

Note: The bottom of well WP-2 is 31.71 feet from top of casing. Well #2 is dry.
 NA indicates not measured or not able to measure.
 Note: well #6 has trace of product but not enough to measure.



Table 1-B, Water Table Elevations, Feet above MSL

Monitor Well ID	1995		1996				1996			
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 4/2/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1	3546.01	3552.21	3550.01	3548.06	3547.56	3546.93				
WP-2	3546.77	3546.42	3546.06	3546.06	3546.06	3546.06				
WP-3	3551.61	3551.66	3551.76	3551.44	3551.26	3550.95				
WP-4	3542.15	3542.05	3541.92	3540.55	3540.30	3540.15				
WP-5	3547.60	3547.40	3546.88	3545.90	3545.50	3544.93				
WP-6	3556.56	3556.56	3556.58	3556.56	3556.56	3556.58				
WP-7	3551.79	3548.74	3551.27	3550.94	3550.84	3550.59				
WP-8	NA	NA	NA	NA	NA	NA				
WP-9	NA	NA	NA	NA	NA	NA				
WP-10	3551.63	3551.73	3551.78	3551.36	3551.18	3550.94				
WP-11	NA	3551.55	3551.74	3550.80	3550.23	3549.84				
WP-12	NA	3543.64	3544.13	3543.39	3542.89	3542.65				
WP-13	NA	3549.40	3549.77	3549.10	3548.95	3548.23				
WP-14	NA	3541.06	3540.96	3540.91	3540.81	3540.67				
WP-15	NA	3548.67	3549.11	3547.97	3548.87	3548.78				

The water table in well WP-3 may be below bottom of well which has an elevation of 3551.91 fasl.
 NA indicates not measured or not able to measure.

Table 1-C, Product Thickness, feet

Monitor Well ID	1995		1996				1996			
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr 4/2/96	3rd Qtr 9/26/96	4th Qtr 1/28/97	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1										
WP-2	0.30	0.40	0.18							
WP-3	0.20	0.25	0.28	0.24	0.10	0.32				
WP-4	1.40	1.35	1.27	1.90	1.65	1.35				
WP-5										
WP-6			0.03							
WP-7										
WP-8	NA	NA	NA							
WP-9	NA	NA	NA							
WP-10	0.10	0.20	0.20	0.12	0.15	0.26				
WP-11	NA	0.08	0.17	0.13	0.55	0.78				
WP-12	NA	0.17	0.22	0.05	0.40	0.29				
WP-13	NA					0.61				
WP-14	NA									
WP-15	NA		0.20	0.35	0.20	0.39				

Blanks indicate no product measured. NA indicates not measured or not able to measure.



Table 1D. **Historical Summary of Groundwater Elevation Data, Warren Monument, New Mexico, Warren Petroleum, Inc.**

DATE	WELL I.D.	MEASURED GROUNDWATER ELEVATION (ft AMSL)	MEASURED PRODUCT THICKNESS (ft)	CORRECTED GROUNDWATER ELEVATION (ft AMSL)
10/31/95	WP-1	3,546.01		3,546.01
11/14/95		3,552.21		3,552.21
1/24/96		3,550.01		3,550.01
4/2/96		3,548.06		3,548.06
9/26/96		3,547.56		3,547.56
1/28/97		3,546.93		3,546.93
10/31/95	WP-2	3,546.77	0.30	3,546.99
11/14/95		3,546.42	0.40	3,546.71
1/24/96		3,546.06	0.18	3,546.19
4/2/96		3,546.06		3,546.06
9/26/96		3,546.06		3,546.06
1/28/97		3,546.06		3,546.06
10/31/95	WP-3	3,551.61	0.20	3,551.76
11/14/95		3,551.66	0.25	3,551.84
1/24/96		3,551.76	0.28	3,551.96
4/2/96		3,551.44	0.24	3,551.61
9/26/96		3,551.26	0.10	3,551.33
1/28/97		3,550.95	0.32	3,551.18
10/31/95	WP-4	3,542.15	1.40	3,543.17
11/14/95		3,542.05	1.35	3,543.03
1/24/96		3,541.92	1.27	3,542.84
4/2/96		3,540.55	1.90	3,541.93
9/26/96		3,540.30	1.65	3,541.50
1/28/97		3,540.15	1.35	3,541.13

Footnotes on last page.



Table 1D. Historical Summary of Groundwater Elevation Data, Warren Monument, New Mexico, Warren Petroleum, Inc.

DATE	WELL I.D.	MEASURED GROUNDWATER ELEVATION (ft AMSL)	MEASURED PRODUCT THICKNESS (ft)	CORRECTED GROUNDWATER ELEVATION (ft AMSL)
10/31/95	WP-5	3,547.60		3,547.60
11/14/95		3,547.40		3,547.40
1/24/96		3,546.88		3,546.88
4/2/96		3,545.90		3,545.90
9/26/96		3,545.50		3,545.50
1/28/97		3,544.93		3,544.93
10/31/95		WP-6	3,556.56	
11/14/95	3,556.56			3,556.56
1/24/96	3,556.58		0.03	3,556.60
4/2/96	3,556.56			3,556.56
9/26/96	3,556.56			3,556.56
1/28/97	3,556.58			3,556.58
10/31/95	WP-7		3,551.79	
11/14/95		3,548.74		3,548.74
1/24/96		3,551.27		3,551.27
4/2/96		3,550.94		3,550.94
9/26/96		3,550.84		3,550.84
1/28/97		3,550.59		3,550.59
10/31/95		WP-10	3,551.63	0.10
11/14/95	3,551.73		0.20	3,551.88
1/24/96	3,551.78		0.20	3,551.93
4/2/96	3,551.36		0.12	3,551.45
9/26/96	3,551.18		0.15	3,551.29
1/28/97	3,550.94		0.26	3,551.13

Footnotes on last page.



Table 1D. **Historical Summary of Groundwater Elevation Data, Warren Monument, New Mexico, Warren Petroleum, Inc.**

DATE	WELL I.D.	MEASURED GROUNDWATER ELEVATION (ft AMSL)	MEASURED PRODUCT THICKNESS (ft)	CORRECTED GROUNDWATER ELEVATION (ft AMSL)
11/14/95	WP-11	3,551.55	0.08	3,551.61
1/24/96		3,551.74	0.17	3,551.86
4/2/96		3,550.80	0.13	3,550.89
9/26/96		3,550.23	0.55	3,550.63
1/28/97		3,549.84	0.78	3,550.41
11/14/95	WP-12	3,543.64		3,543.64
1/24/96		3,544.13		3,544.13
4/2/96		3,543.39		3,543.39
9/26/96		3,542.89	0.40	3,543.18
1/28/97		3,542.65	0.29	3,542.86
11/14/95	WP-13	3,549.40		3,549.40
1/24/96		3,549.77		3,549.77
4/2/96		3,549.10		3,549.10
9/26/96		3,548.95		3,548.95
1/28/97		3,548.23	0.61	3,548.67
11/14/95	WP-14	3,541.06		3,541.06
1/24/96		3,540.96		3,540.96
4/2/96		3,540.91		3,540.91
9/26/96		3,540.81		3,540.81
1/28/97		3,540.67		3,540.67

Footnotes on last page.



Table 1D. **Historical Summary of Groundwater Elevation Data, Warren Monument, New Mexico, Warren Petroleum, Inc.**

DATE	WELL I.D.	MEASURED GROUNDWATER ELEVATION (ft AMSL)	MEASURED PRODUCT THICKNESS (ft)	CORRECTED GROUNDWATER ELEVATION (ft AMSL)
11/14/95	WP-15	3,548.67		3,548.67
1/24/96		3,549.11	0.20	3,549.26
4/2/96		3,547.97	0.35	3,548.22
9/26/96		3,548.87	0.20	3,549.02
1/28/97		3,548.78	0.39	3,549.06

ft Feet
 AMSL Above Mean Sea Level

G:\STAFF\RG\WARRENWL.XLS



Table 2. Summary of Groundwater Quality Data, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Chlorides (mg/L)	TDS (mg/L)	Sulfate (mg/L)
10/31/95	WP-1	5,100	ND	18	ND	5,118	30	907	ND
12/20/95		5,000	ND	ND	ND	5,000	16	798	ND
2/19/96		6,300	ND	ND	ND	6,300	21	1,146	ND
7/11/96		2,500	ND	60	58	2,618	78	1,369	9
10/11/96		1,100	33	68	280	1,481	202	1,446	8
1/17/97		NA	NA	NA	NA	NA	NA	NA	NA
10/31/95	WP-5	140	ND	2	2	144	6,700	16,229	2,960
12/20/95		110	ND	1	ND	111	7,500	17,087	2,670
2/19/96		140	ND	ND	ND	140	9,000	20,202	3,090
7/11/96		180	ND	ND	ND	180	6,250	15,321	2,880
10/11/96		200	ND	1.1	ND	201.1	6,150	15,024	2,800
1/17/97		260	1.9	2.2	ND	264.1	6,350	15,833	3,110
10/31/95	WP-6	620	ND	880	180	1,680	2,100	5,271	53
12/20/95		290	ND	320	70	680	1,900	5,259	28
2/19/96		610	ND	630	ND	1,240	1,500	4,718	21
7/11/96		280	25	450	42	797	1,520	4,724	34
10/11/96		280	ND	910	500	1,690	1,670	3,678	17
1/17/97		180	ND	580	ND	760	1,500	4,371	268

Footnotes on last page.



Table 2. Summary of Groundwater Quality Data, Warren Monument, New Mexico, Warren Petroleum, Inc.

Date	Well ID	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Chlorides (mg/L)	TDS (mg/L)	Sulfate (mg/L)
10/31/95	WP-7	ND	ND	ND	ND	ND	16,000	35,492	5,830
12/20/95		ND	ND	ND	ND	ND	15,000	32,986	5,390
2/19/96		ND	ND	1	ND	1	16,500	36,587	6,160
7/11/96		ND	ND	ND	1.1	1.1	15,200	34,522	6,270
10/11/96		ND	ND	ND	ND	ND	15,200	33,712	5,720
1/17/97		ND	ND	ND	ND	ND	15,200	30,385	3,510
12/20/95	WP-13	5,100	ND	170	ND	5,270	2,300	5,387	11
2/19/96		5,700	ND	150	ND	5,850	1,150	3,495	5
7/11/96		3,600	ND	130	ND	3,730	975	3,229	13
10/11/96		3,400	ND	500	320	4,220	975	3,027	9
1/17/97		2,700	63	700	140	3,603	487	2,207	15
12/20/95	WP-14	120	ND	2	21	143	7,750	15,888	1,170
2/19/96		81	ND	1	ND	82	10,000	21,366	2,670
7/11/96		27	ND	ND	ND	27	12,200	25,570	3,040
10/11/96		29	1.4	6.1	12	49	11,500	19,754	29
1/17/97		ND	ND	ND	ND	ND	11,700	24,483	3,110

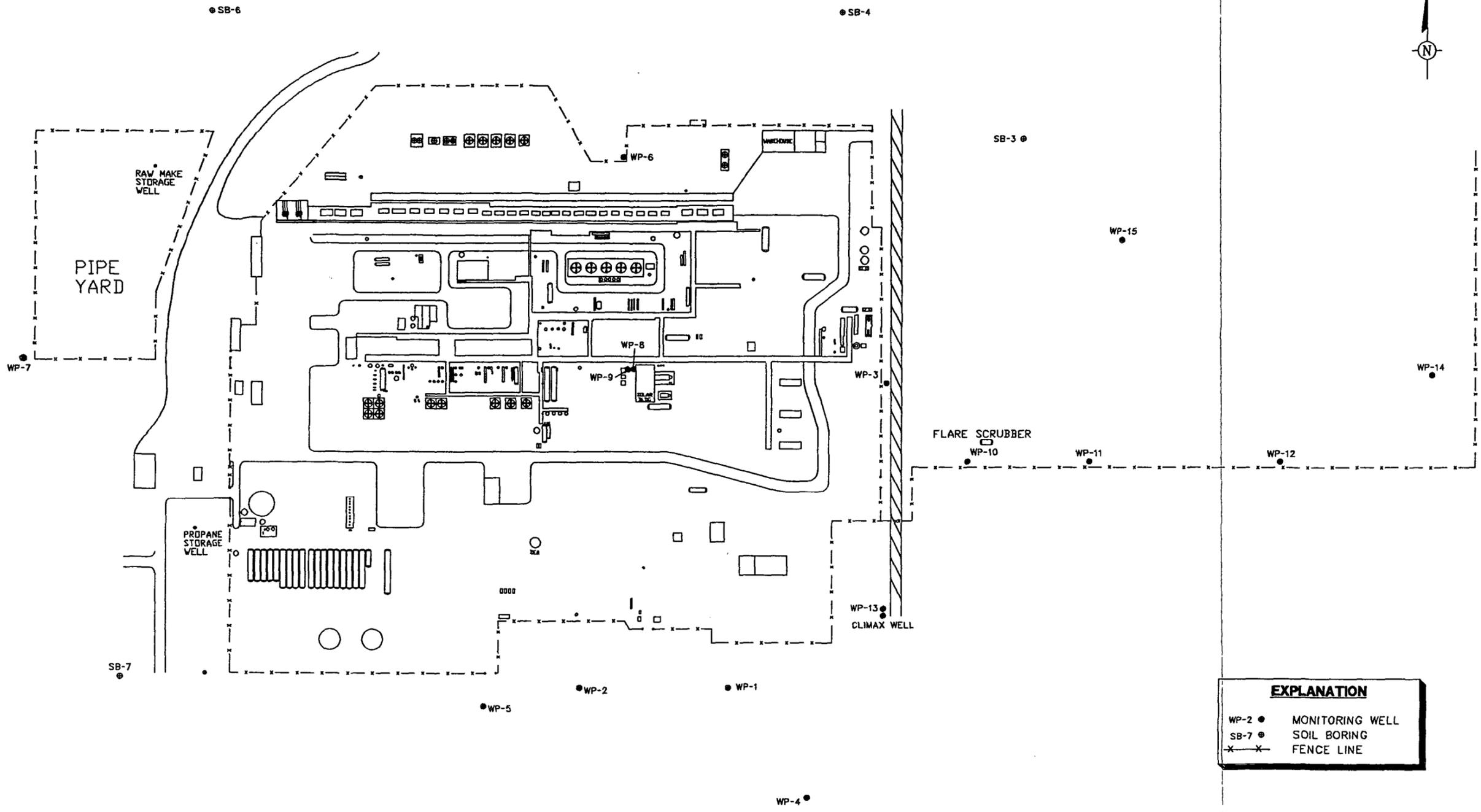
µg/L Micrograms per liter.

mg/L Milligrams per liter.

G:\STAFF\RG\PI\WARRENWQ.DAT



DWG DATE: 31-JAN-96 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: SITE-3 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
●	MONITORING WELL
⊙	SOIL BORING
-x-x-	FENCE LINE


GERAGHTY & MILLER, INC.
Environmental Services
 A Heidemij Company

0  200 ft.

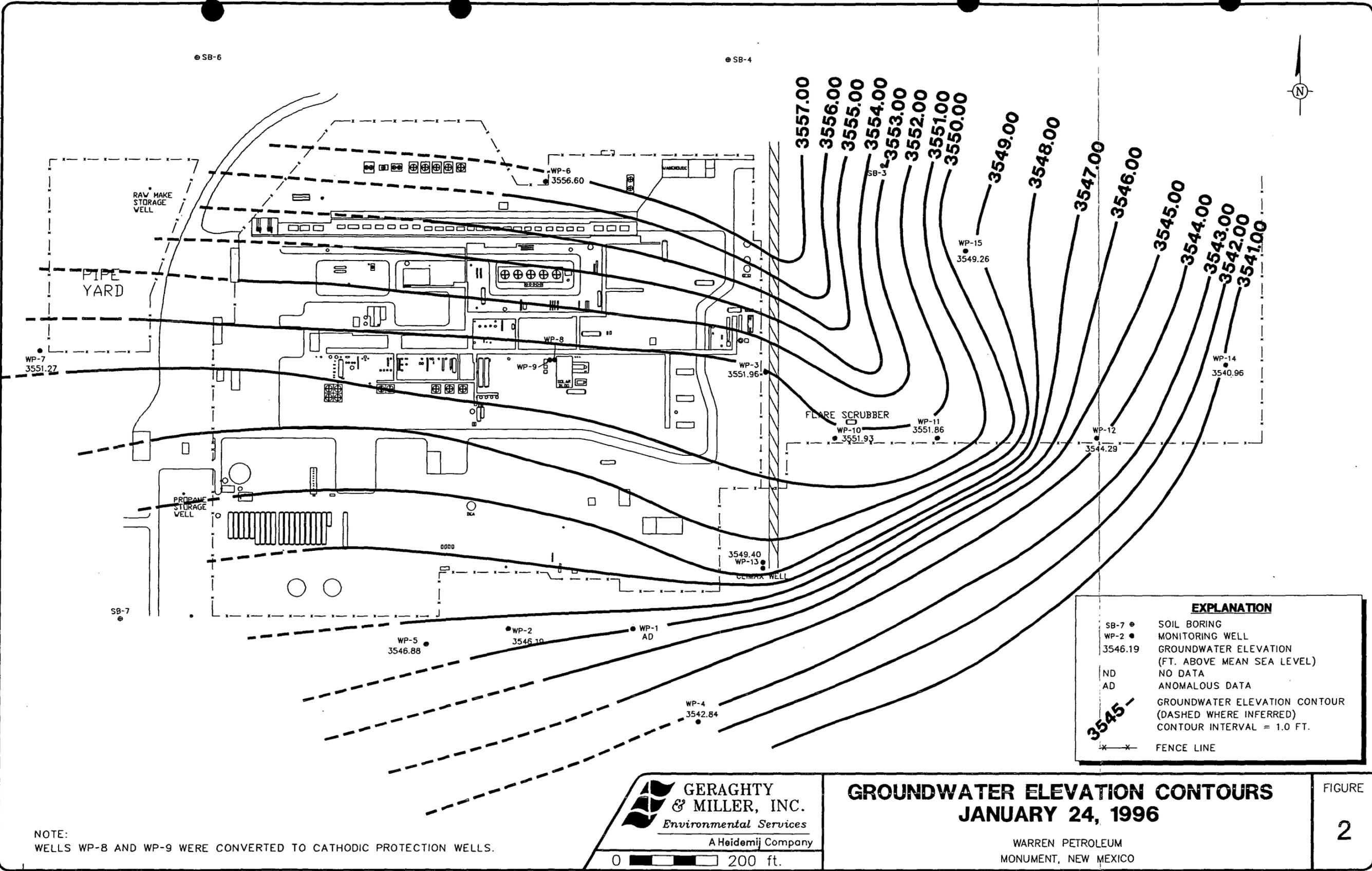
SITE MAP WITH SOIL BORINGS AND OBSERVATION WELL LOCATIONS

WARREN PETROLEUM MONUMENT, NEW MEXICO

FIGURE

1

DWG DATE: 11FEB97 | PRJCT NO.: OK0532.002 | FILE NO.: - | DRAWING: GV0196 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.19	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
AD	ANOMALOUS DATA
3545- - - -	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
	CONTOUR INTERVAL = 1.0 FT.
x-x	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

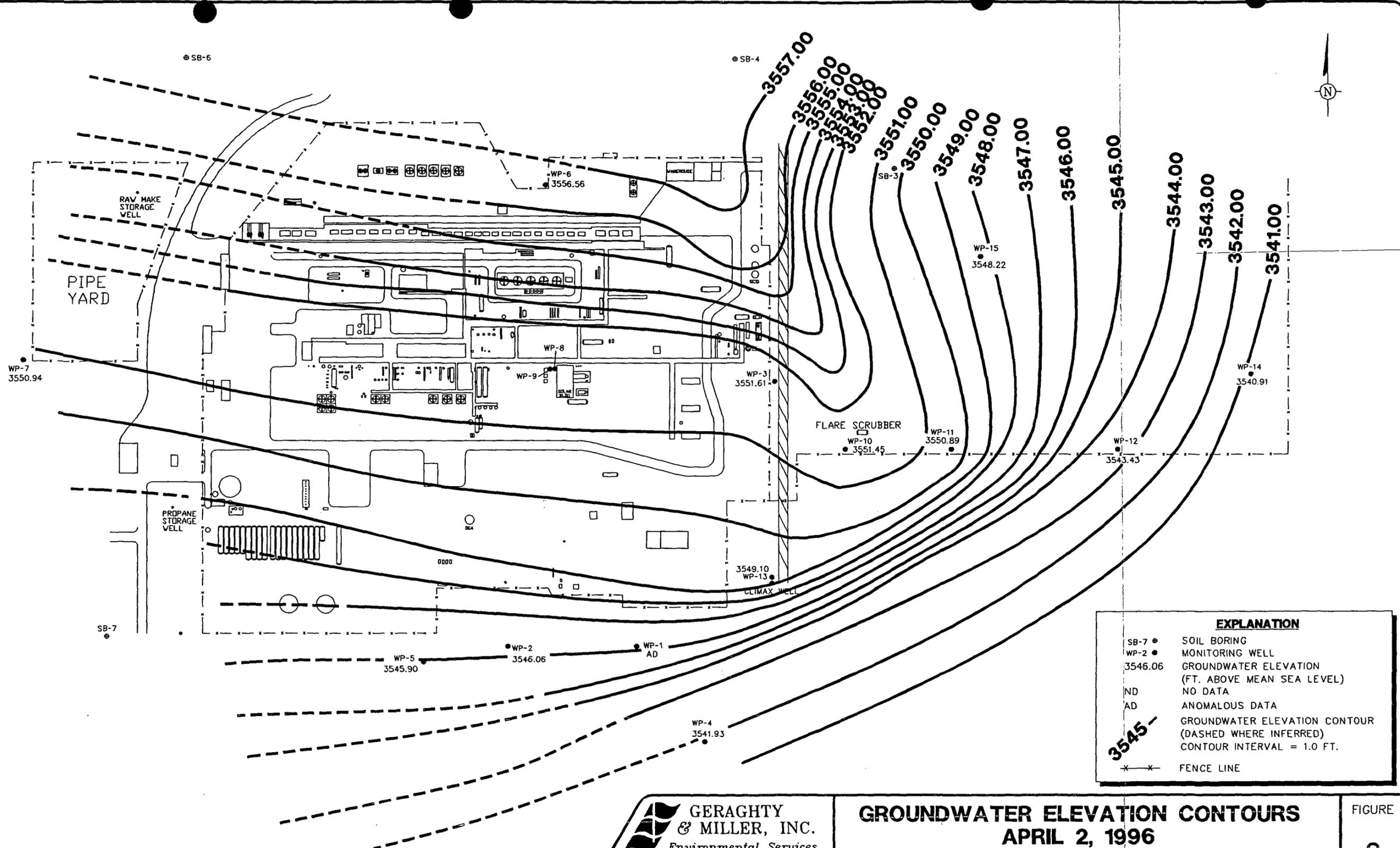
0 200 ft.

GROUNDWATER ELEVATION CONTOURS
JANUARY 24, 1996

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
2

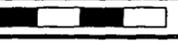
DWG DATE: 11FEB97 | PRCT NO.: OK0532.002 | FILE NO.: - | DRAWING: GV0496 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.06	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
AD	ANOMALOUS DATA
3545- - - -	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

0  200 ft.

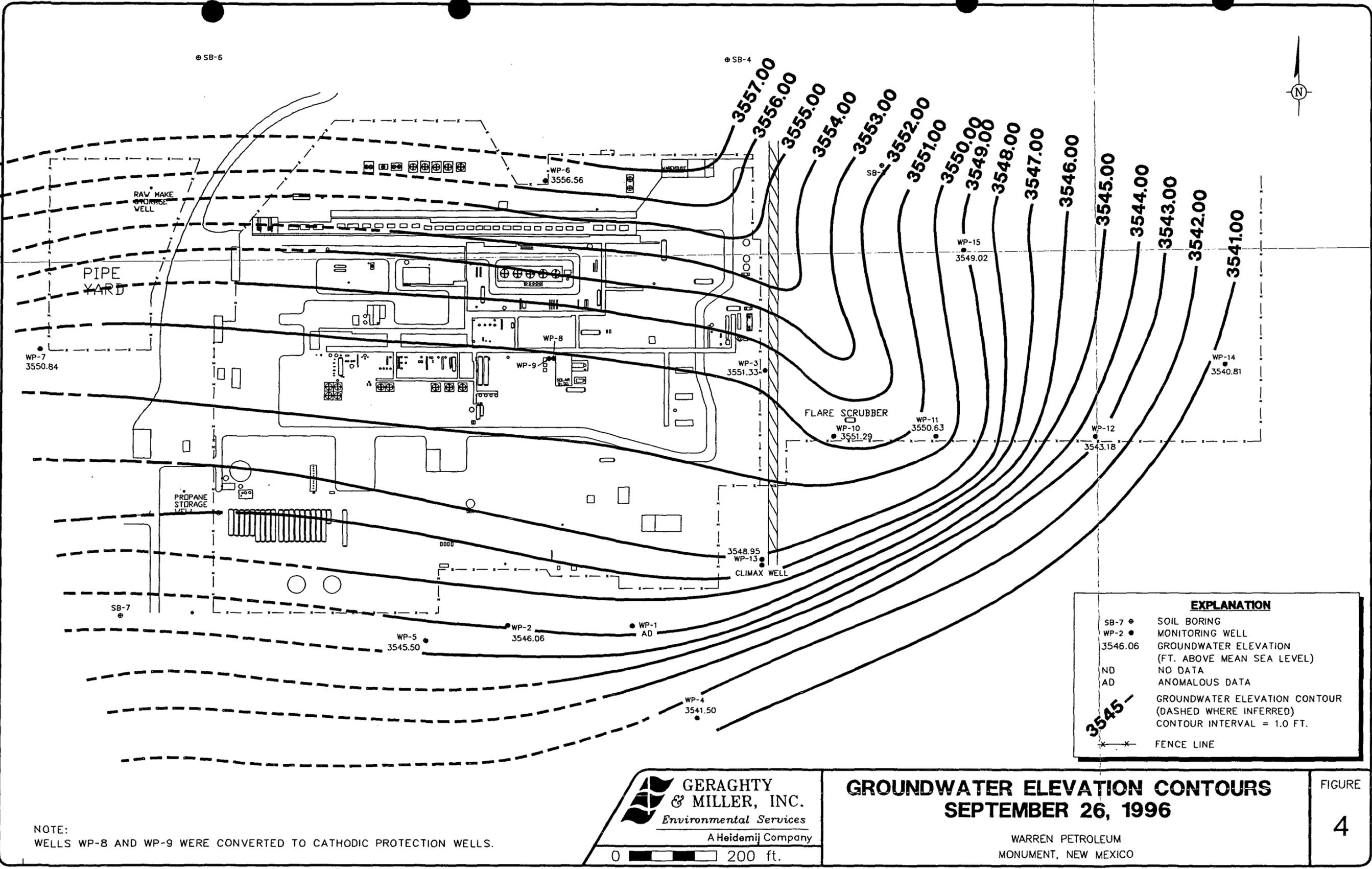
GROUNDWATER ELEVATION CONTOURS
APRIL 2, 1996

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE

3

DWG DATE: 11FEB97 | PRJCT NO.: 0K0532.002 | FILE NO.: | DRAWING: GW0996 | CHECKED: JOHN SHONFELT | DRAFTER: JIM HARBESTON | APPROVED: JOHN SHONFELT



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.06	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
AD	ANOMALOUS DATA
3545 - - -	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
	CONTOUR INTERVAL = 1.0 FT.
- x -	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

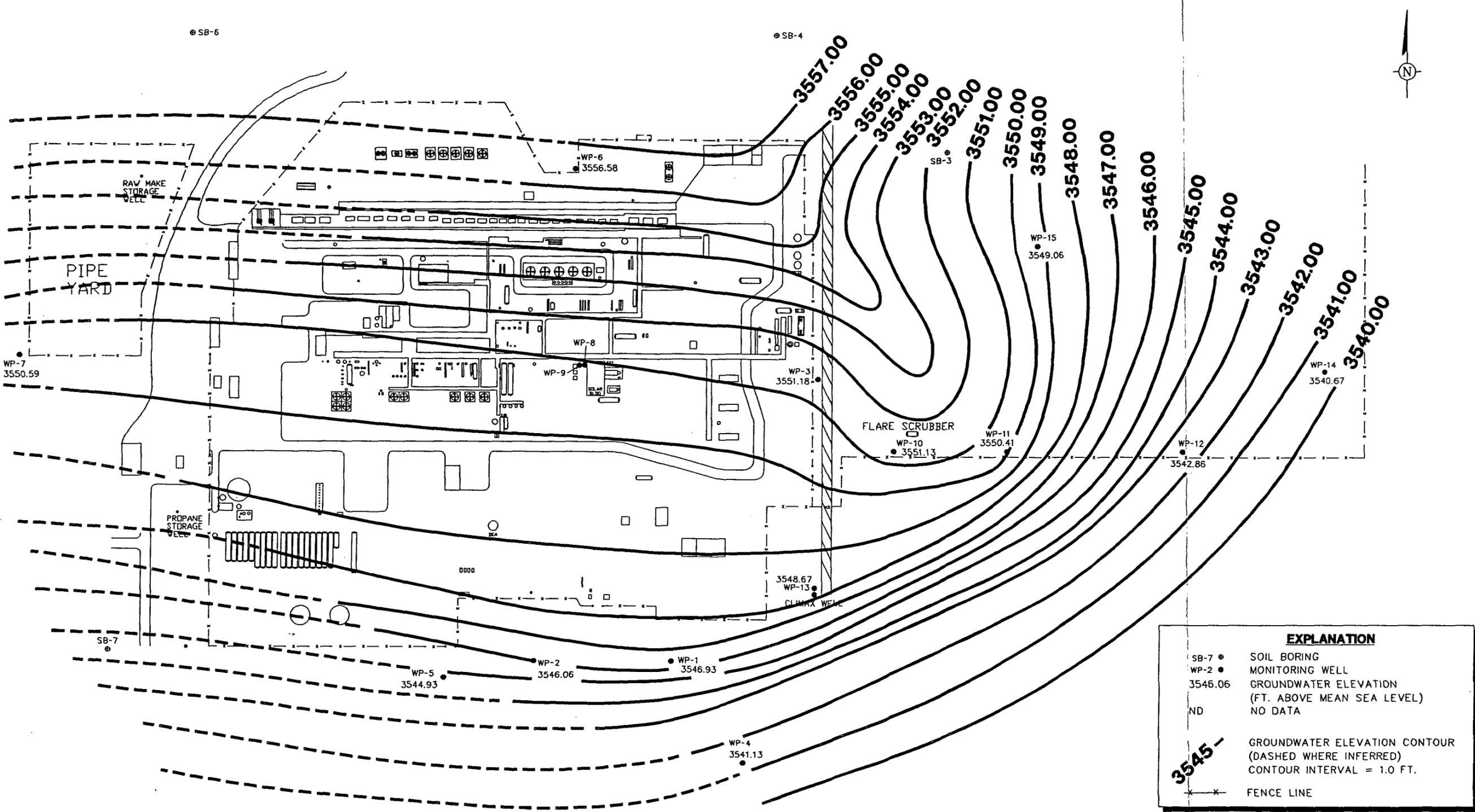
0 200 ft.

**GROUNDWATER ELEVATION CONTOURS
SEPTEMBER 26, 1996**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
4

DWG DATE: 11FEB97 | PRJCT NO.: OK0532.002 | FILE NO.: | DRAWING: GVO197 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
3546.06	GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
ND	NO DATA
3545 - - -	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FT.
- x -	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company



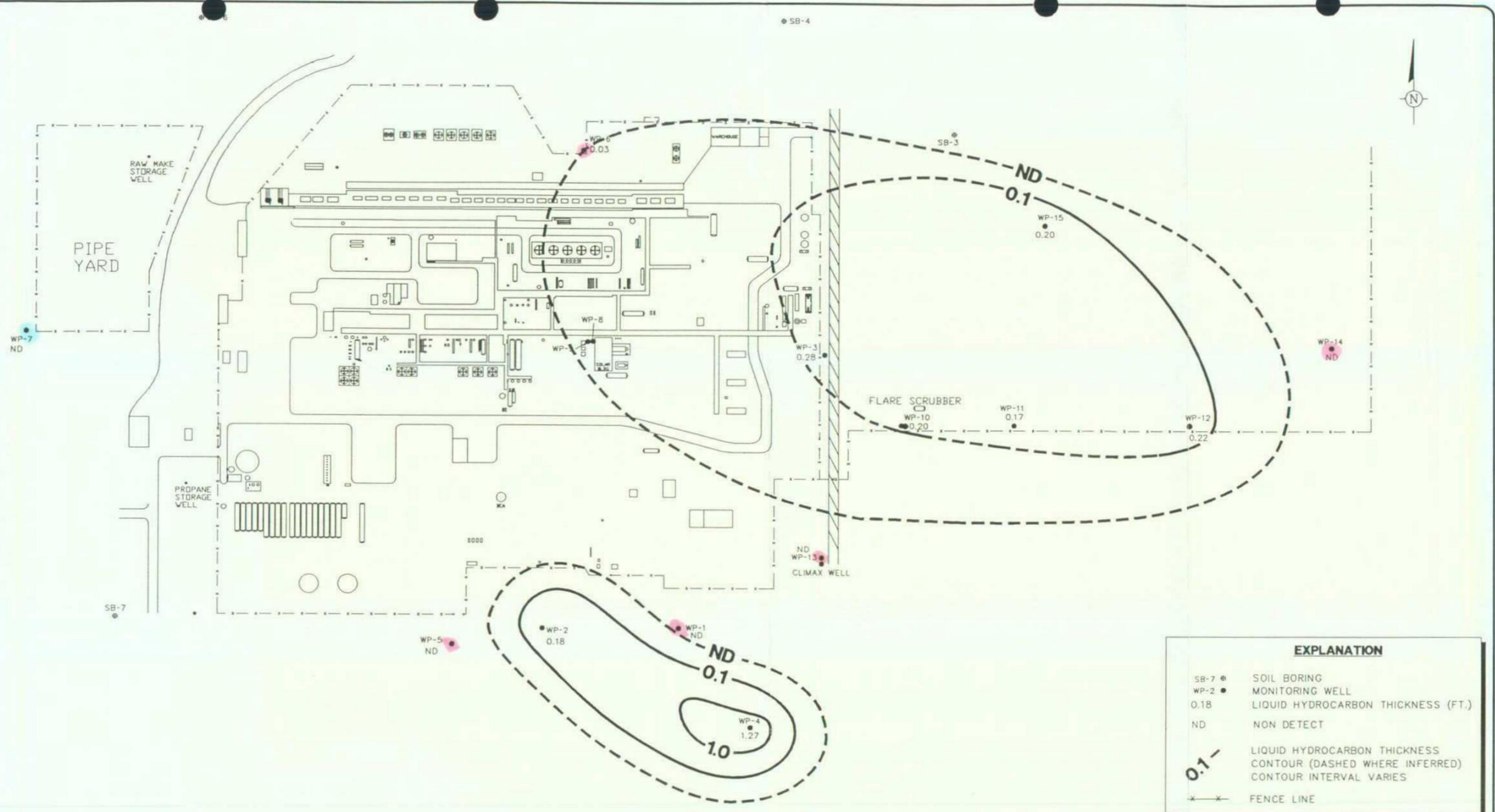
**GROUNDWATER ELEVATION CONTOURS
JANUARY 28, 1997**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE

5

DWG DATE: 11FEB97 | PRJCT NO.: 0K0532.002 | FILE NO.: - | DRAWING: EXT0196 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-2 ●	MONITORING WELL
0.18	LIQUID HYDROCARBON THICKNESS (FT.)
ND	NON DETECT
0.1-	LIQUID HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

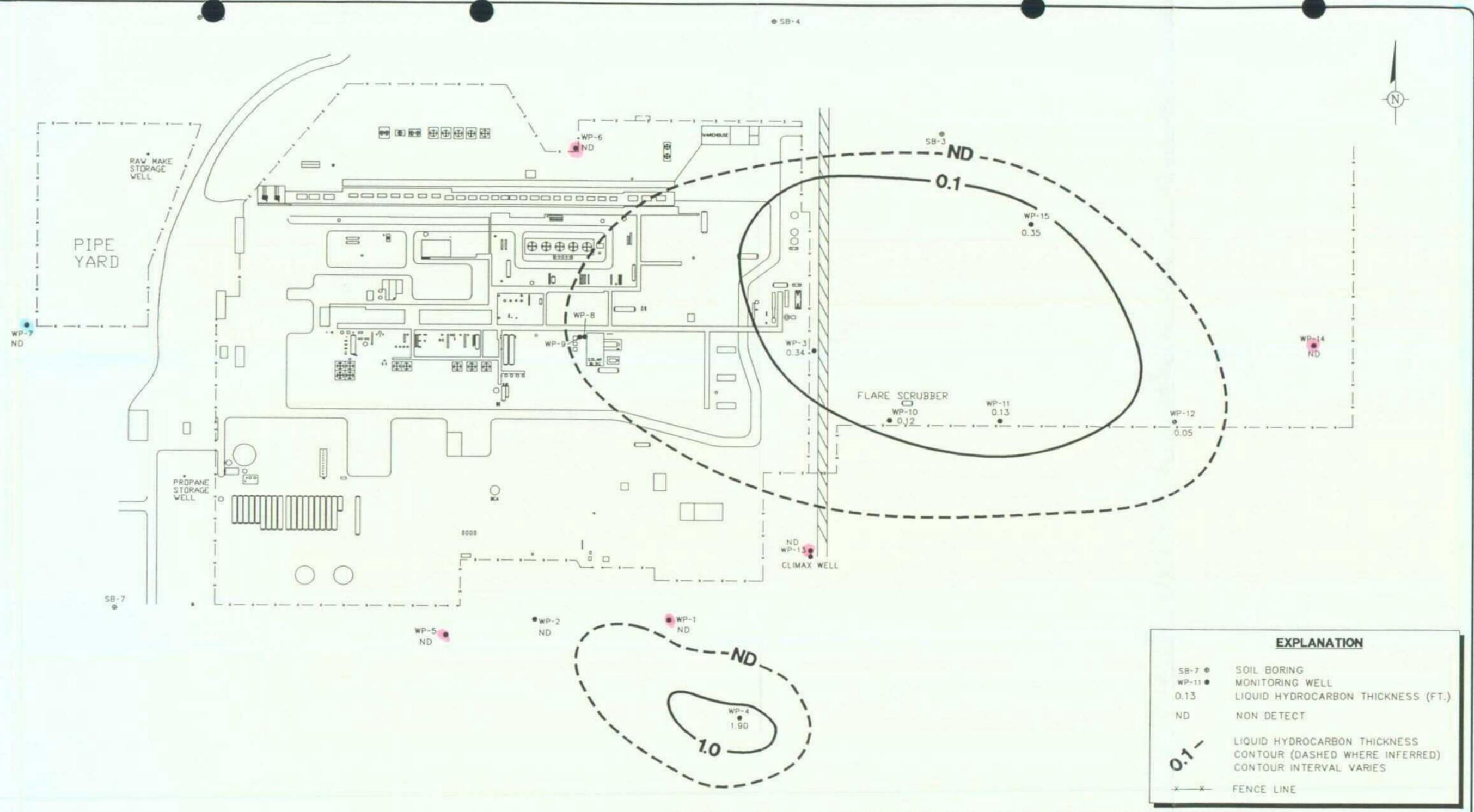
0 200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
JANUARY 24, 1996**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
6

DWG DATE: 11FEB97 | PRJCT NO.: 0K0532.002 | FILE NO.: | DRAWING: EXT0496 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.13	LIQUID HYDROCARBON THICKNESS (FT.)
ND	NON DETECT
0.1-	LIQUID HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
- - -	FENCE LINE

NOTE: WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
 A Heidemij Company



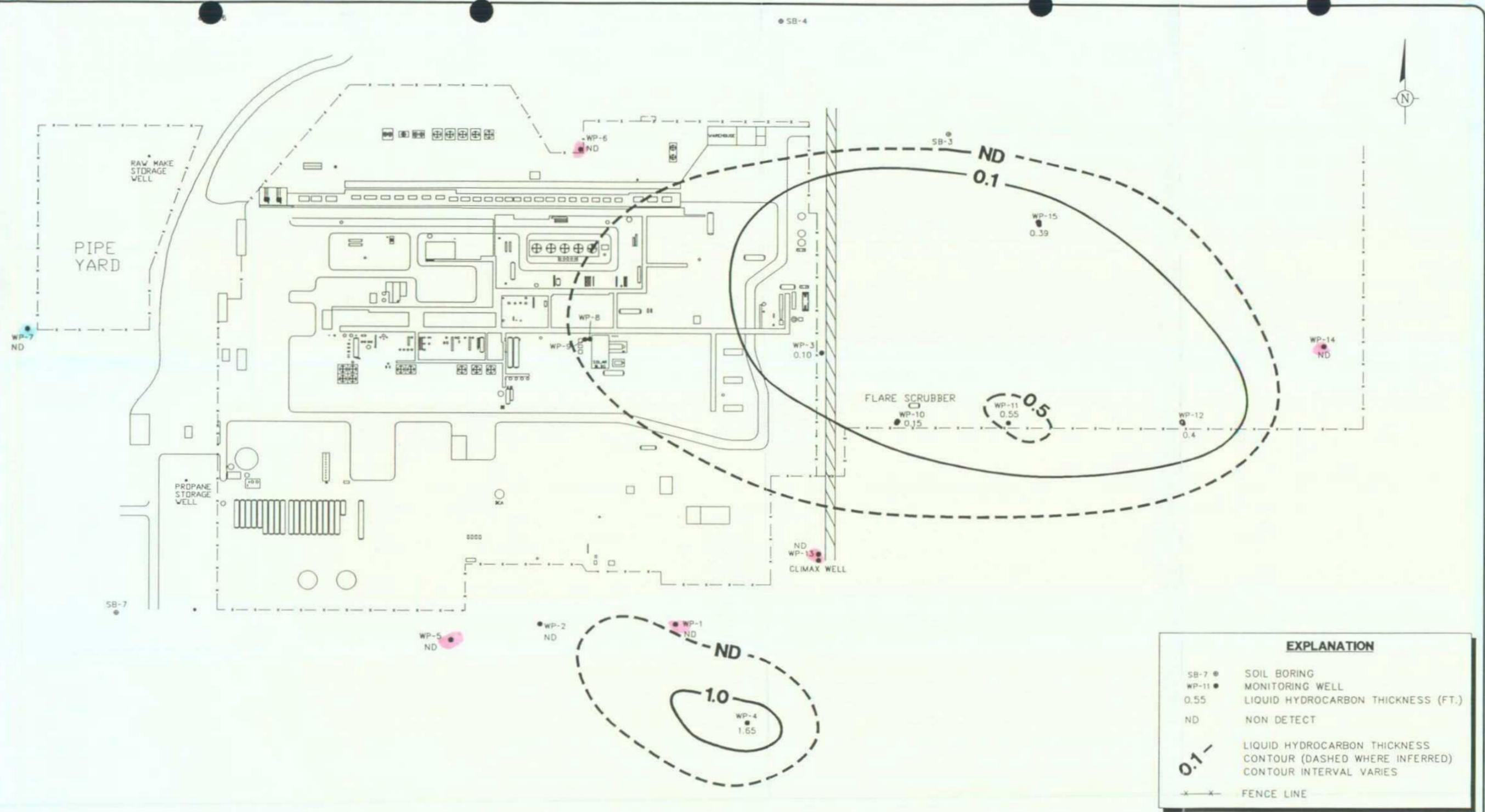
**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
 APRIL 2, 1996**

WARREN PETROLEUM
 MONUMENT, NEW MEXICO

FIGURE

7

DWG DATE: 11FEB97 | PRJCT NO.: 0K0532.002 | FILE NO.: - | DRAWING: EXT0996 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.55	LIQUID HYDROCARBON THICKNESS (FT.)
ND	NON DETECT
0.1	LIQUID HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
- - - -	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company

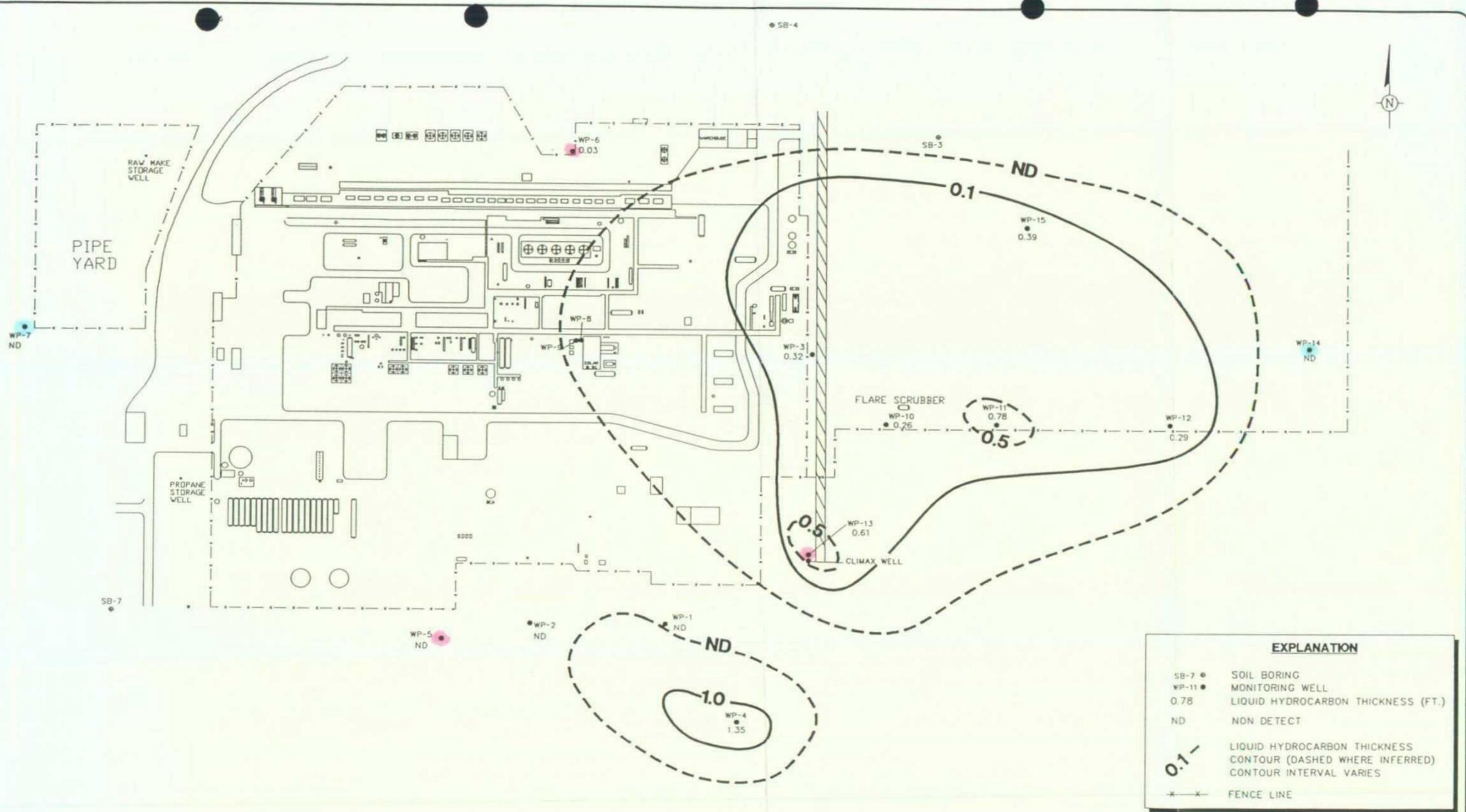
0 200 ft.

**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
SEPTEMBER 26, 1996**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

FIGURE
8

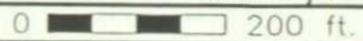
DWG DATE: 11FEB97 | PRJCT NO: OK0532.002 | FILE NO: -- | DRAWING: EXT0197 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
SB-7 ●	SOIL BORING
WP-11 ●	MONITORING WELL
0.78	LIQUID HYDROCARBON THICKNESS (FT.)
ND	NON DETECT
0.1	LIQUID HYDROCARBON THICKNESS CONTOUR (DASHED WHERE INFERRED) CONTOUR INTERVAL VARIES
-x-x-	FENCE LINE

NOTE:
WELLS WP-8 AND WP-9 WERE CONVERTED TO CATHODIC PROTECTION WELLS.

GERAGHTY & MILLER, INC.
Environmental Services
A Heidemij Company



**APPROXIMATE EXTENT OF LIQUID HYDROCARBONS
JANUARY 28, 1997**

WARREN PETROLEUM
MONUMENT, NEW MEXICO

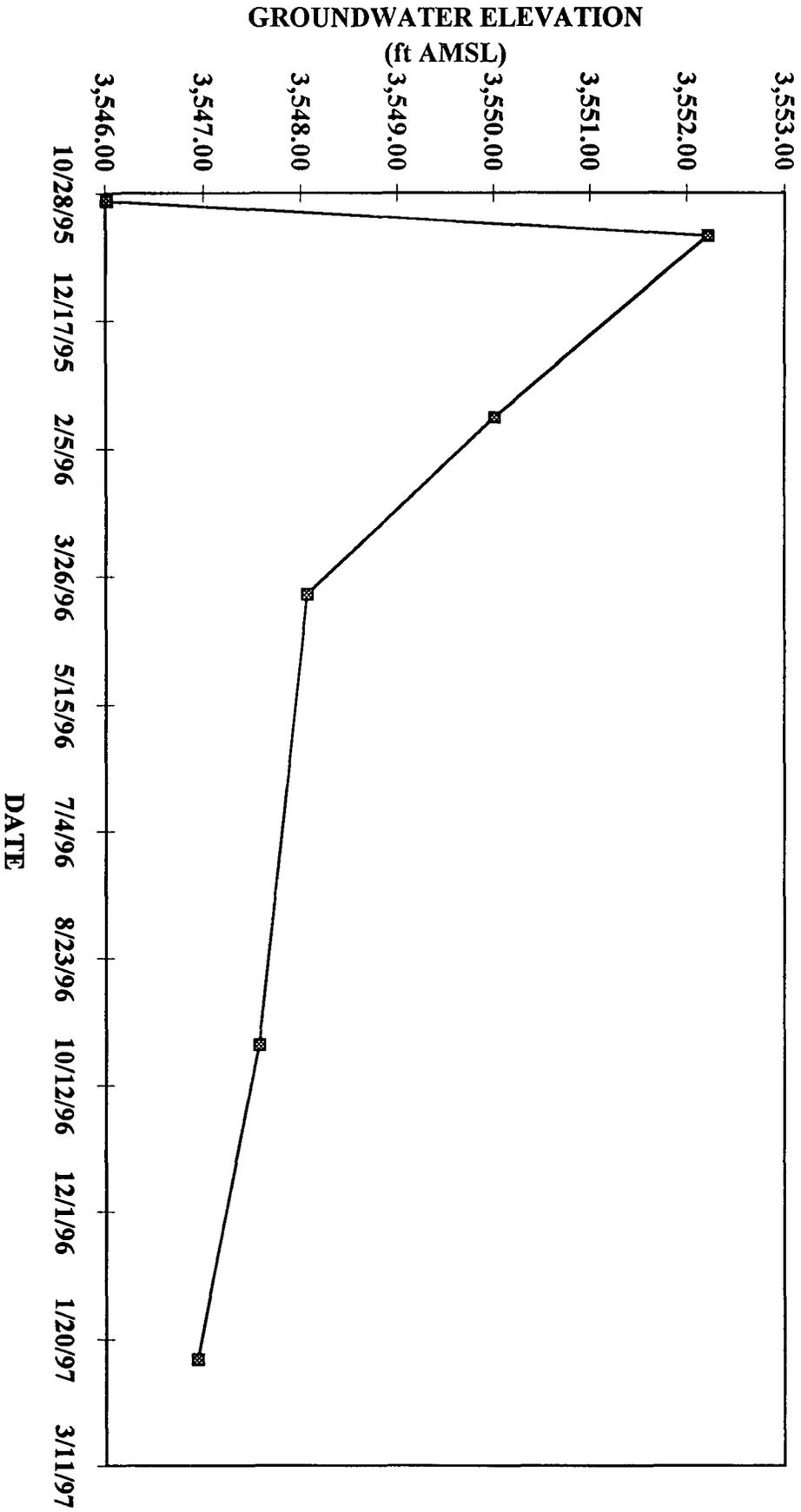
FIGURE
9



ATTACHMENT A

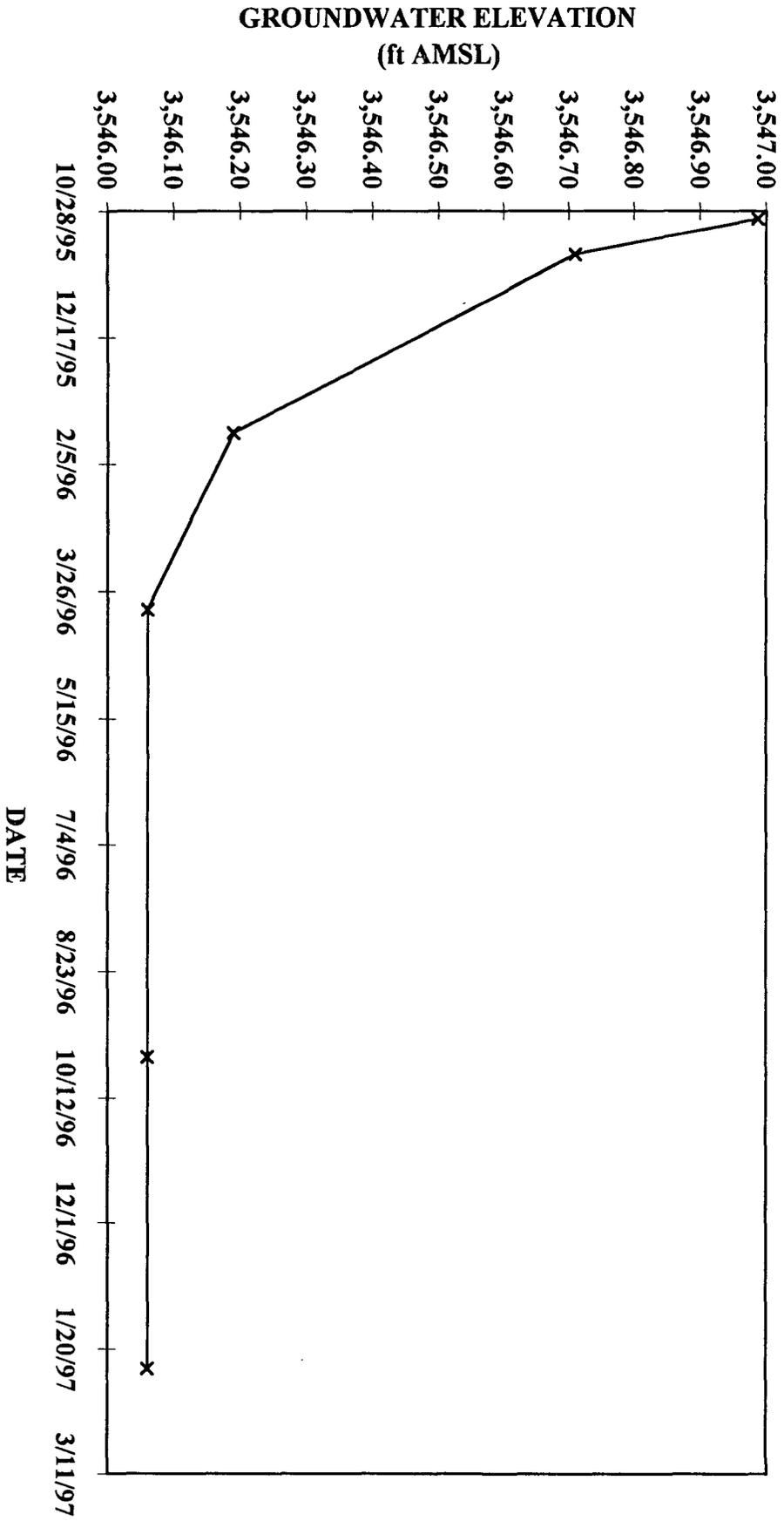


GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-1



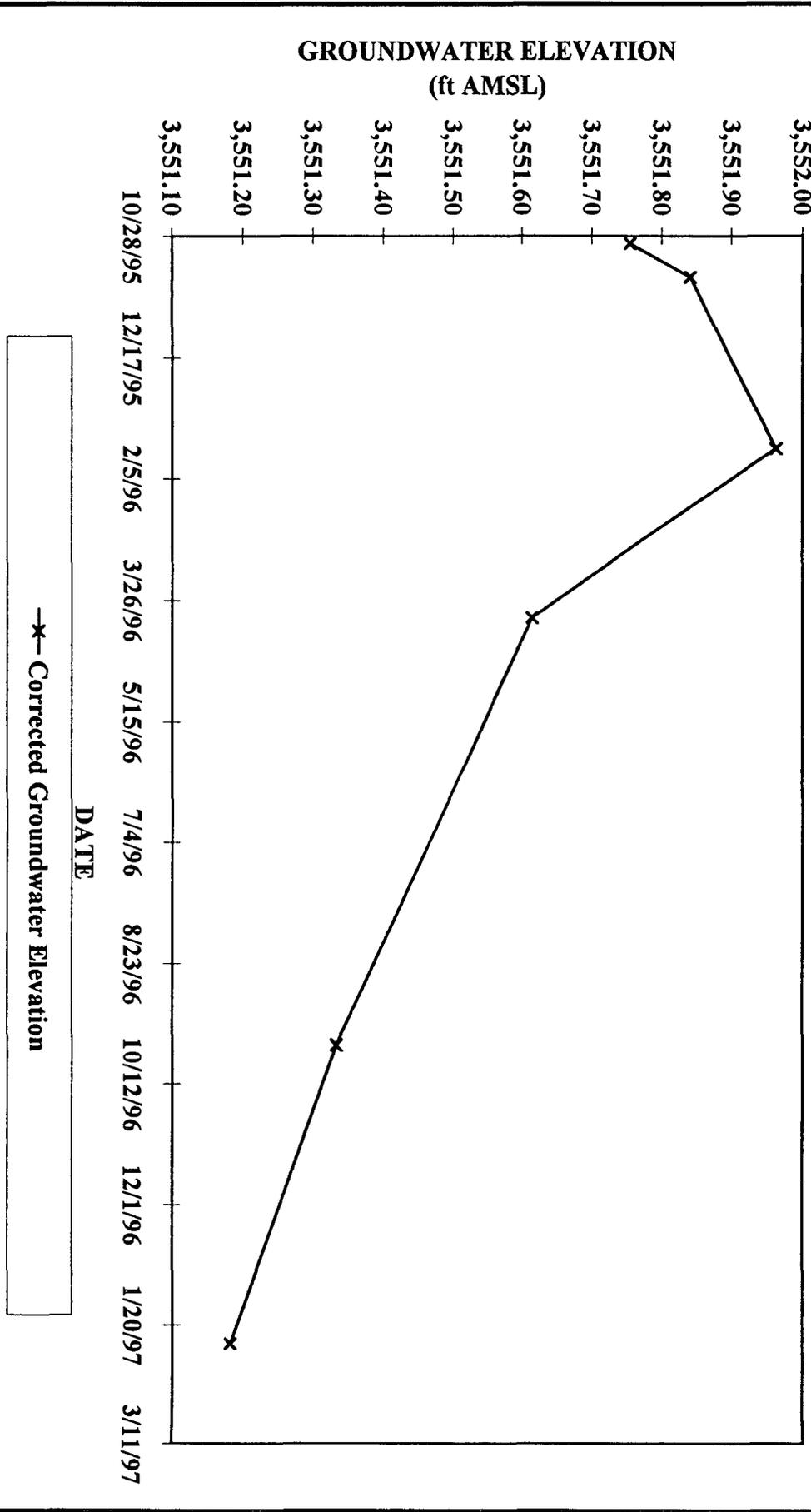
—■— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-2



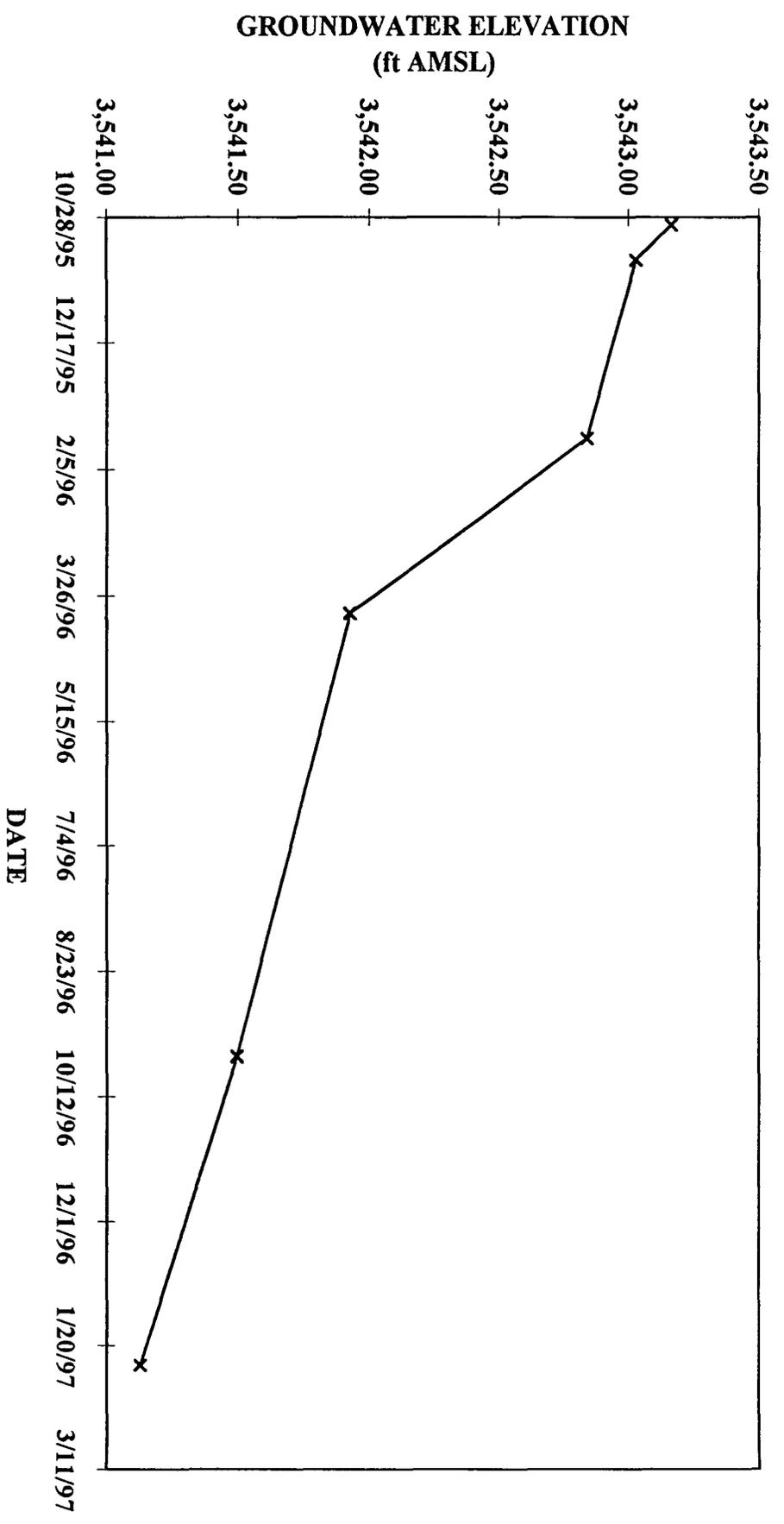
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-3



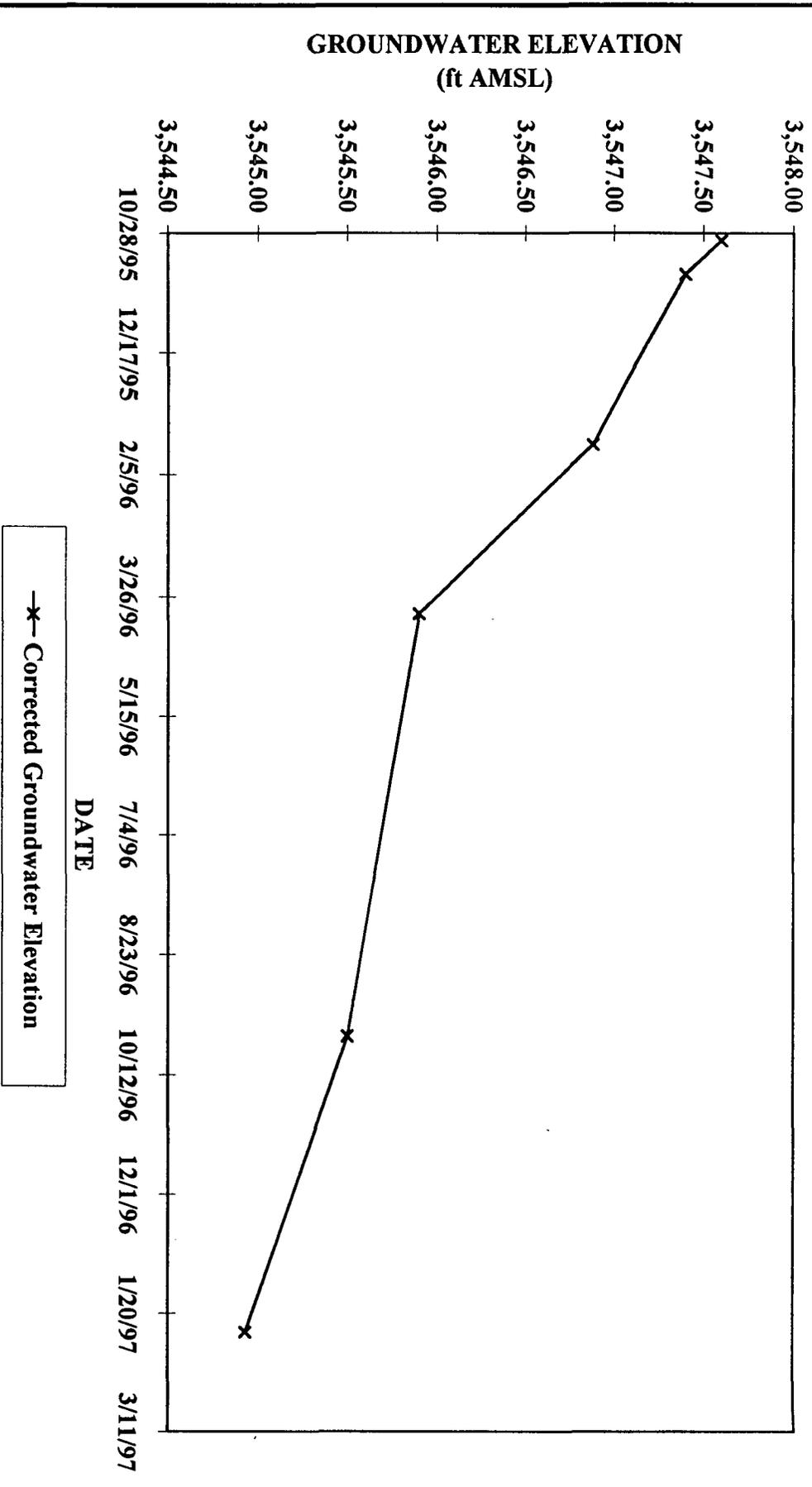
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-4



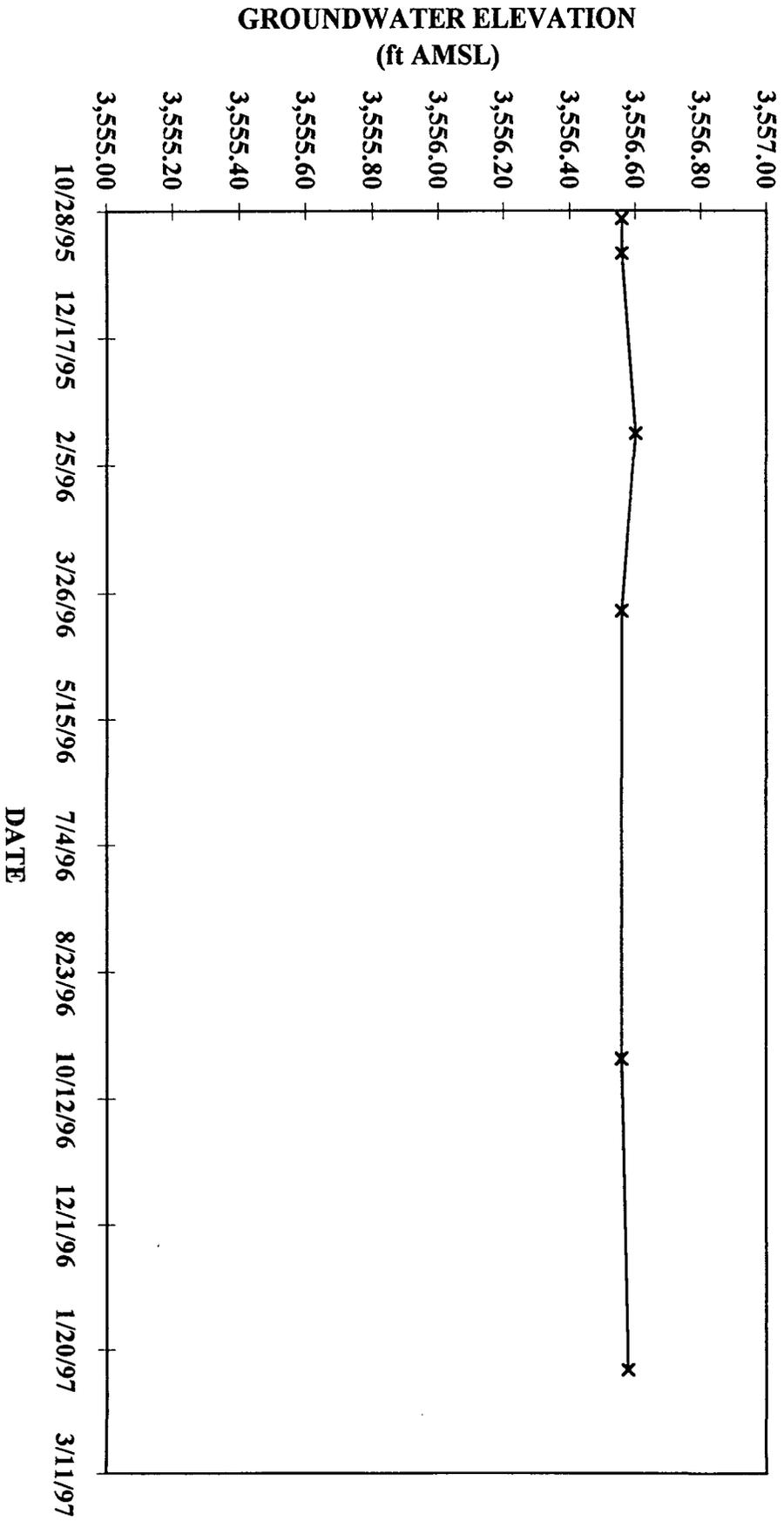
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



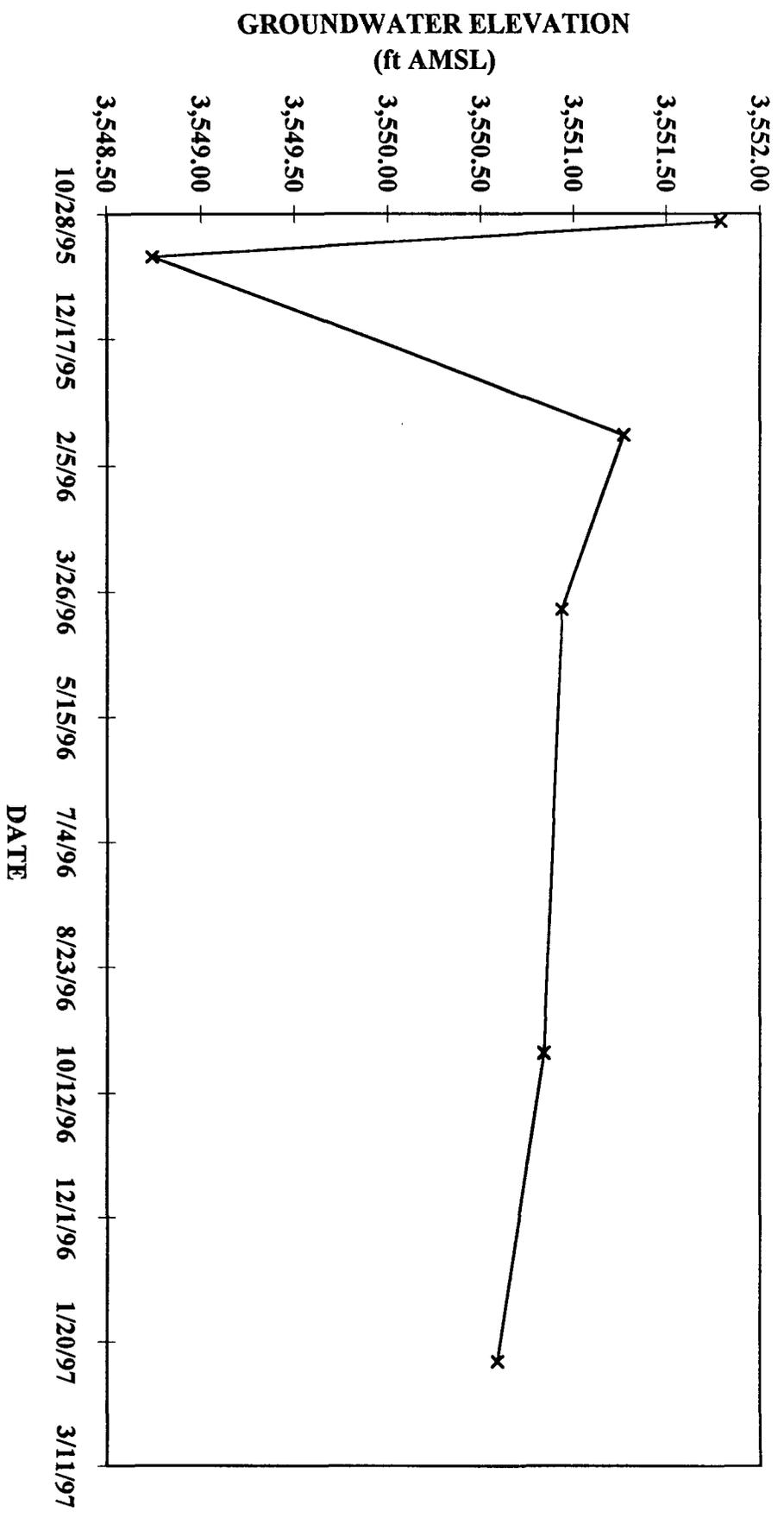
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-6



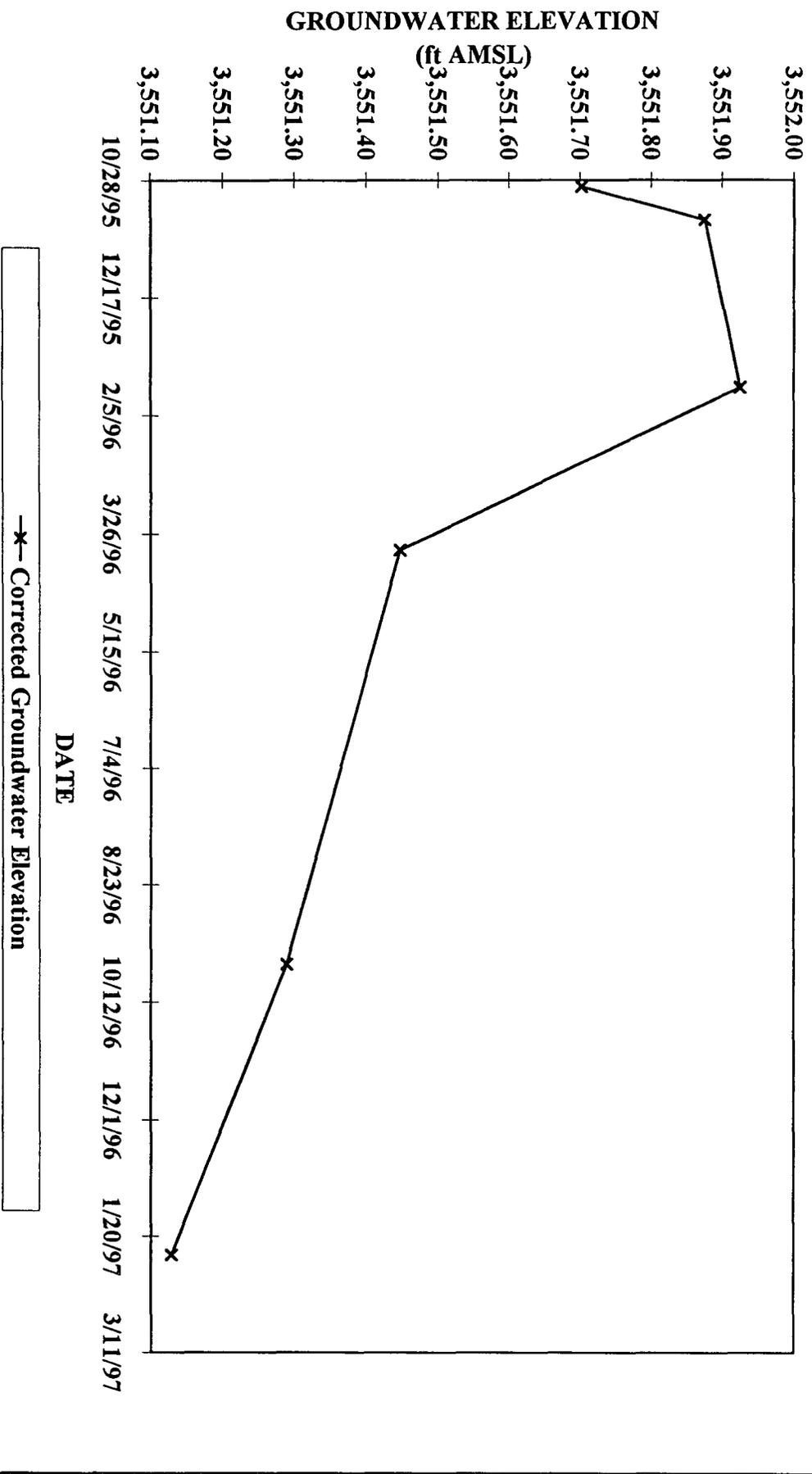
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-7



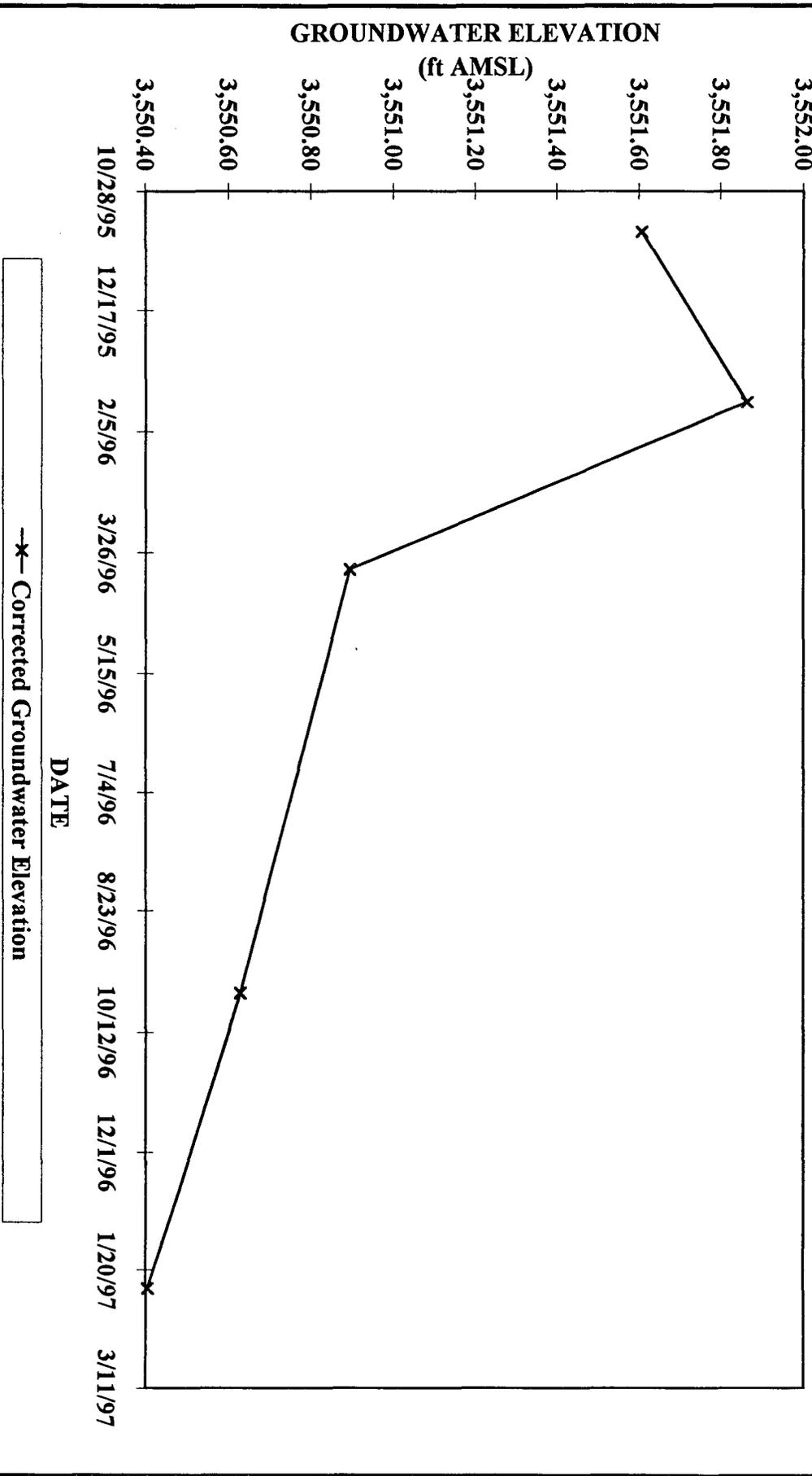
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-10



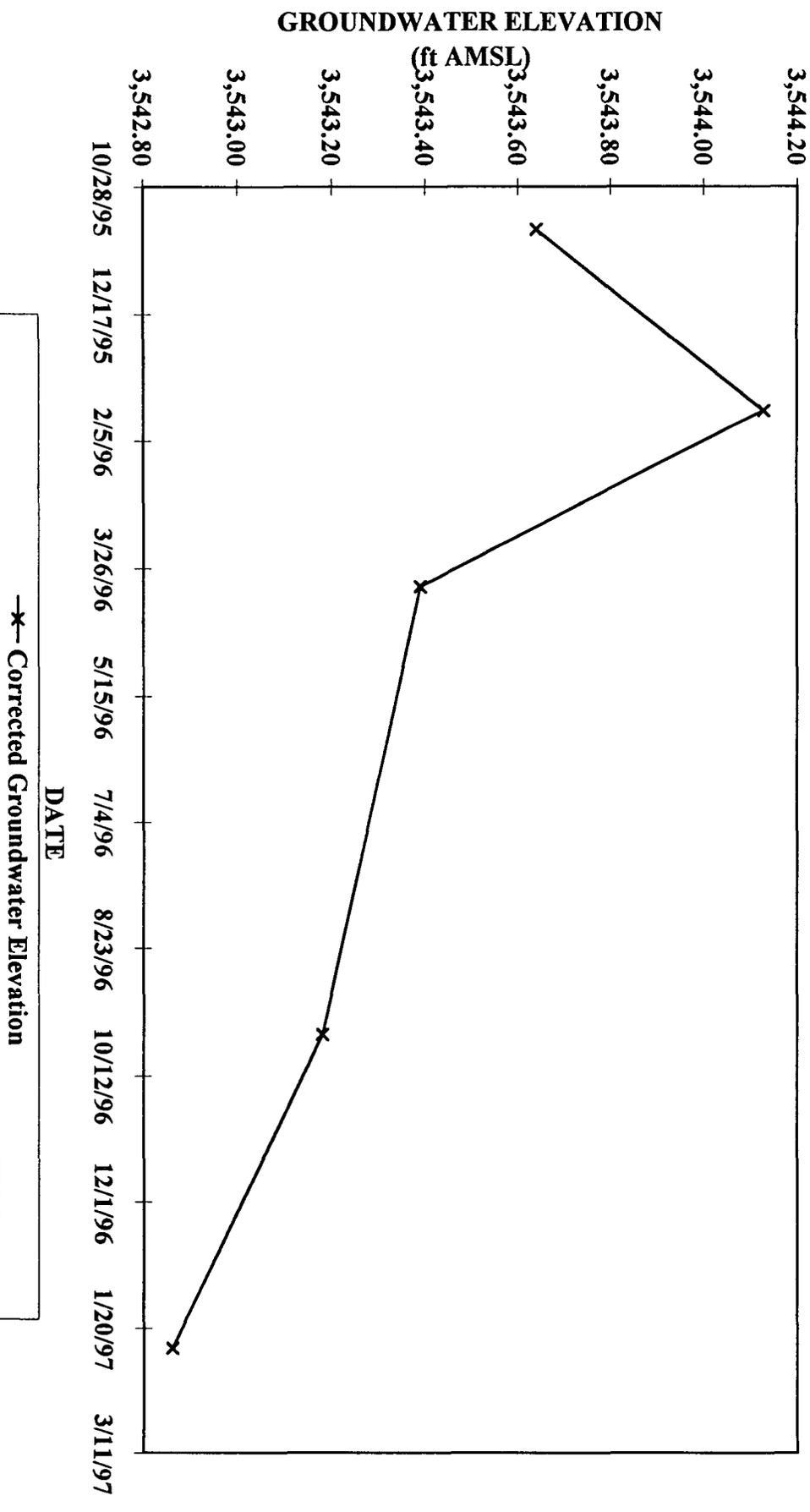
—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-11

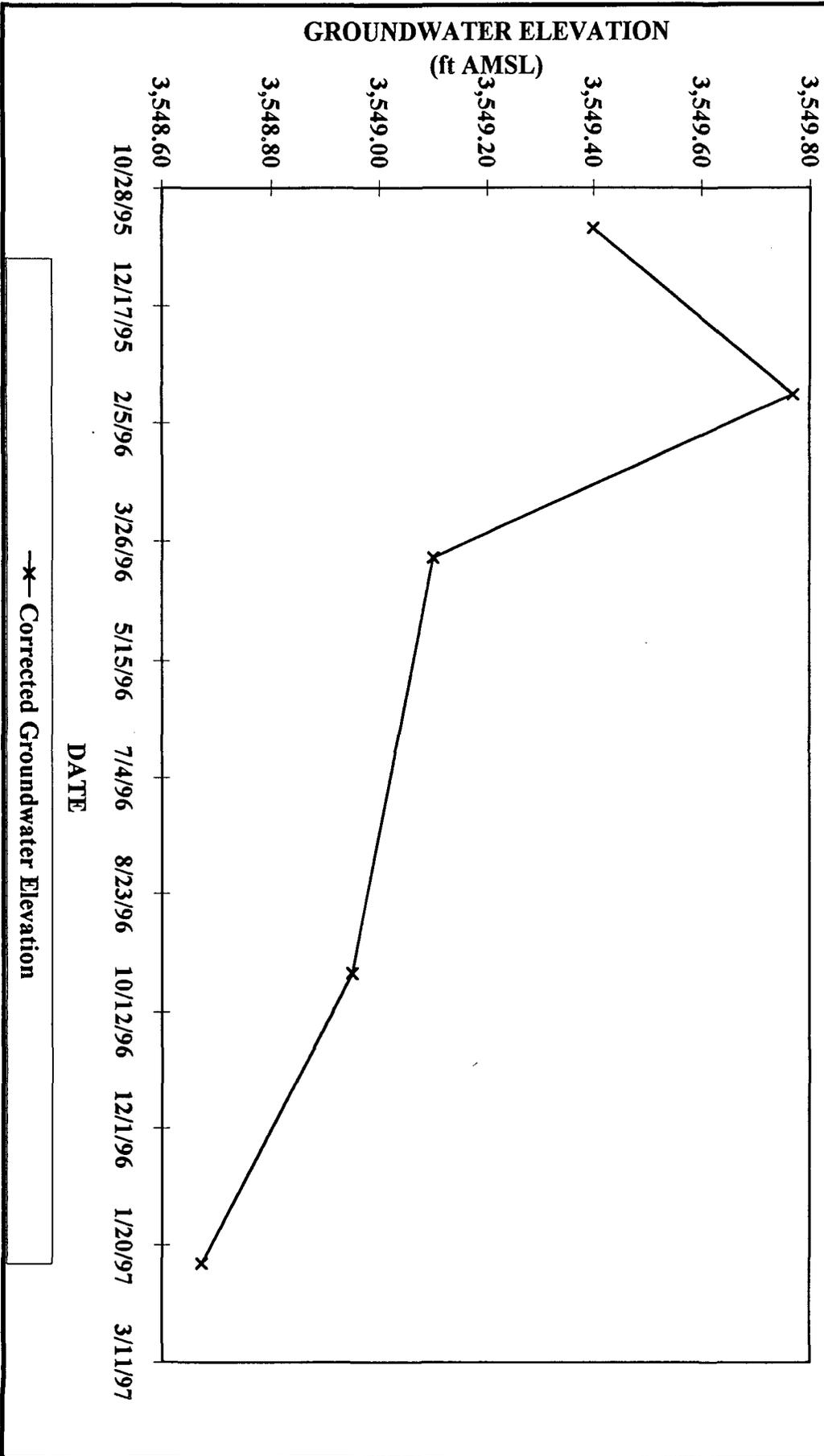


—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-12

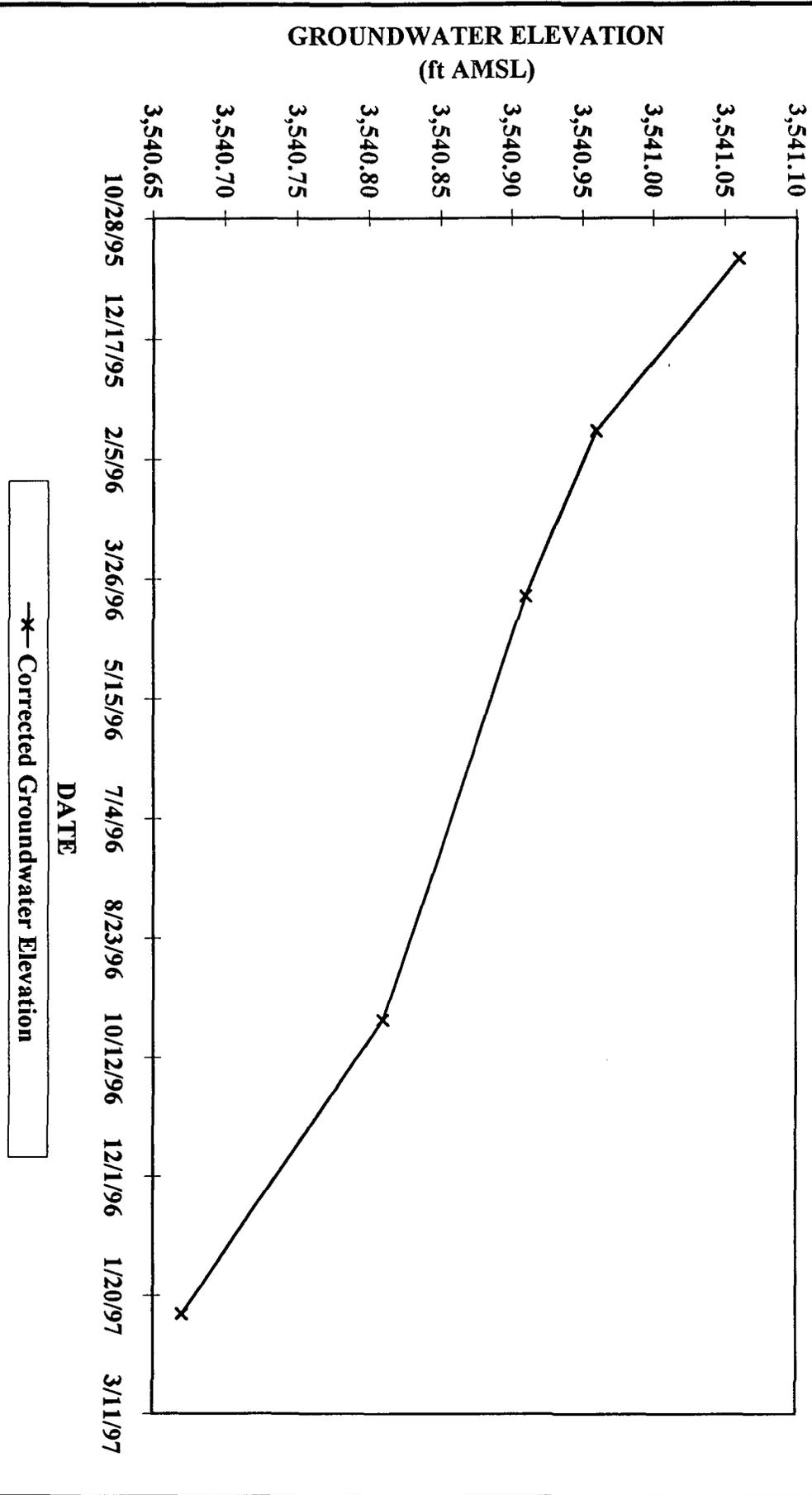


GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13



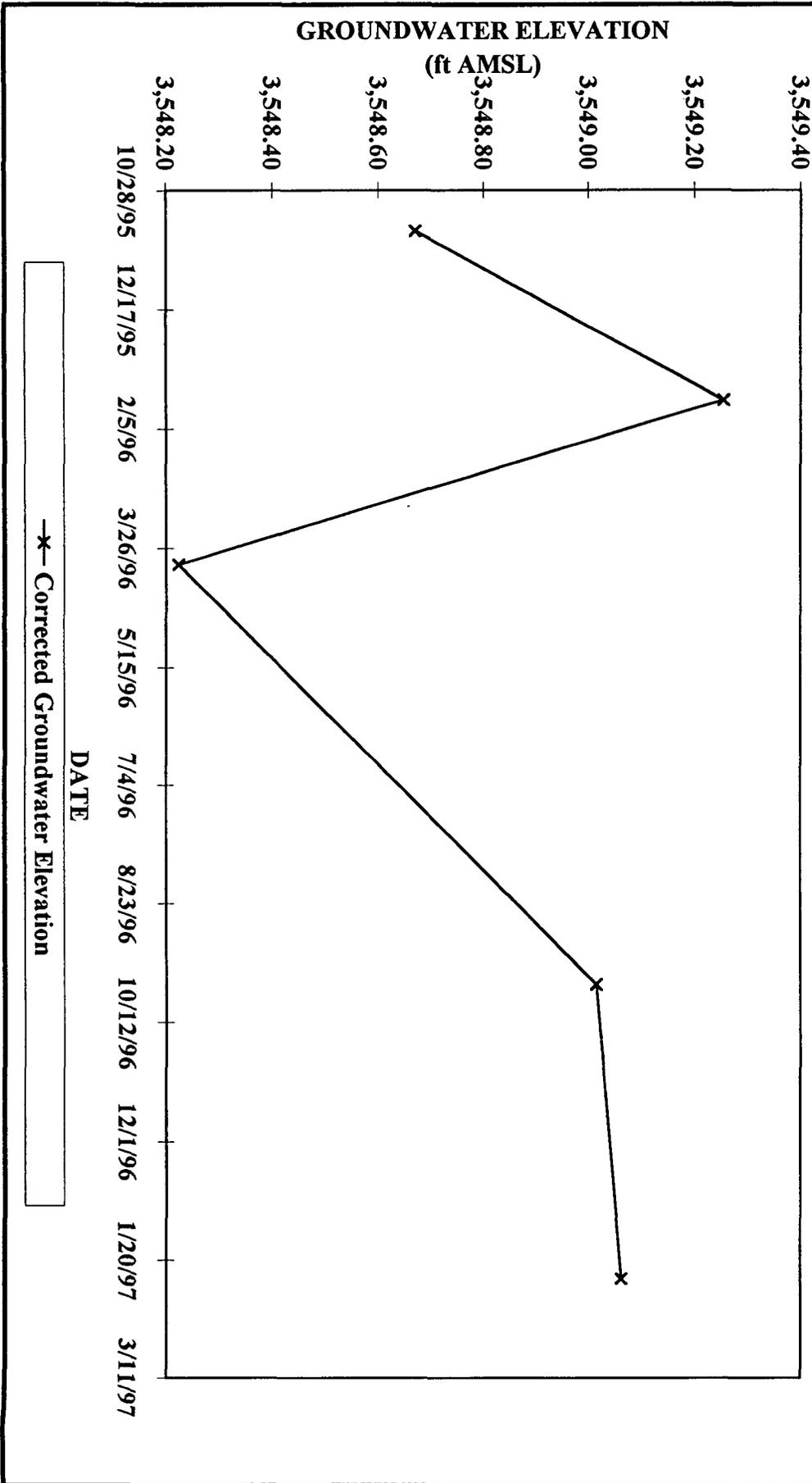
—x— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14



—*— Corrected Groundwater Elevation

GROUNDWATER ELEVATION vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-15

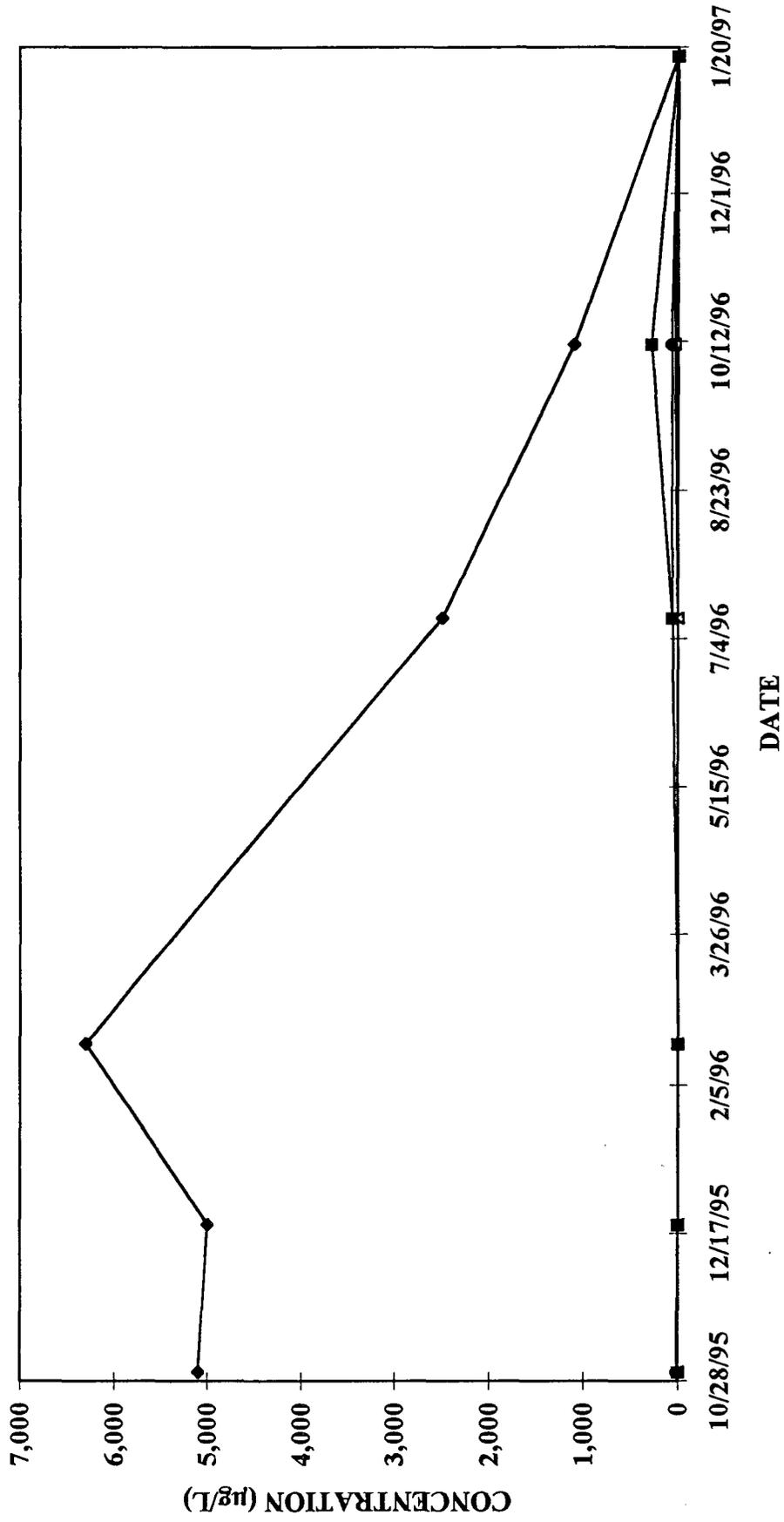




ATTACHMENT B

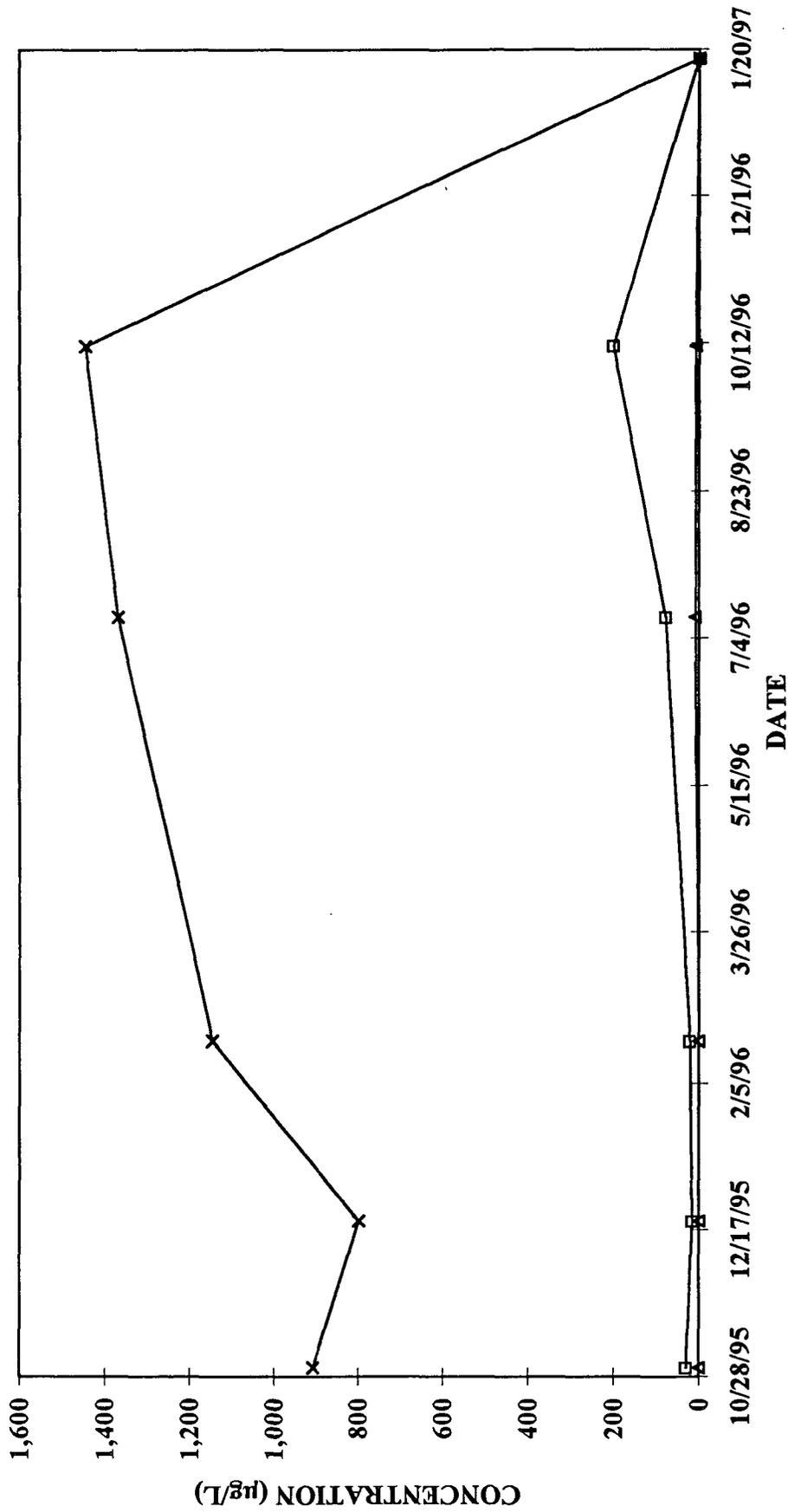


ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-1



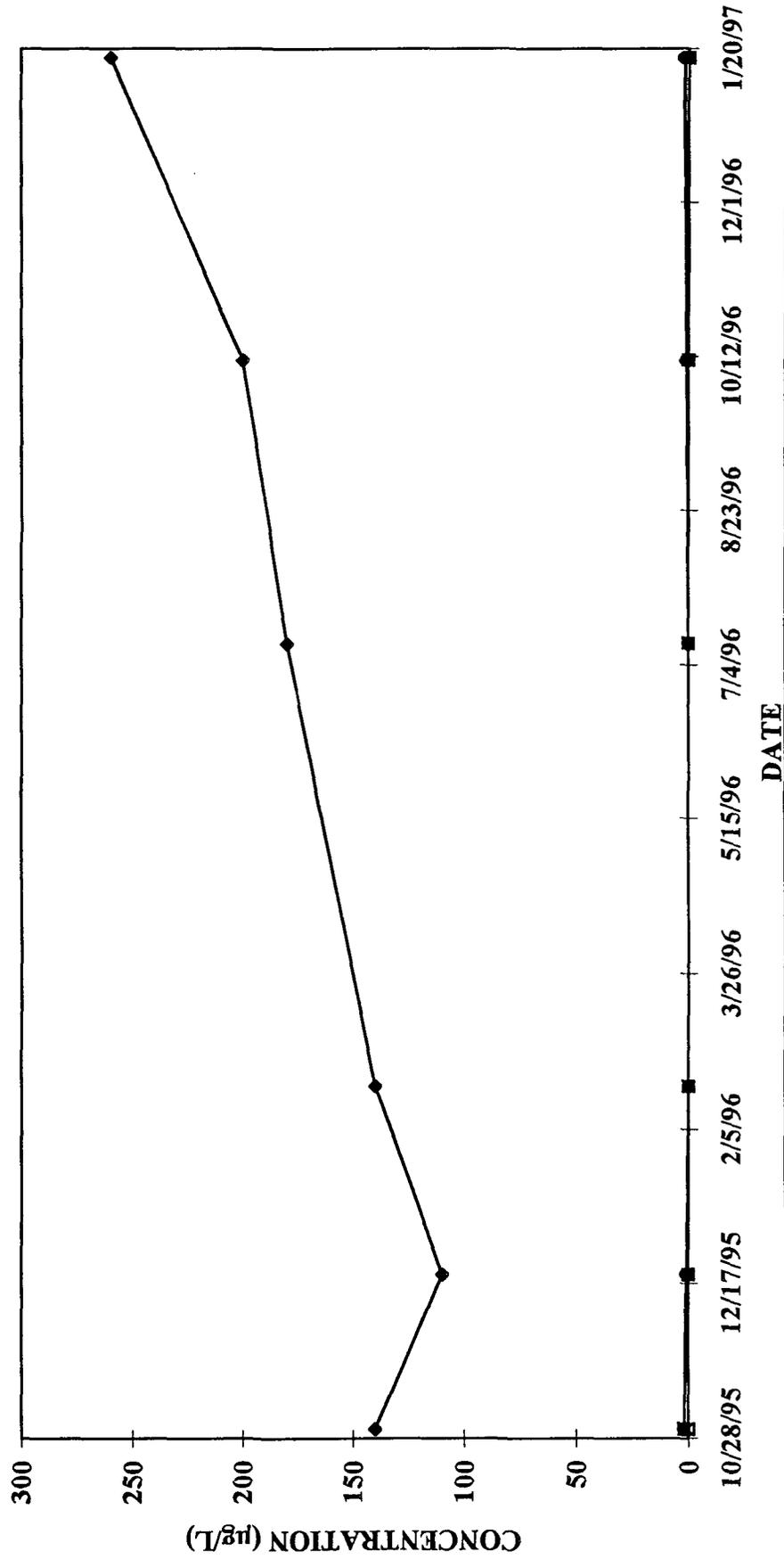
Legend:
◆ Benzene
▲ Toluene
● Ethylbenzene
■ Total Xylenes

INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-1

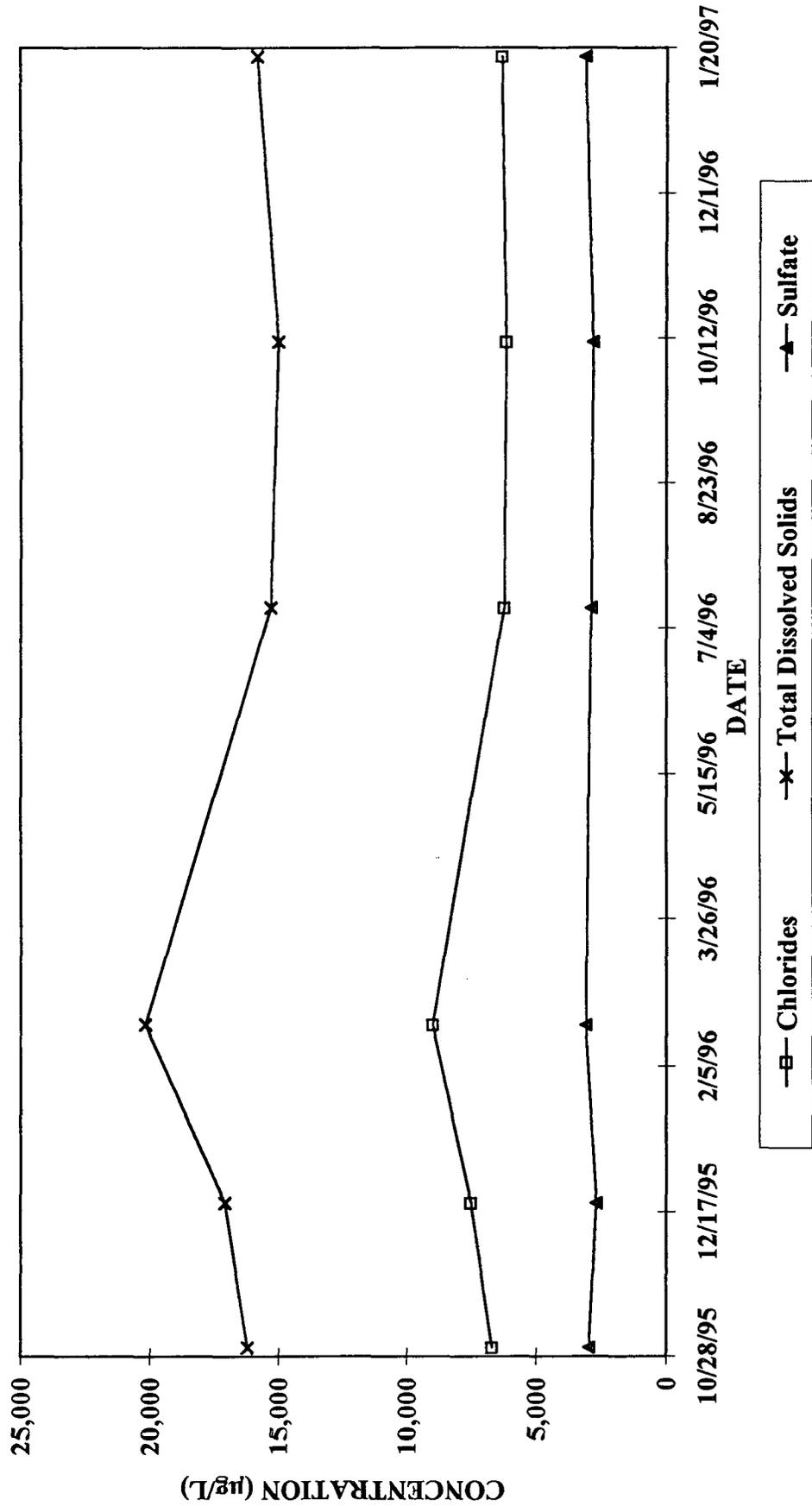


—□— Chlorides —x— Total Dissolved Solids —▲— Sulfate

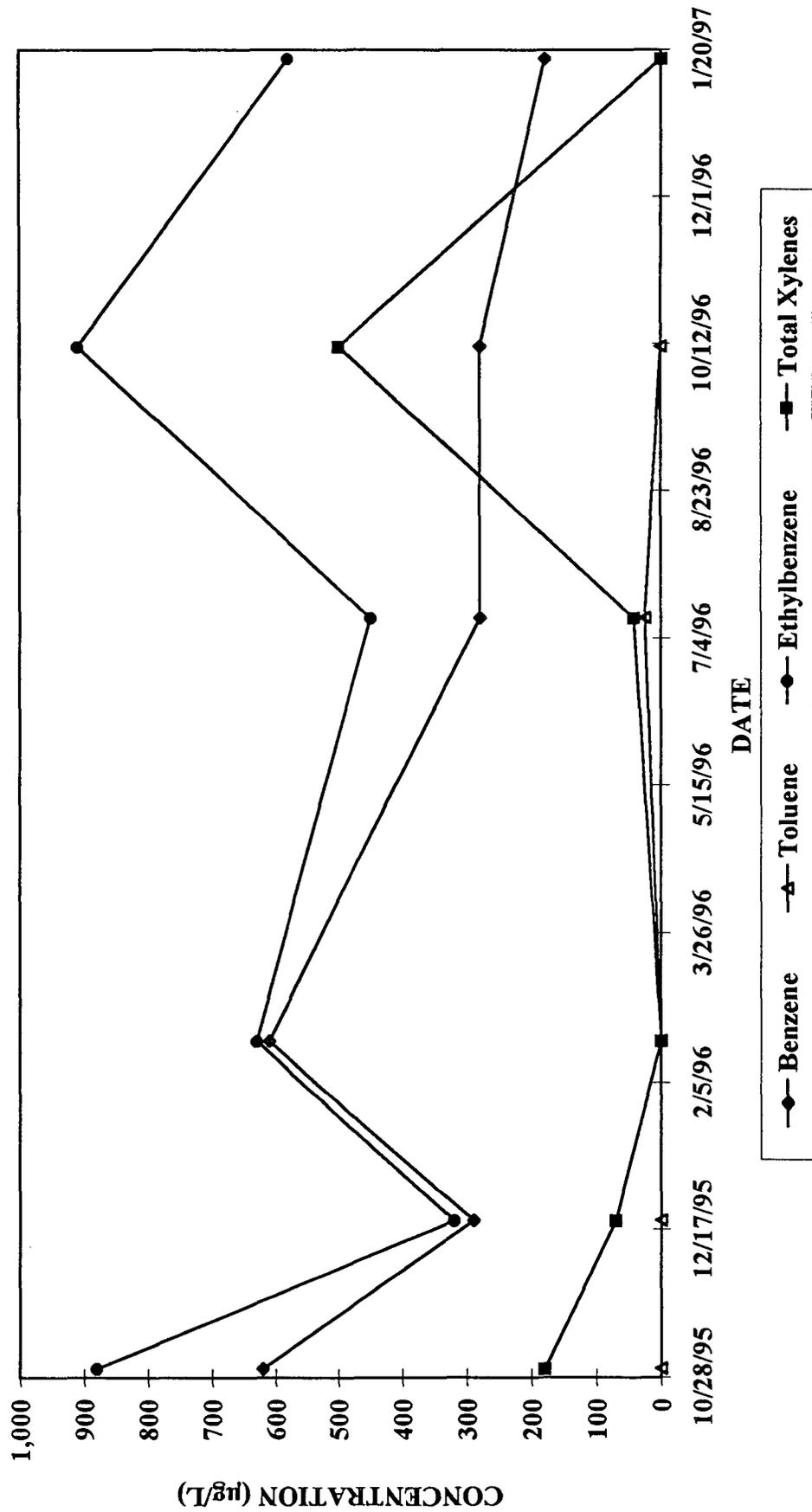
ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



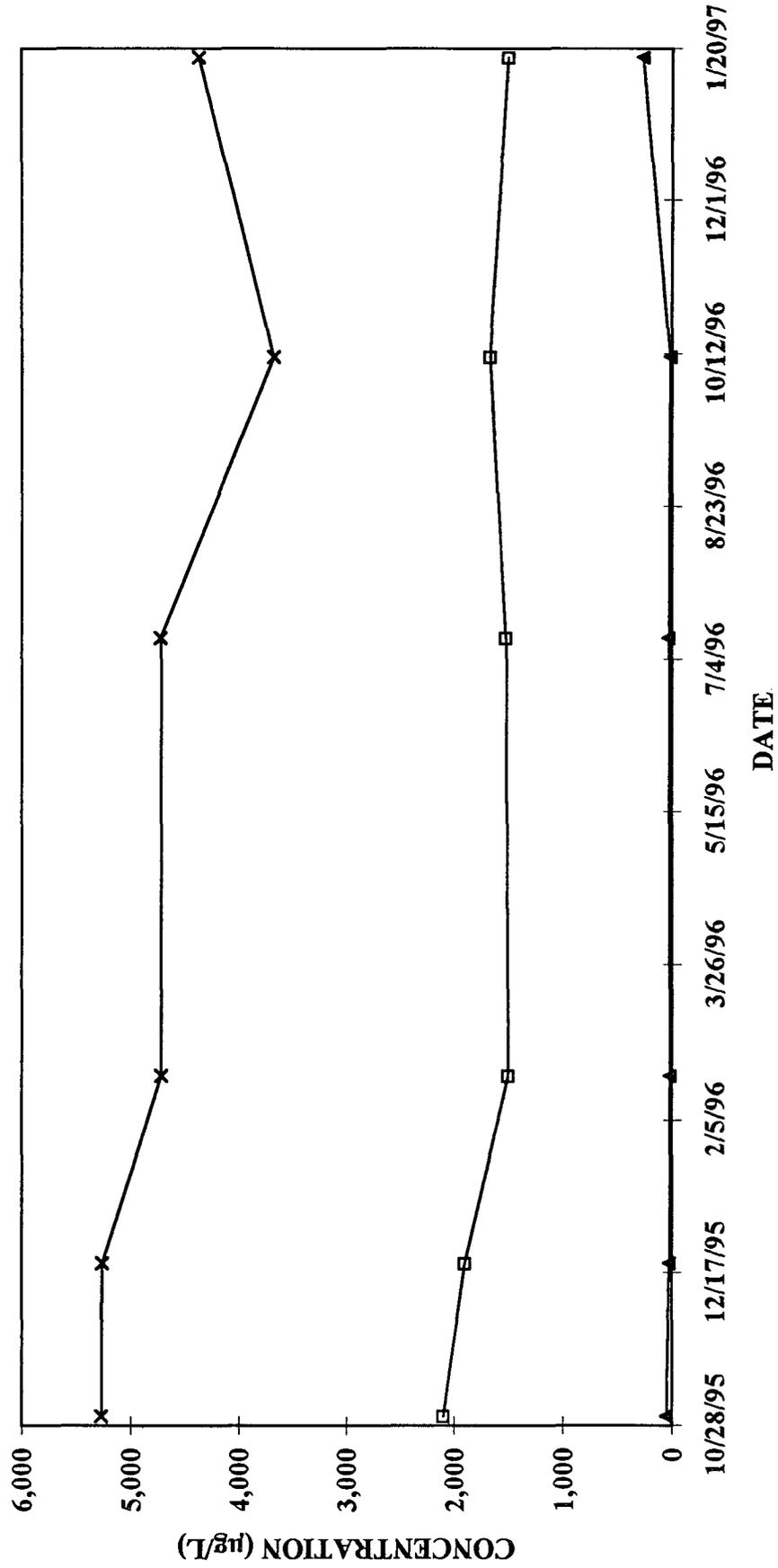
INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-5



ORGANIC GROUNDWATER QUALITY vs. TIME
 WARREN MONUMENT, NEW MEXICO
 WARREN PETROLEUM, INC.
 WELL WP-6

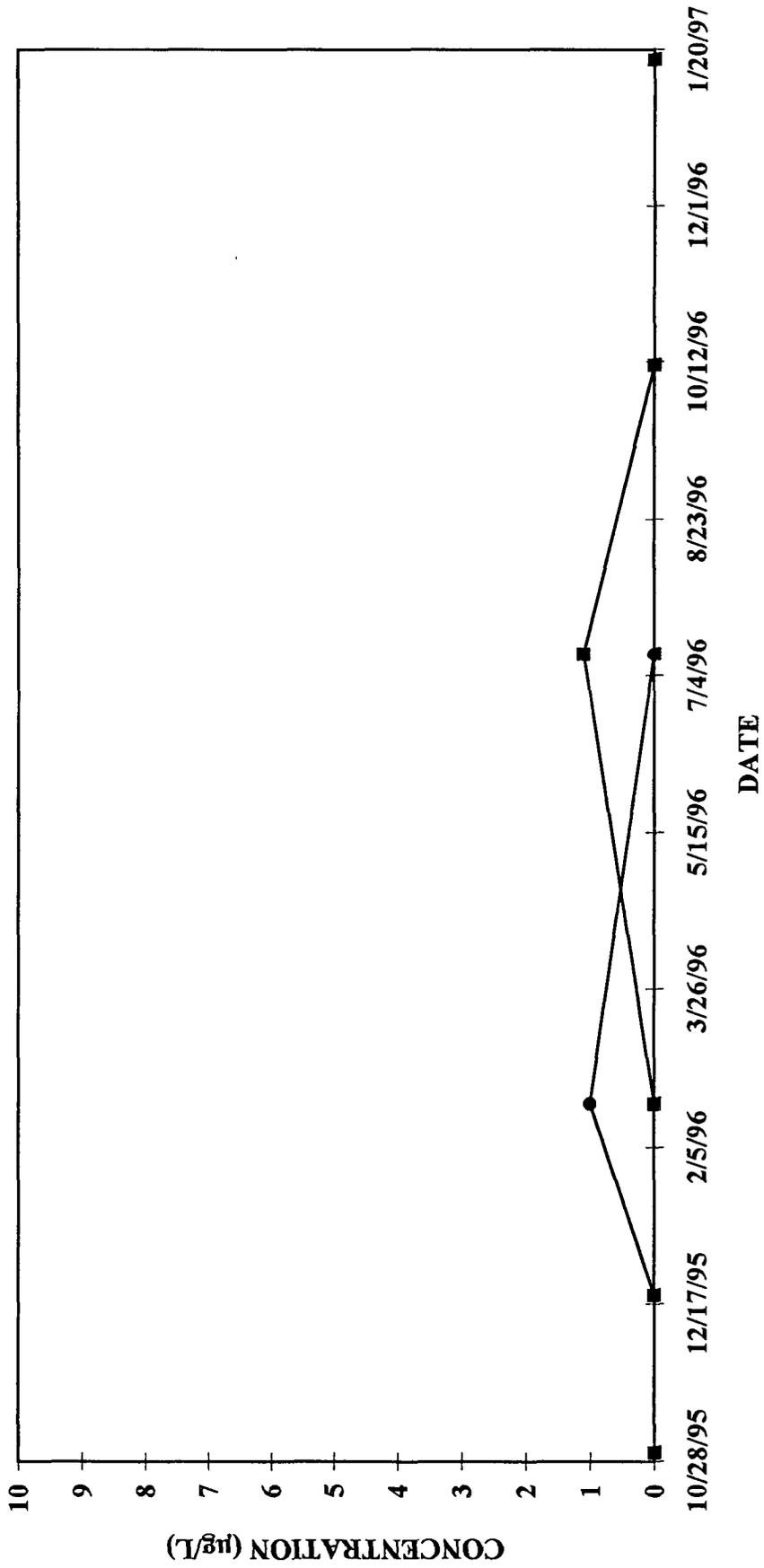


INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-6



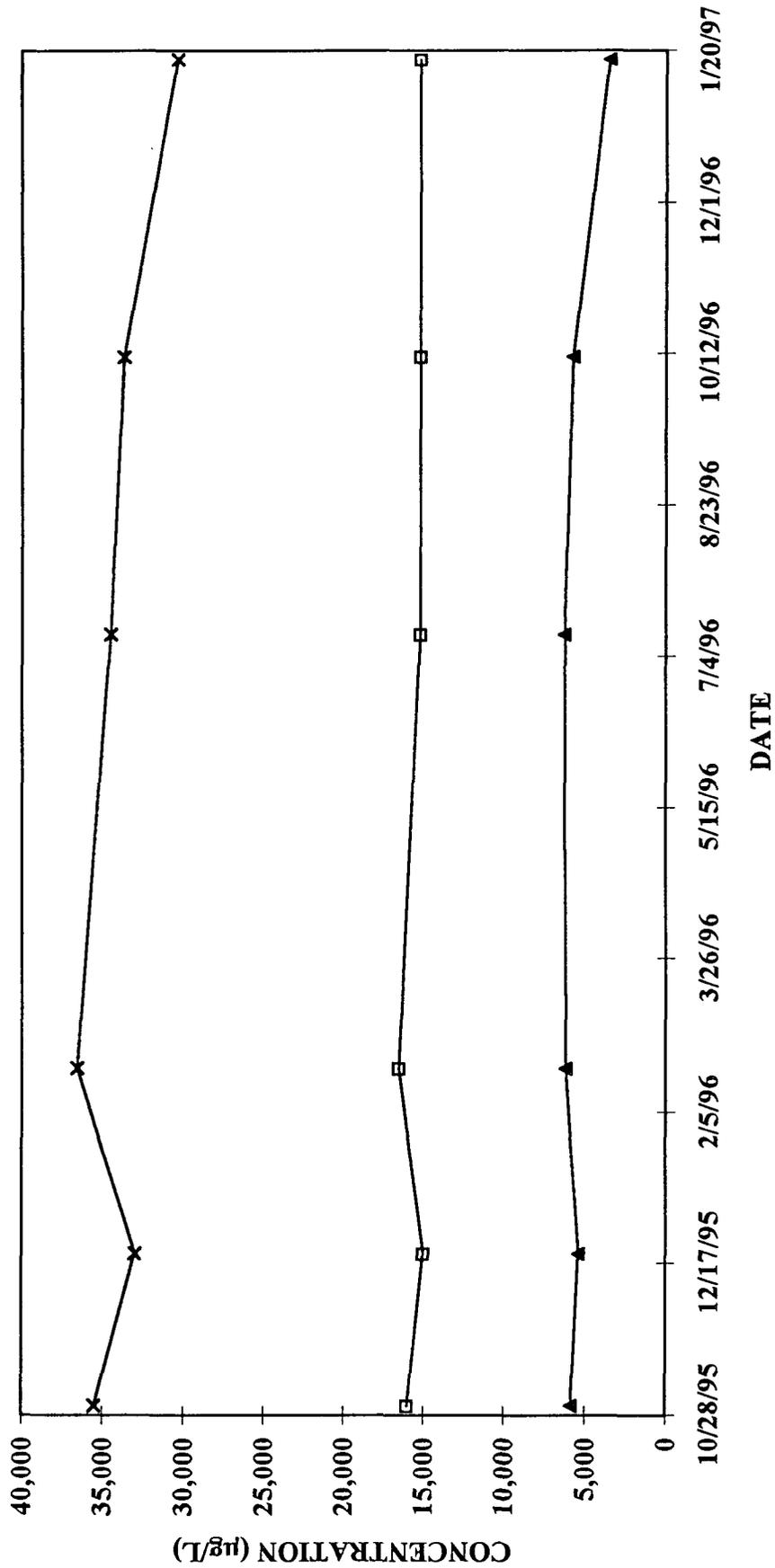
—□— Chlorides —*— Total Dissolved Solids —▲— Sulfate

ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-7



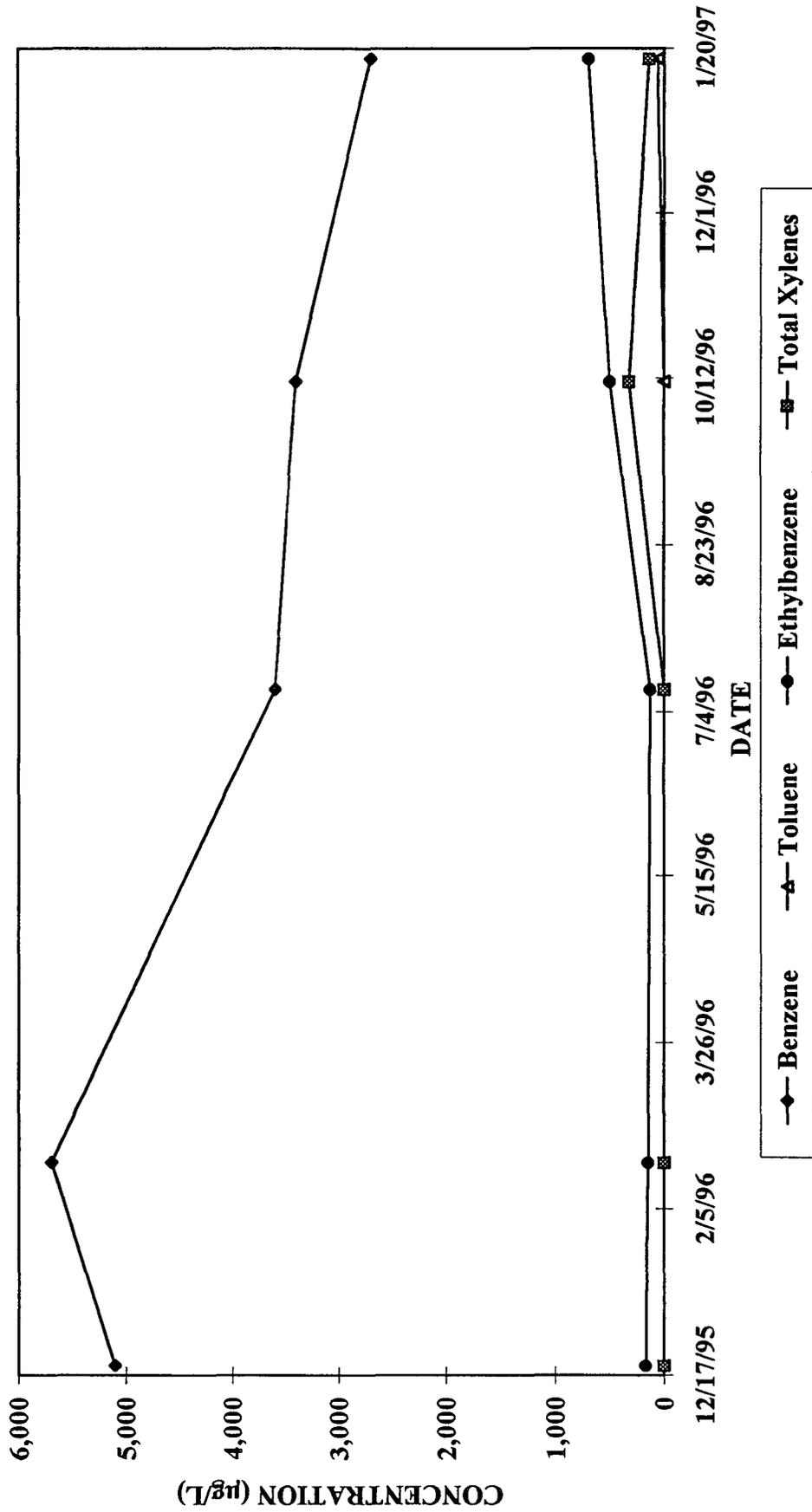
—●— Benzene -△- Toluene —●— Ethylbenzene -■- Total Xylenes

INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-7

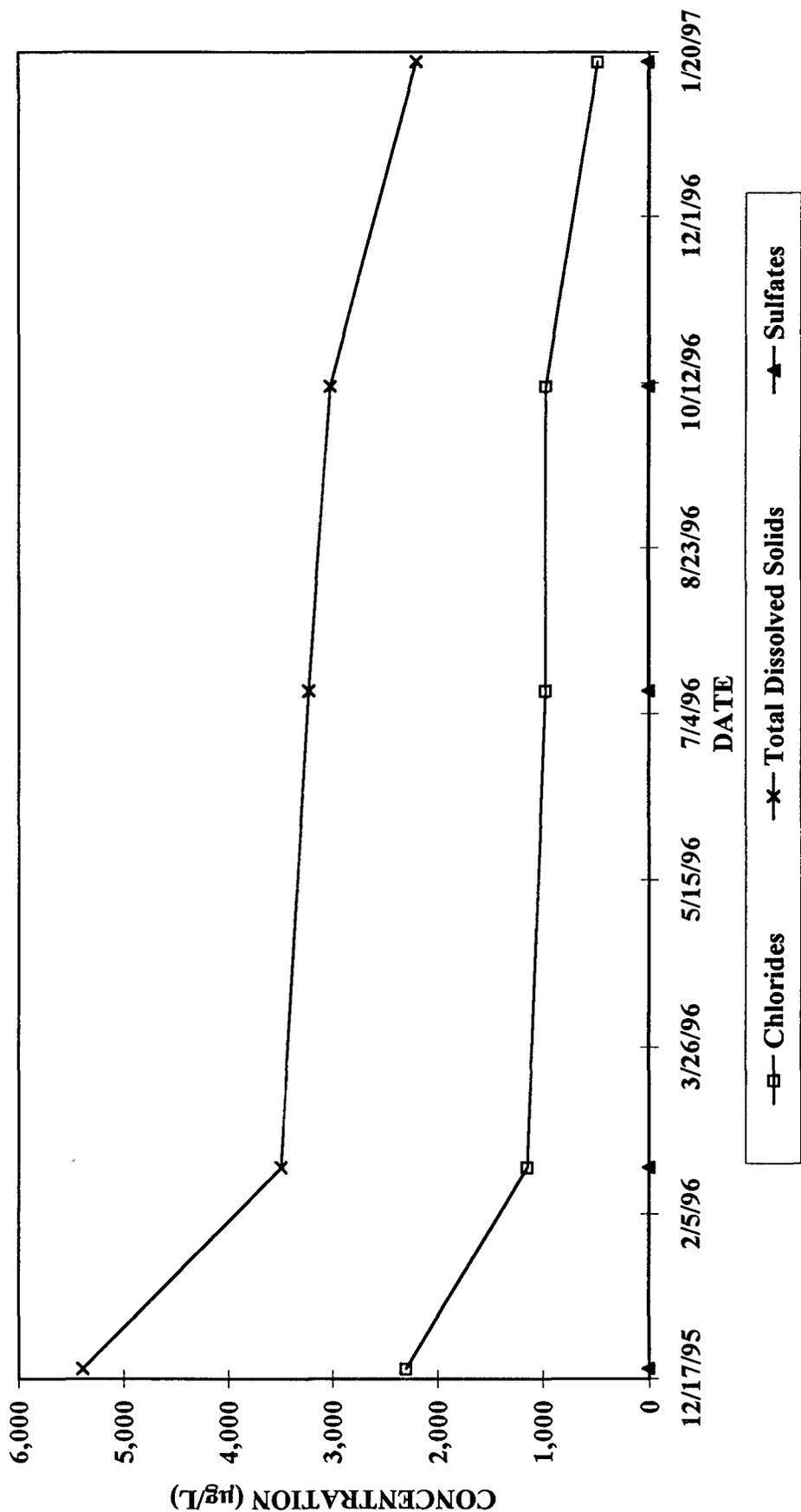


—□— Chlorides —x— Total Dissolved Solids —▲— Sulfate

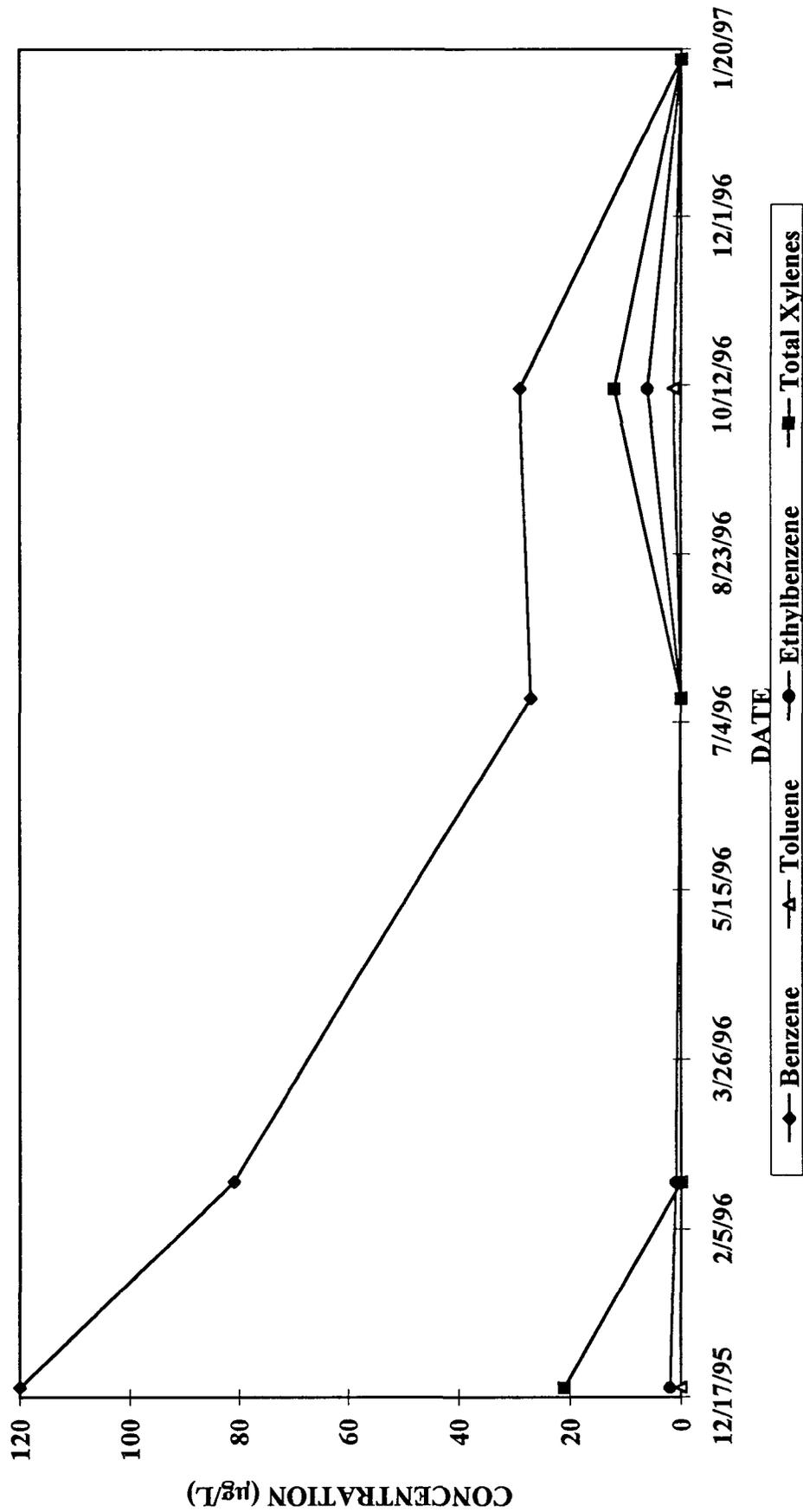
ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13



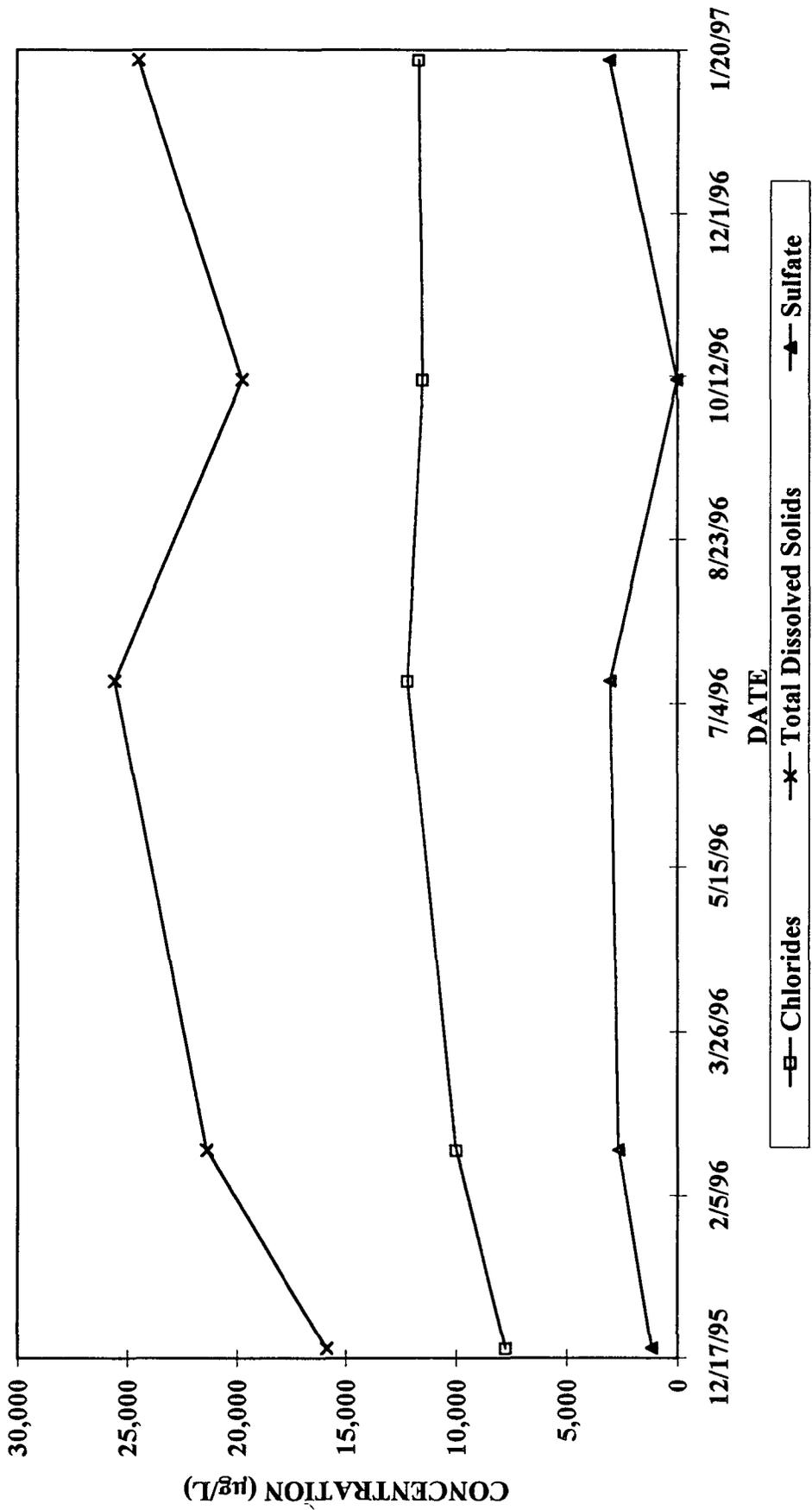
INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-13



ORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14



INORGANIC GROUNDWATER QUALITY vs. TIME
WARREN MONUMENT, NEW MEXICO
WARREN PETROLEUM, INC.
WELL WP-14





ATTACHMENT C





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 96 - 02 - 880

Approved for release by:

COPY

M. Scott Sample
M. Scott Sample, Laboratory Director

Date: 3/6/96

Debbie Proctor
Debbie Proctor, Project Manager

Date: 3/6/96



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 850-0901

CASE NARRATIVE

WORKORDER NO.: 9602880

Southern Petroleum Laboratories (SPL) is pleased to present the results of laboratory analysis to Warren Petroleum Company. Six water samples and one trip blank were received intact at our laboratory on 02/20/96 at a temperature of 4 degrees Celsius. The following is a brief narrative of the laboratory analysis.

The samples were analyzed for BTEX by SW 846 8020 and a variety of cations and anions. There were no deviations from the methods.

All of the quality control data was within acceptable limits for the samples associated with this work order, with the exception of the matrix spike/matrix spike duplicate (MS/MSD) analysis for Total Calcium, Potassium, and Magnesium on sample 9602880-02B, MW#5. The MS/MSD recoveries were higher than the advisory QC limits. However, the recovery of the laboratory control standard was within acceptable limits and the entire analysis is considered to be in control.

Please refer to this project by **9602880** to expedite any further discussions. I will be happy to address any questions or concerns you may have.

SOUTHERN PETROLEUM LABORATORIES

A handwritten signature in cursive script, appearing to read 'Debbie Proctor', is written over a horizontal line.

Debbie Proctor
Project Manager



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-01
 For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #1

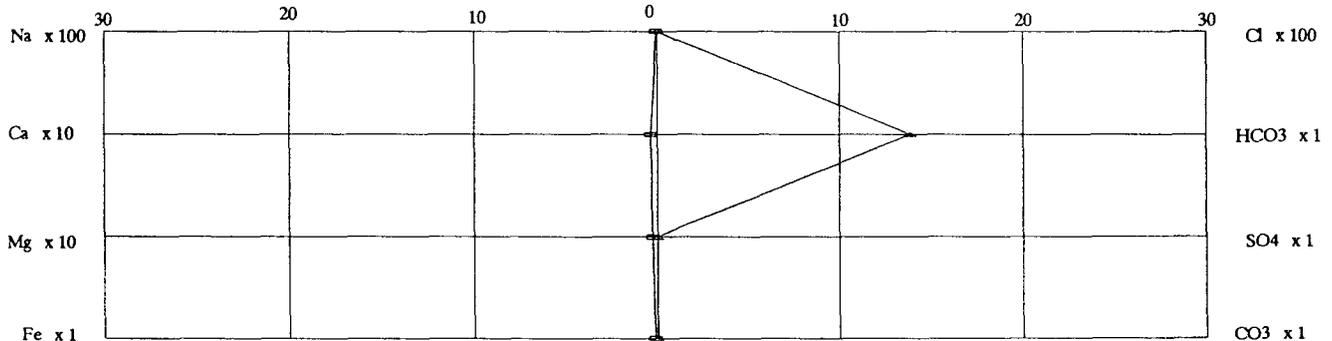
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	176.49	7.68	Total Dissolved Solids	
Calcium, Ca	74.7	3.73	(calc.) mg/L	1164.12
Magnesium, Mg	34.2	2.81	Specific Gravity	
Chloride, Cl	21	0.59	60/60 deg. F.	1.0000
Bicarbonate, CaCO3	848	13.90	Resistivity	
Sulfate SO4	0	0.00	(Mohm-cm) 75 deg. F.	0.6640
Carbonate, CaCO3	0	0.00	pH	
Iron, Fe(Total)	4.06	0.15	pH units	7.25
Barium, Ba	1.67	0.02		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-02

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #5

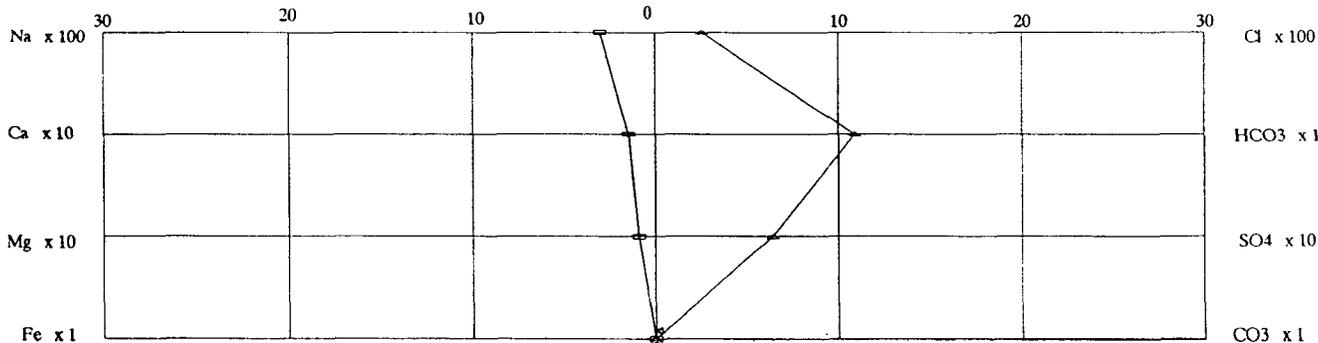
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 13:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	6978.54	303.55	Total Dissolved Solids (calc.) mg/L	20201.66
Calcium, Ca	295	14.72		
Magnesium, Mg	112	9.21		
Chloride, Cl	9000	253.88	Specific Gravity 60/60 deg. F.	1.0100
Bicarbonate, CaCO ₃	664	10.88		
Sulfate SO ₄	3090	64.33		
Carbonate, CaCO ₃	0	0.00	Resistivity (Mohm-cm) 75 deg. F.	0.0490
Iron, Fe(Total)	0.09	0.00		
Barium, Ba	0.03	0.00		
			pH pH units	7.11

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-03

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #6

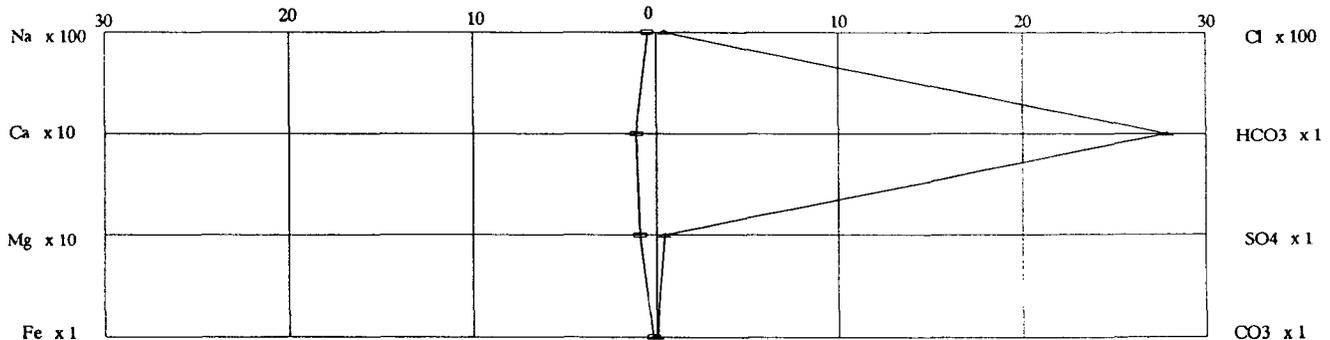
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	1133.2	49.29	Total Dissolved Solids (calc.) mg/L	4718.46
Calcium, Ca	228	11.38	Specific Gravity 60/60 deg. F.	1.0020
Magnesium, Mg	113	9.30	Resistivity (Mohm-cm) 75 deg. F.	0.1540
Chloride, Cl	1500	42.31	pH	
Bicarbonate, CaCO ₃	1700	27.86	pH units	7.37
Sulfate SO ₄	21	0.44		
Carbonate, CaCO ₃	0	0.00		
Iron, Fe(Total)	5.53	0.20		
Barium, Ba	0.73	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-04

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #7

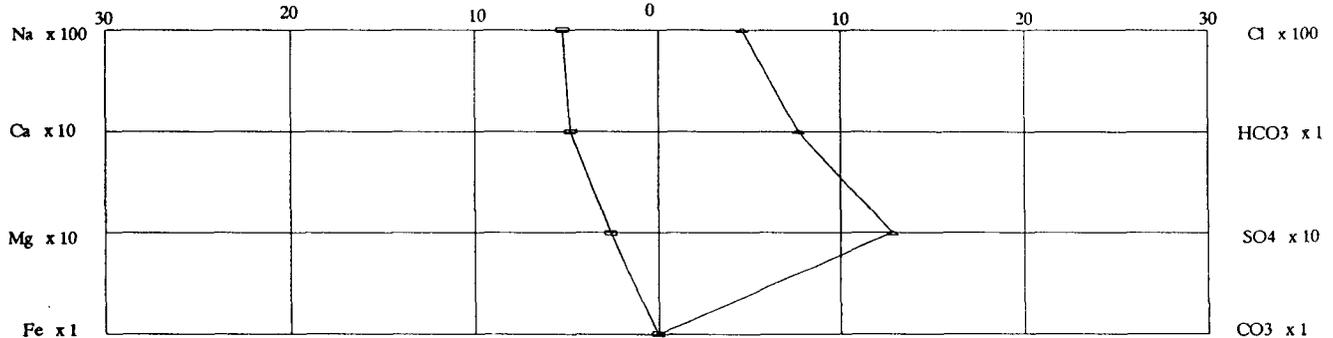
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	12029.18	523.24	Total Dissolved Solids (calc.) mg/L	36586.83
Calcium, Ca	964	48.10		
Magnesium, Mg	320	26.32		
Chloride, Cl	16500	465.44	Specific Gravity 60/60 deg. F.	1.0250
Bicarbonate, CaCO ₃	470	7.70		
Sulfate SO ₄	6160	128.25		
Carbonate, CaCO ₃	0	0.00	Resistivity (Mohm - cm) 75 deg. F.	0.0230
Iron, Fe(Total)	1.58	0.06		
Barium, Ba	0.07	0.00	pH pH units	6.92

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8980 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-05

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #13

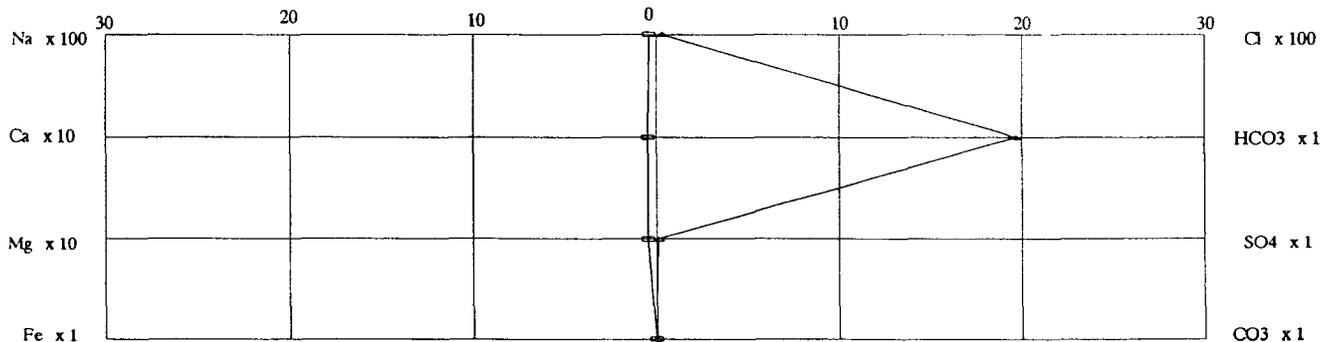
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 14:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	973.14	42.33	Total Dissolved Solids (calc.) mg/L	3494.65
Calcium, Ca	97.2	4.85		
Magnesium, Mg	57.6	4.74		
Chloride, Cl	1150	32.44	Specific Gravity 60/60 deg. F.	0.9990
Bicarbonate, CaCO ₃	1200	19.67		
Sulfate SO ₄	5	0.10		
Carbonate, CaCO ₃	0	0.00	Resistivity (Mohm - cm) 75 deg. F.	0.1980
Iron, Fe(Total)	1.49	0.05		
Barium, Ba	2.22	0.03	pH pH units	7.19

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-06

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #14

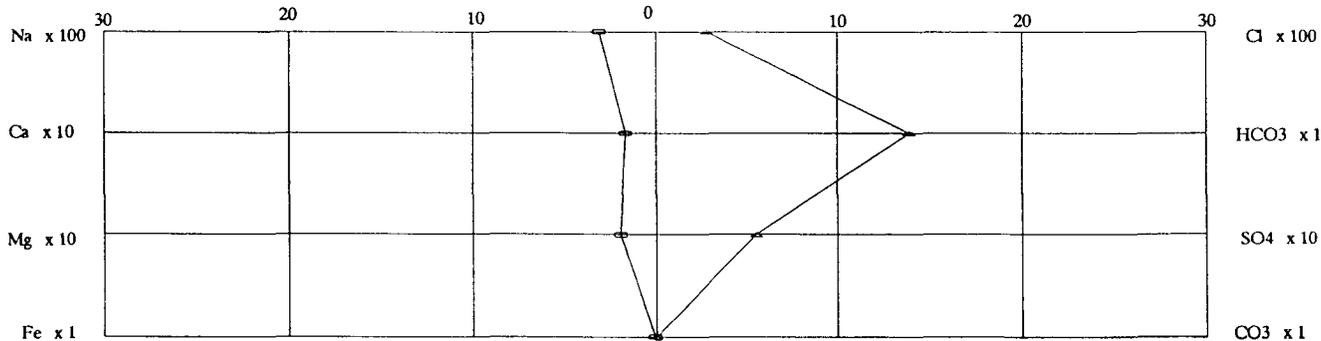
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 14:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	7217.5	313.94	Total Dissolved Solids (calc.) mg/L	21366.21
Calcium, Ca	334	16.67		
Magnesium, Mg	236	19.41		
Chloride, Cl	10000	282.09	Specific Gravity 60/60 deg. F.	1.0140
Bicarbonate, CaCO ₃	849	13.91		
Sulfate SO ₄	2670	55.59		
Carbonate, CaCO ₃	0	0.00	Resistivity (Mohm-cm) 75 deg. F.	0.0320
Iron, Fe(Total)	1.62	0.06		
Barium, Ba	0.09	0.00		
			pH pH units	6.91

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	6300	1000 P	µg/L
TOLUENE	ND	1000 P	µg/L
ETHYLBENZENE	ND	1000 P	µg/L
TOTAL XYLENE	ND	1000 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	6300		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene 82
 4-Bromofluorobenzene 68

METHOD 8020A ***

Analyzed by: YN
 Date: 03/01/96

Barium, Total 1.67 0.005 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

Calcium, Total 74.7 0.1 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

Iron, Total 4.06 0.02 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	4	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	34.2	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	21	1	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	848	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	176	1	mg/L	
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.25		pH units	
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.664		Mohms-cm	
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	ND	1	mg/L	
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.000			
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	1164	1	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	140	10 P	µg/L
TOLUENE	ND	10 P	µg/L
ETHYLBENZENE	ND	10 P	µg/L
TOTAL XYLENE	ND	10 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	140		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

83
 76

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.028

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

295

0.1

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

0.09

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 13:30:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	62	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	112	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	9000	500	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LC Date: 02/21/96	664	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	6978	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.11		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.049		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	3090	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.010		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	20202	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	610	500 P	µg/L
TOLUENE	ND	500 P	µg/L
ETHYLBENZENE	630	500 P	µg/L
TOTAL XYLENE	ND	500 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1240		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	82		
4-Bromofluorobenzene	80		
METHOD 8020A *** Analyzed by: YN Date: 03/01/96			
Barium, Total	0.734	0.005	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			
Calcium, Total	228	0.1	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			
Iron, Total	5.53	0.02	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	17	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	113	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	1500	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	1700	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	1133	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.37		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.154		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	21	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.002		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	4718	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

76

4-Bromofluorobenzene

80

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.074

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

964

0.5

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

1.58

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	142	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	320	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	16500	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	470	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	12029	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	6.92		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.023		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	6160	500	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.025		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	36587	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
BENZENE	5700	50 P	µg/L	
TOLUENE	ND	50 P	µg/L	
ETHYLBENZENE	150	50 P	µg/L	
TOTAL XYLENE	ND	50 P	µg/L	
TOTAL VOLATILE AROMATIC HYDROCARBONS	5850		µg/L	
Surrogate		% Recovery		
1,4-Difluorobenzene		97		
4-Bromofluorobenzene		86		
METHOD 8020A ***				
Analyzed by: YN				
Date: 03/01/96				
Barium, Total	2.22	0.005	mg/L	
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				
Calcium, Total	97.2	0.1	mg/L	
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				
Iron, Total	1.49	0.02	mg/L	
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	8	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	57.6	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	1150	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	1200	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #13

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 14:00:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	973	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.19		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.198		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	5	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	0.999		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	3495	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77053
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	81	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	82		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

90

4-Bromofluorobenzene

101

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.088

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

334

0.1

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

1.62

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	58	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	236	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	10000	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	849	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 14:30:00
DATE RECEIVED: 02/20/96

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	7218	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	6.91		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.032		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	2670	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.014		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	21366	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



Certificate of Analysis No. H9-9602880-07

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/05/96
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENE, and TOTAL VOLATILE AROMATIC HYDROCARBONS.

Surrogate % Recovery
1,4-Difluorobenzene 99
4-Bromofluorobenzene 60
METHOD 8020A ***
Analyzed by: YN
Date: 03/01/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION



Matrix: Aqueous
Units: µg/L

Batch Id: HP_R960301012700

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	55	110	62 - 121
Toluene	ND	50	52	104	66 - 136
EthylBenzene	ND	50	46	92.0	70 - 136
O Xylene	ND	50	53	106	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

M A T R I X S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	20	21	105	21	105
TOLUENE	ND	20	21	105	20	100	4.88	26	56 - 134
ETHYLBENZENE	ND	20	17	85.0	17	85.0	0	38	61 - 128
O XYLENE	ND	20	19	95.0	19	95.0	0	29	40 - 130
M & P XYLENE	ND	40	39	97.5	38	95.0	2.60	20	43 - 152

Analyst: YN

Sequence Date: 03/01/96

SPL ID of sample spiked: 9602B39-04A

Sample File ID: R__160.TX0

Method Blank File ID:

Blank Spike File ID: R__153.TX0

Matrix Spike File ID: R__156.TX0

Matrix Spike Duplicate File ID: R__157.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $((<1> - <2>) / <3>) \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $|(<4> - <5> | / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9602A23-03A 9602A23-01A 9602B37-02A 9602A09-05A
 9602B39-02A 9602B39-03A 9602B39-01A 9602880-06A
 9602977-02A 9602880-02A 9602880-05A 9602880-03A
 9602880-01A 9602B38-02A 9602A52-02A 9602A52-01A
 9602B38-01A 9602880-07A 9602B39-04A

QC Officer



Matrix: Aqueous
Units: µg/L

Batch Id: HP_R960301044600

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	33	66.0	62 - 121
Toluene	ND	150	120	80.0	66 - 136
EthylBenzene	ND	50	41	82.0	70 - 136
O Xylene	ND	100	98	98.0	74 - 134
M & P Xylene	ND	200	190	95.0	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	50	60	120	60	120
TOLUENE	6.2	150	180	116	170	109	6.22	26	56 - 134
ETHYLBENZENE	2.1	50	53	102	53	102	0	38	61 - 128
O XYLENE	10	100	130	120	120	110	8.70	29	40 - 130
M & P XYLENE	11	100	140	129	130	119	8.06	20	43 - 152

Analyst: YN

Sequence Date: 03/01/96

SPL ID of sample spiked: 9602940-01A

Sample File ID: R__188.TX0

Method Blank File ID:

Blank Spike File ID: R__182.TX0

Matrix Spike File ID: R__185.TX0

Matrix Spike Duplicate File ID: R__186.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $[(<4> - <5>) / ((<4> + <5>) \times 0.5)] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9602880-04A 9602940-03A 9602940-04A 9602940-05A
9602940-02A 9602940-08A 9602940-07A 9602940-06A
9602976_01A 9602976-06A 9602976-05A 9602976-02A
9602976-07A 9602976-08A 9602940-01A

QC Officer

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: DO

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Checked by: *[Signature]*
 Date: 02/22/96

Date: 022296 Time: 0851

File Name: 022296Q1

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.918	96	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.620	98	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron	ND	2.00	1.902	95	1.60	2.40
Potassium	ND	20.00	18.580	93	16.00	24.00
Magnesium	ND	20.00	19.720	99	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

96-02-880 01B-06B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 96-02-880 02B

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike		QC	
			Result	Recovery	Result	Recovery	% Recovery	RPD %	Limits %			
Silver												
Aluminum												
Arsenic												
Barium	0.0283	1.0	0.9976	97	0.9921	96	80	120	0.6		20.0	
Beryllium												
Calcium	295.3	10.0	318.7	234 *	313.3	180 *	80	120	26.1	**	20.0	
Cadmium												
Cobalt												
Chromium												
Copper												
Iron	0.0899	1.0	1.174	108	1.017	93	80	120	15.6	**	20.0	
Potassium	62.5	10.0	79.96	175 *	76.02	135 *	80	120	25.4	**	20.0	
Magnesium	112.1	10.0	127.7	156 *	124.7	126 *	80	120	21.3	**	20.0	
Manganese												
Sodium												
Nickel												
Lead												
Antimony												
Selenium												
Thallium												
Vanadium												
Zinc												

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

[Signature]
 QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/22/96
 Analyzed on: 02/21/96
 Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 METHOD 325.3 *

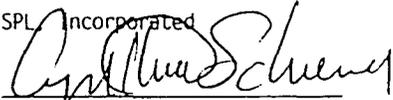
SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9602780-03A	ND	50.00	102	102	0	93. - 109	2.7

-9602780

Samples in batch:

9602780-03A 9602782-03A 9602853-04A 9602880-01C
 9602880-02C 9602880-03C 9602880-04C 9602880-05C
 9602880-06C

COMMENTS:

SPL Incorporated

 QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/22/96

Analyzed on: 02/21/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	51.60	51.98	101	90 - 110

-9602781

Samples in batch:

9602780-03A 9602782-03A 9602853-04A 9602880-01C
9602880-02C 9602880-03C 9602880-04C 9602880-05C
9602880-06C

COMMENTS:

SPL ID# 9553514-21

SPL Incorporated


QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/21/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9602880-06C	ND	ND	0	2.2

-9602776

Samples in batch:

9602853-04A 9602880-01C 9602880-02C 9602880-03C
9602880-04C 9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/21/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9602880-06C	850	848	0.2	3

-9602775

Samples in batch:

9602853-04A 9602880-01C 9602880-02C 9602880-03C
9602880-04C 9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/20/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
 METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH UNITS	Duplicate Sample pH UNITS	RPD	RPD Max.
9602887-02C	8.39	8.42	0.4	1.0

-9602726

Samples in batch:

9602403-01A 9602880-01C 9602880-02C 9602880-03C
 9602880-04C 9602880-05C 9602880-06C 9602887-02C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9602880-04C	6.91	6.92	0.1	1.0

-9602717

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9602880-02C	0.049	0.049	0	1.0

-9602716

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS :

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/20/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9602880-02C	0.049	0.049	0	1.0

-9602728

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96
Analyzed on: 02/20/96
Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9602880-05C	ND	10.00	99.4	93.8	5.8	79 - 122	11.

-9602720

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	19.93	99.6	90 - 110

-9602721

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL LCS ID#9553514-21

SPL, Incorporated

QC officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
 ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9602880-04C	1.025	1.025	0	1.0

-9602719

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
 9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC officer

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

SPL Workorder No:

9602880

W-04184

page 1 of 2

Analysis Request & Chain of Custody Record

Requested Analysis

Client Name: Worland Petroleum Company
Address/Phone: P.O. Box 67 - 505-393-2823

Client Contact: OSCAR DELBON

Project Name: MOVEMENT NUM

Project Number: 118

Project Location: 11

Invoice To:

SAMPLE ID

DATE

TIME

comp

grab

matrix

bottle

size

pres.

Number of Containers

BTX

MAJOR CATS

MAJOR ANIONS

Intact? Y N

Temp: 4°C

PM review (initial): Q. J. [Signature]

Requested TAT

Special Reporting Requirements

Fax Results Level 3 QC

Raw Data Level 4 QC

Special Detection Limits (specify):

Requested by: OSCAR DELBON

Relinquished by: OSCAR DELBON

Relinquished by: OSCAR DELBON

Relinquished by: OSCAR DELBON

Client/Consultant Remarks: FAX - 505-393-4780

Laboratory remarks:

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	BTX	MAJOR CATS	MAJOR ANIONS	Intact?	Temp	PM review (initial)
MW # 19	2/19/96	1:00 pm			W	V	40	1	3	X			<input checked="" type="checkbox"/>	4°C	[Signature]
MW # 1b	"	1:00 pm			W	P	40	2	1	X	X		<input type="checkbox"/>		
MW # 1c	"	1:00 pm			W	P	40	2	1	X	X		<input type="checkbox"/>		
MW # 5a	"	1:30 pm			W	V	40	1	3	X			<input type="checkbox"/>		
MW # 5b	"	1:30 pm			W	P	1	2	1	X	X		<input type="checkbox"/>		
MW # 5c	"	1:30 pm			W	P	1	2	1	X	X		<input type="checkbox"/>		
MW # 6a	"	1:00 pm			W	V	40	1	3	X			<input type="checkbox"/>		
MW # 6b	"	1:00 pm			W	P	1	2	1	X	X		<input type="checkbox"/>		
MW # 6c	"	1:00 pm			W	P	1	2	1	X	X		<input type="checkbox"/>		

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868



SPL, Inc.

SPL Workorder No:

4-04185

page 2 of 2

Analysis Request & Chain of Custody Record

Requested Analysis

matrix bottle size pres. Number of Containers

Client Name: Wileen Petroleum Company
Address/Phone: P.O. Box 67 - 505-393-2823

Client Contact: OSCAR DECEAN

Project Name: MONUMENT AM 88265

Project Number: #118

Project Location:

Invoice To:

SAMPLE ID

DATE

TIME

comp

grab

W=water S=soil
SL=sludge O=other:

P=plastic A=amber glass
G=glass V=vial

1=1 liter 4=4oz 40=vial
8=8oz 16=16oz

1=HCl 2=HNO3
3=H2SO4 O=other:

Requested Analysis

Intact? Y N

Temp: 4

MW # 79

2/19/96

10:00 AM

V

W

V

40

1

3

X

X

X

MW # 75

"

10:00 AM

V

W

P

1

2

1

X

X

X

MW # 72

"

10:00 AM

V

W

P

1

46

1

3

X

X

X

MW # 139

"

2:00 PM

V

W

V

1

2

1

X

X

X

MW # 136

"

2:00 PM

V

W

P

1

2

1

X

X

X

MW # 13C

"

2:00 PM

V

W

P

1

40

1

3

X

X

X

MW # 14A

"

2:30 PM

V

W

V

1

2

1

X

X

X

MW # 14B

"

2:30 PM

V

W

P

1

2

1

X

X

X

MW # 14C

"

2:30 PM

V

W

P

1

1

1

X

X

X

Client/Consultant Remarks: FAK 505-393-4788

Laboratory remarks:

Intact? Y N

Requested TAT

Special Reporting Requirements

Fax Results

Level 3 QC

Raw Data

Level 4 QC

Special Detection Limits (specify):

PM review (initial):

24hr 72hr

48hr Standard

Other

1. Relinquished by Sampler: OSCAR DECEAN
3. Relinquished by: OSCAR DECEAN
5. Relinquished by:

date: 2-19-96
time: 4:00 PM
date: 2/20/96
time: 10:30

2. Received by: FAK EXPRESS
4. Received by: [Signature]
6. Received by Laboratory:

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

479 Hughes Drive, Traverse City, MI 49684 (616) 947-5777

1511 E. Orangefhorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 2/20/96	Time: 10:30
---	---

SPL Sample ID:

9602880

		<u>Yes</u>	<u>No</u>
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	830971314
		Other:	
11	Method of sample disposal:	SPL Disposal	
		HOLD	
		Return to Client	

Name: Yveta Brown	Date: 2/20/96
---	---





David Quate

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 96-06-D01

Approved for Release by:

Debbie Proctor
Debbie Proctor, Project Manager

7/12/96
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

COPY



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-01

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D & E

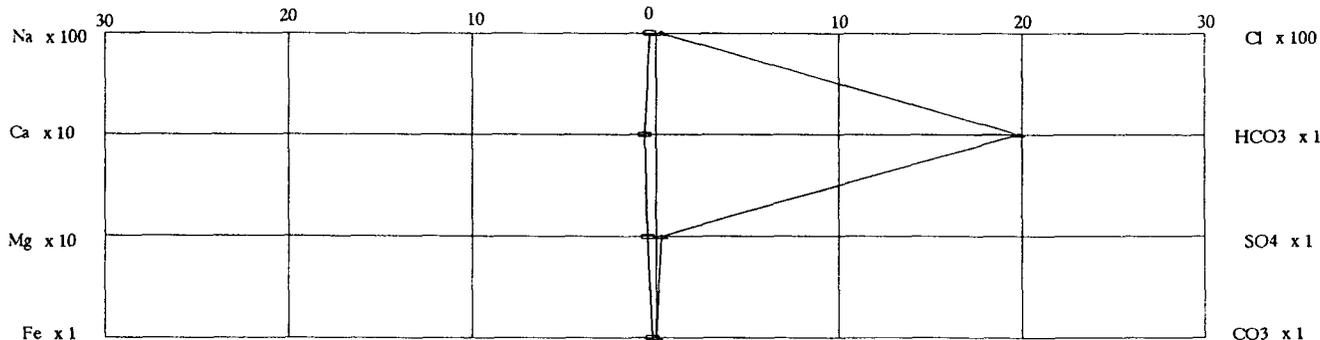
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	830.87	36.14	Total Dissolved Solids	
Calcium, Ca	127.00	6.34	(calc.) mg/L	3228.92
Magnesium, Mg	56.80	4.67		
Chloride, Cl	975.00	27.50	Specific Gravity	
Bicarbonate, CaCO ₃	1210.00	19.83	60/60 deg. F.	1.00
Sulfate SO ₄	13.00	0.27		
Carbonate, CaCO ₃	0.00	0.00	Resistivity	
Iron, Fe(Total)	5.97	0.21	(Mohm-cm) 75 deg. F.	0.2030
Barium, Ba	2.28	0.03		
			pH	
			pH units	7.47

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-02

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A B C D & E

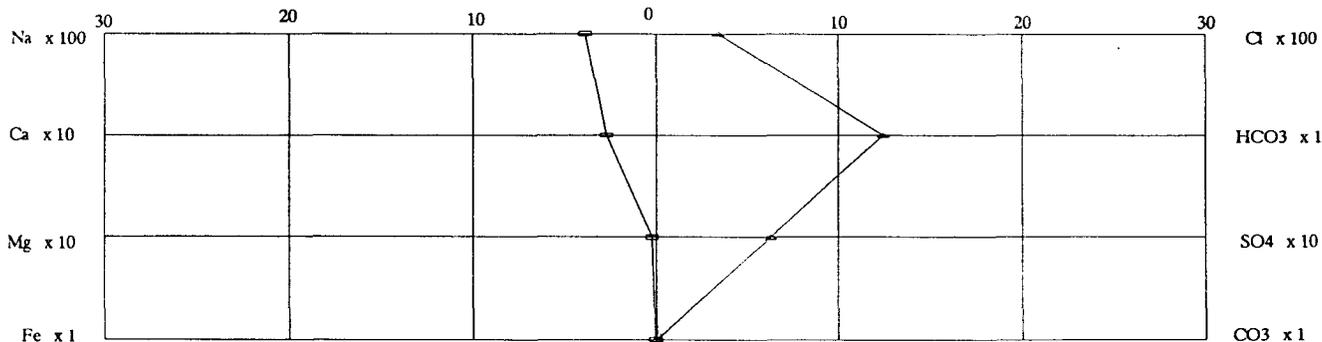
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:30:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	8923.48	388.15	Total Dissolved Solids (calc.) mg/L	25570.14
Calcium, Ca	554.00	27.64		
Magnesium, Mg	29.70	2.44		
Chloride, Cl	12200.00	344.15	Specific Gravity 60/60 deg. F.	1.01
Bicarbonate, CaCO ₃	760.00	12.46		
Sulfate SO ₄	3040.00	63.29		
Carbonate, CaCO ₃	0.00	0.00	Resistivity (Mohm-cm) 75 deg. F.	0.0280
Iron, Fe(Total)	1.88	0.07		
Barium, Ba	0.08	0.00		
			pH pH units	7.32

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-03

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D & E

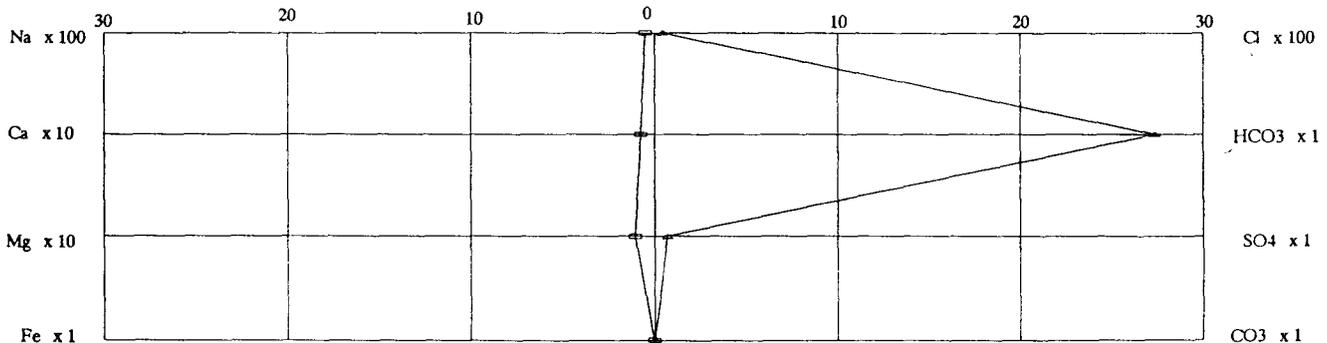
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 11:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	1203.02	52.33	Total Dissolved Solids	
Calcium, Ca	150.00	7.49	(calc.) mg/L	4724.24
Magnesium, Mg	130.00	10.69	Specific Gravity	
Chloride, Cl	1520.00	42.88	60/60 deg. F.	1.01
Bicarbonate, CaCO ₃	1670.00	27.37	Resistivity	
Sulfate SO ₄	34.00	0.71	(Mohm-cm) 75 deg. F.	0.1370
Carbonate, CaCO ₃	0.00	0.00	pH	
Iron, Fe(Total)	0.77	0.03	pH units	7.74
Barium, Ba	0.45	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-04

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A B C D & E

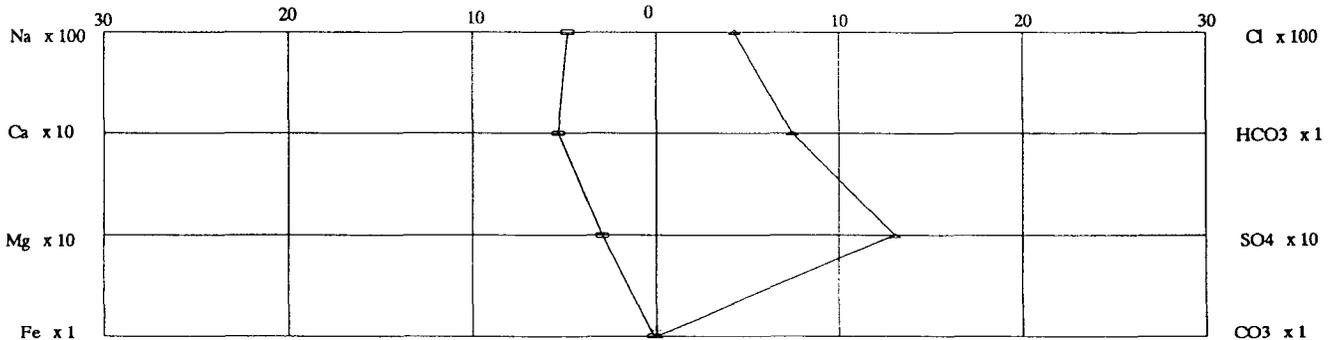
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 10:45:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	11052.15	480.74	Total Dissolved Solids (calc.) mg/L	34521.92
Calcium, Ca	1070.00	53.39		
Magnesium, Mg	358.00	29.45	Specific Gravity	
Chloride, Cl	15200.00	428.77	60/60 deg. F.	1.03
Bicarbonate, CaCO ₃	452.00	7.41		
Sulfate SO ₄	6270.00	130.54	Resistivity	
Carbonate, CaCO ₃	0.00	0.00	(Mohm-cm) 75 deg. F.	0.0200
Iron, Fe(Total)	3.62	0.13		
Barium, Ba	0.15	0.00	pH	
			pH units	6.90

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-05

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A B C D & E

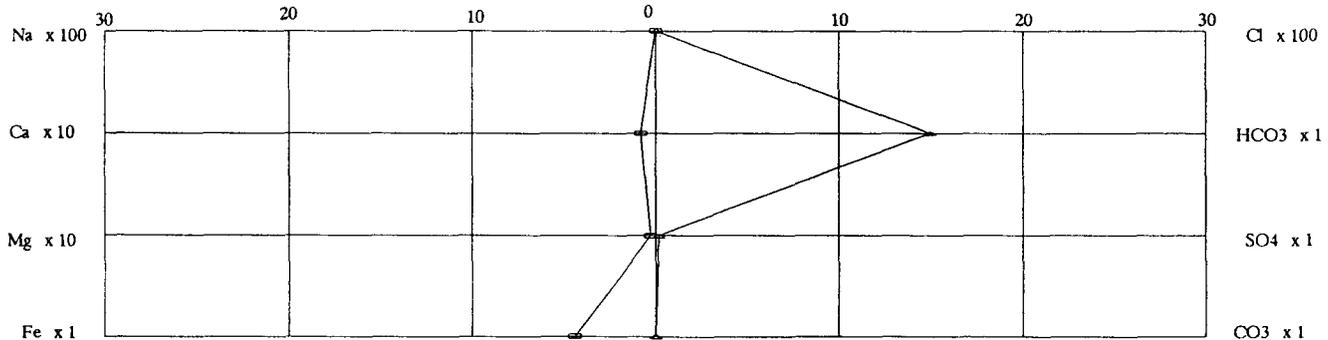
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:30:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	34.24	1.49	Total Dissolved Solids (calc.) mg/L	1368.73
Calcium, Ca	167.00	8.33	Specific Gravity 60/60 deg. F.	1.00
Magnesium, Mg	35.10	2.89	Resistivity (Mohm-cm) 75 deg. F.	0.5330
Chloride, Cl	78.00	2.20	pH	
Bicarbonate, CaCO ₃	913.00	14.96	pH units	7.30
Sulfate SO ₄	9.00	0.19		
Carbonate, CaCO ₃	0.00	0.00		
Iron, Fe(Total)	124.00	4.44		
Barium, Ba	1.39	0.02		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9606D01-06

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

Attn: Oscar Deleon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D & E

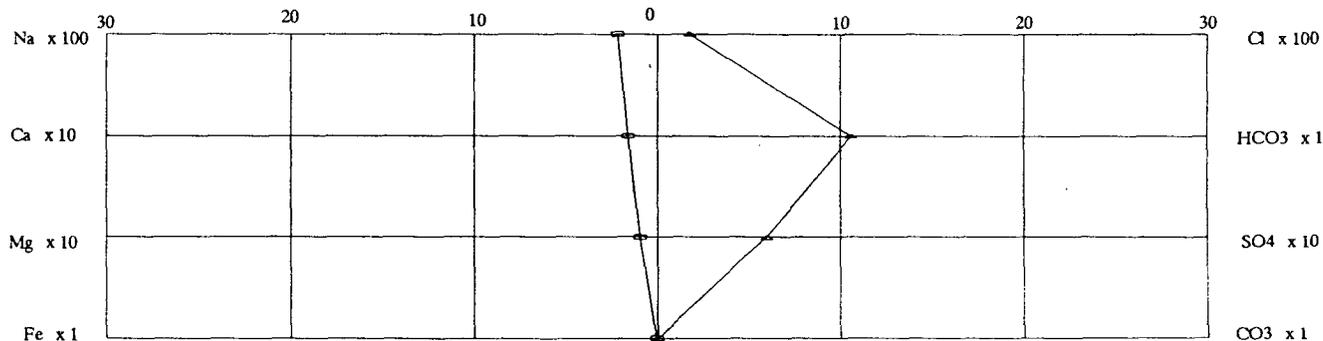
PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	5049.55	219.64	Total Dissolved Solids	
Calcium, Ca	324.00	16.17	(calc.) mg/L	15320.64
Magnesium, Mg	117.00	9.62		
Chloride, Cl	6250.00	176.30	Specific Gravity	
Bicarbonate, CaCO ₃	646.00	10.59	60/60 deg. F.	1.01
Sulfate SO ₄	2880.00	59.96		
Carbonate, CaCO ₃	0.00	0.00	Resistivity	
Iron, Fe(Total)	1.96	0.07	(Mohm-cm) 75 deg. F.	0.0430
Barium, Ba	0.14	0.00		
			pH	
			pH units	7.13

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT		UNITS
BENZENE	3600	10 P		µg/L
TOLUENE	ND	10 P		µg/L
ETHYLBENZENE	130	10 P		µg/L
TOTAL XYLENE	ND	10 P		µg/L
TOTAL BTEX	3730			µg/L
Surrogate		% Recovery		
1,4-Difluorobenzene			107	
4-Bromofluorobenzene			87	
METHOD 5030/8020 ***				
Analyzed by: fab				
Date: 07/04/96				
Barium, Total	2.28	0.005		mg/L
METHOD 6010A ***				
Analyzed by: JM				
Date: 07/11/96				
Calcium, Total	127	0.1		mg/L
METHOD 6010A ***				
Analyzed by: JM				
Date: 07/11/96				
Iron, Total	5.97	0.02		mg/L
METHOD 6010A ***				
Analyzed by: JM				
Date: 07/11/96				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8380 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	8	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	56.8	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96	07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96	975	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	1210	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:00:00
 DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		831	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 06/27/96		7.47		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 06/27/96		0.203		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 07/09/96		13	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: LC Date: 07/02/96		1.00		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		3229	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:30:00
 DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96		61	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96		297	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96		07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96		12200	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96		ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96		760	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:30:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 07/11/96	8923	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 06/27/96	7.32		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 06/27/96	0.028		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 07/09/96	3040	250	mg/L
Specific Gravity ASTM D1429 Analyzed by: LC Date: 07/02/96	1.01		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 07/11/96	25570	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #6 A B C D & E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 06/26/96 11:00:00
DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	280	5 P	µg/L
TOLUENE	25	5 P	µg/L
ETHYLBENZENE	450	5 P	µg/L
TOTAL XYLENE	42	5 P	µg/L
TOTAL BTEX	797		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

93

4-Bromofluorobenzene

93

METHOD 5030/8020 ***

Analyzed by: YN

Date: 07/06/96

Barium, Total

0.451

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 07/11/96

Calcium, Total

150

0.1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 07/11/96

Iron, Total

0.77

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 07/11/96

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 11:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	16	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	130	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96	07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96	1520	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	1670	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 11:00:00
 DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		1203	1	mg/L
	METHOD CALCULATION			
	Analyzed by: DAM			
	Date: 07/11/96			
pH		7.74		pH units
	METHOD 150.1 *			
	Analyzed by: LC			
	Date: 06/27/96			
Resistivity		0.137		Mohms-cm
	EPA 120.1 *			
	Analyzed by: LC			
	Date: 06/27/96			
Sulfate		34	2	mg/L
	METHOD 375.4 *			
	Analyzed by: ST			
	Date: 07/09/96			
Specific Gravity		1.00		
	ASTM D1429			
	Analyzed by: LC			
	Date: 07/02/96			
Total Dissolved Solids		4724	1	mg/L
	METHOD CALCULATION			
	Analyzed by: DAM			
	Date: 07/11/96			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 10:45:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	1.1	1 P	µg/L
TOTAL BTEX	1.1		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene 90
 4-Bromofluorobenzene 87

METHOD 5030/8020 ***

Analyzed by: fab
 Date: 07/03/96

Barium, Total 0.148 0.005 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 07/11/96

Calcium, Total 1070 1 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 07/11/96

Iron, Total 3.62 0.02 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 07/11/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A B C D & E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 06/26/96 10:45:00
DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	116	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	358	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96	07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96	15200	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	452	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A B C D & E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 06/26/96 10:45:00
DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		11052	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 06/27/96		6.90		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 06/27/96		0.020		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 07/09/96		6270	500	mg/L
Specific Gravity ASTM D1429 Analyzed by: LC Date: 07/02/96		1.03		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		34522	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:30:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	2500	10 P	µg/L
TOLUENE	ND	10 P	µg/L
ETHYLBENZENE	60	10 P	µg/L
TOTAL XYLENE	58	10 P	µg/L
TOTAL BTEX	2618		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

100
 90

METHOD 5030/8020 ***
 Analyzed by: YN
 Date: 07/05/96

Barium, Total 1.39 0.005 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

Calcium, Total 167 0.1 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

Iron, Total 124 0.02 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #1 A B C D & E

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 06/26/96 12:30:00
DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96		7	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96		35.1	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96		07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96		78	1	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96		ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96		913	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 3880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 12:30:00
 DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		34	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 06/27/96		7.30		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 06/27/96		0.533		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 07/09/96		9	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: LC Date: 07/02/96		0.999		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 07/11/96		1369	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	180	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL BTEX	180		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	100
4-Bromofluorobenzene	93

METHOD 5030/8020 ***
 Analyzed by: fab
 Date: 07/03/96

Barium, Total	0.136	0.005	mg/L
---------------	-------	-------	------

METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

Calcium, Total	324	0.1	mg/L
----------------	-----	-----	------

METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

Iron, Total	1.96	0.02	mg/L
-------------	------	------	------

METHOD 6010A ***
 Analyzed by: JM
 Date: 07/11/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:00:00
 DATE RECEIVED: 06/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	52	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 07/11/96	117	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AM Date: 07/03/96	07/03/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 07/03/96	6250	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 06/27/96	646	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9606D01-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 07/11/96

PROJECT: 2nd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D & E

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 06/26/96 13:00:00
 DATE RECEIVED: 06/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		5050	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 07/11/96				
pH		7.13		pH units
METHOD 150.1 *				
Analyzed by: LC				
Date: 06/27/96				
Resistivity		0.043		Mohms-cm
EPA 120.1 *				
Analyzed by: LC				
Date: 06/27/96				
Sulfate		2880	250	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 07/09/96				
Specific Gravity		1.01		
ASTM D1429				
Analyzed by: LC				
Date: 07/02/96				
Total Dissolved Solids		15321	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 07/11/96				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION



Matrix: Aqueous
Units: ug/L

Batch Id: VARD960705074100

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	52	104	62 - 121
Toluene	ND	50	53	106	66 - 136
EthylBenzene	ND	50	52	104	70 - 136
O Xylene	ND	50	53	106	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	260	20	290	NC	300	NC
TOLUENE	8	20	28	100	29	105	4.88	26	56 - 134
ETHYLBENZENE	7	20	27	100	28	105	4.88	38	61 - 128
O XYLENE	7	20	28	105	28	105	0	29	40 - 130
M & P XYLENE	24	40	64	100	66	105	4.88	20	43 - 152

Analyst: YN

Sequence Date: 07/05/96

SPL ID of sample spiked: 9607039-01A

Sample File ID: D__819.TX0

Method Blank File ID:

Blank Spike File ID: D__813.TX0

Matrix Spike File ID: D__816.TX0

Matrix Spike Duplicate File ID: D__817.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = ((<1> - <2>) / <3>) x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = | (<4> - <5>) | / ((<4> + <5>) x 0.5) x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9606E54-07A 9606E54-08A 9606E54-09A 9606E54-10A
 9606D01-03A 9606E54-04A 9606E54-02A 9606E54-03A
 9607039-03A 9606E54-11A 9607045-01A 9607045-02A
 9606E54-01A 9607044-01A 9607044-02A 9607044-05A
 9607039-01A 9607039-02A

QC officer



** SPL BATCH QUALITY CONTROL REPORT **
 METHOD 8020***

PAGE HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Matrix: Aqueous
 Units: µg/L

Batch Id: VARD960702202000

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	47	94.0	62 - 121
Toluene	ND	50	53	106	66 - 136
EthylBenzene	ND	50	53	106	70 - 136
O Xylene	ND	50	55	110	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	20	29		143	29
TOLUENE	ND	20	28	139 *	28	139 *	0	26	56 - 134
ETHYLBENZENE	ND	20	27	135 *	27	135 *	0	38	61 - 128
O XYLENE	ND	20	27	134 *	27	134 *	0	29	40 - 130
M & P XYLENE	ND	40	55	137	54	134	2.21	20	43 - 152

Analyst: fab

Sequence Date: 07/02/96

SPL ID of sample spiked: 9606E42-03A

Sample File ID: D__755.TX0

Method Blank File ID:

Blank Spike File ID: D__747.TX0

Matrix Spike File ID: D__750.TX0

Matrix Spike Duplicate File ID: D__751.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $(\langle 1 \rangle - \langle 2 \rangle) / \langle 3 \rangle \times 100$

LCS % Recovery = $(\langle 1 \rangle / \langle 3 \rangle) \times 100$

Relative Percent Difference = $[(\langle 4 \rangle - \langle 5 \rangle) / ((\langle 4 \rangle + \langle 5 \rangle) \times 0.5)] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9606E42-03A 9606E45-05A 9606E45-09A 9606E42-04A
 9606E45-01A 9606E45-08A 9606E44-02A 9606D01-04A
 9606D01-02A 9606E40-01A 9606E40-02A 9606E40-04A
 9606E40-03A 9607105-02A 9607010-01A

QC Officer



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020***

PAGE HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: ug/l

Batch Id: VARD960703050800

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	46	92.0	62 - 121
Toluene	ND	50	53	106	66 - 136
EthylBenzene	ND	50	55	110	70 - 136
O Xylene	ND	50	56	112	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	20	23	115	22	110
TOLUENE	ND	20	23	115	23	115	0	26	56 - 134
ETHYLBENZENE	ND	20	21	105	22	110	4.65	38	61 - 128
O XYLENE	ND	20	22	110	22	110	0	29	40 - 130
M & P XYLENE	ND	40	44	110	44	110	0	20	43 - 152

Analyst: fab

Sequence Date: 07/03/96

SPL ID of sample spiked: 9606E40-05A

Sample File ID: D__783.TX0

Method Blank File ID:

Blank Spike File ID: D__777.TX0

Matrix Spike File ID: D__780.TX0

Matrix Spike Duplicate File ID: D__781.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $(\langle 1 \rangle - \langle 2 \rangle) / \langle 3 \rangle \times 100$

LCS % Recovery = $(\langle 1 \rangle / \langle 3 \rangle) \times 100$

Relative Percent Difference = $(\langle 4 \rangle - \langle 5 \rangle) / ((\langle 4 \rangle + \langle 5 \rangle) \times 0.5) \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9606D01-06A 9607040-01A 9607040-03A 9607051-02A
 9607051-03A 9607059-01A 9607051-01A 9607040-05A
 9607051-05A 9607081-02A 9607081-01A 9606E45-02A
 9606D01-01A 9606D01-05A 9606E54-05A 9606E54-06A
 9606E54-01A 9606E40-05A 9606E40-06A 9606E40-07A

QC Officer



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

PAGE **HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N960702063600

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	44	88.0	20 - 110
Benzene	ND	50	41	82.0	62 - 121
Toluene	ND	50	43	86.0	66 - 136
EthylBenzene	ND	50	46	92.0	70 - 136
O Xylene	ND	50	48	96.0	74 - 134
M & P Xylene	ND	100	100	100	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	ND	20	25		125	24
BENZENE	ND	20	24	120	24	120	0	25	39 - 150
TOLUENE	ND	20	23	115	24	120	4.26	26	56 - 134
ETHYLBENZENE	ND	20	23	115	25	125	8.33	38	61 - 128
O XYLENE	ND	20	24	120	24	120	0	29	40 - 130
M & P XYLENE	ND	40	50	125	50	125	0	20	43 - 152

Analyst: fab

Sequence Date: 07/02/96

SPL ID of sample spiked: 9606E08-01A

Sample File ID: N__123.TX0

Method Blank File ID:

Blank Spike File ID: N__115.TX0

Matrix Spike File ID: N__118.TX0

Matrix Spike Duplicate File ID: N__119.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $\frac{(\langle 1 \rangle - \langle 2 \rangle)}{\langle 3 \rangle} \times 100$

LCS % Recovery = $\frac{(\langle 1 \rangle / \langle 3 \rangle)}{\langle 3 \rangle} \times 100$

Relative Percent Difference = $\frac{|\langle 4 \rangle - \langle 5 \rangle|}{[(\langle 4 \rangle + \langle 5 \rangle) \times 0.5]} \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9606E08-01A 9606E01-08A 9606E01-10A 9606E01-11A
 9606E01-12A 9606E01-14A 9606E08-02A 9606E08-03A
 9606E15-03A 9606E15-01A 9606D01-07A 9606E15-02A
 9606E52-01A 9606E52-03A 9606E52-02A 9606E01-09A
 9606D50-04A 9606E01-13A

QC Officer

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Date: 071196 Time: 0811 File Name: 071196M1

Checked

Q 7/11/96

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	2.04	102	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.50	98	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron	ND	2.00	1.99	100	1.60	2.40
Potassium	ND	20.00	21.23	106	16.00	24.00
Magnesium	ND	20.00	19.75	99	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

96-06-D01 01B-06B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 96-06-D56 01A

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery		Spike RPD %	QC Limits %
Silver										
Aluminum										
Arsenic										
Barium	0.646	1.0	1.549	90.3	1.46	81.4	80	120	10.4	20.0
Beryllium										
Calcium	38.99	10.0	48.41	94.2	48.32	93.3	80	120	1.0	20.0
Cadmium										
Cobalt										
Chromium										
Copper										
Iron	2.982	1.0	3.917	93.5	3.914	93.2	80	120	0.3	20.0
Potassium	1.3	10.0	11.64	103.4	10.62	93.2	80	120	10.4	20.0
Magnesium	35.61	10.0	45.43	98.2	45.43	98.2	80	120	0.0	20.0
Manganese										
Sodium										
Nickel										
Lead										
Antimony										
Selenium										
Thallium										
Vanadium										
Zinc										

Elements Bench Spiked: Ca, Mg, Fe
Ca, Mg, Fe X10 DIL

William Schmeel
QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 07/03/96
 Analyzed on: 07/03/96
 Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9606D01-01C	ND	50.00	100	100	0	93. - 109	2.7

-9607102

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
 9606D01-05C 9606D01-06C 9606D54-01C 9606D54-02C
 9606D54-03C 9606D54-04C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 07/03/96

Analyzed on: 07/03/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	51.60	50.48	97.8	90 - 110

-9607103

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
9606D01-05C 9606D01-06C 9606D54-01C 9606D54-02C
9606D54-03C 9606D54-04C 9606D54-05C 9606D85-01I

COMMENTS:

SPL LCS ID# 9553536-18

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/28/96

Analyzed on: 06/27/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9606D01-04C	ND	ND	0	2.2

-9606A73

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
9606D01-05C 9606D01-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/28/96

Analyzed on: 06/27/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9606D01-04C	450	454	0.9	3

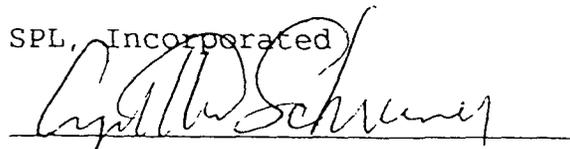
-9606A73

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
9606D01-05C 9606D01-06C

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/28/96

Analyzed on: 06/27/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
 METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9606D11-01D	6.89	6.90	0.1	1.0

-9606A74

Samples in batch:

9606C38-01C 9606D01-01C 9606D01-02C 9606D01-03C
 9606D01-04C 9606D01-05C 9606D01-06C 9606D11-01D

COMMENTS :

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/28/96

Analyzed on: 06/27/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mohms-cm	Duplicate Sample Mohms-cm	RPD	RPD Max.
9606D01-04C	0.020	0.020	0	1.0

-9606A67

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
9606D01-05C 9606D01-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 07/10/96
Analyzed on: 07/09/96
Analyst: SF

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	Ant. Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9606074-01C	ND	10.00	94.9	98.7	3.9	79. - 122	11.

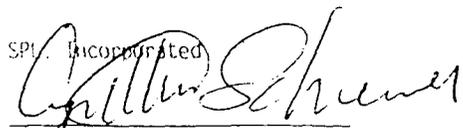
-9607261

Samples in batch:

9606001-01C 9606001-02C 9606001-03C 9606001-04C
9606001-05C 9606001-06C 9606006-01C 9606006-02C
9606006-03C 9606074-01C

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 07/10/96

Analyzed on: 07/09/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
 METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	19.24	96.2	90 - 110

-9607268

Samples in batch:

9606D01-01C	9606D01-02C	9606D01-03C	9606D01-04C
9606D01-05C	9606D01-06C	9606D06-01C	9606D06-02C
9606D06-03C	9606D07-01C	9606D07-02C	9606D07-03C
9606D07-04C	9606D07-05C	9606D54-01C	9606D54-02C
9606D54-03C	9606D54-04C	9606D54-05C	9606D74-01C

COMMENTS:

SPL LCS ID#9553536-18

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 07/03/96

Analyzed on: 07/02/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9606D01-06C	1.010	1.010	0	1.0

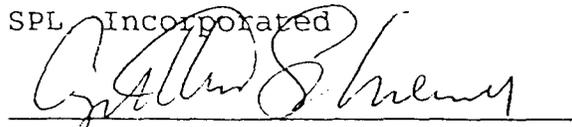
-9607116

Samples in batch:

9606D01-01C 9606D01-02C 9606D01-03C 9606D01-04C
9606D01-05C 9606D01-06C

COMMENTS:

SPL Incorporated


QC Officer

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

960601

4-01867

page 1 of 3

Requested Analysis

matrix bottle size pres.

W=water S=soil SL=sludge O=other: P=plastic A=amber glass G=glass V=vial

1=1 liter 4=4oz 40=vial 8=8oz 16=16oz

1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers

MAJOR CATIONS ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

Client Name: WAREN Petroleum Company

Address/Phone: P.O. Box 67 - 505-393-2823

Client Contact: OSCAR DELGADO

Project Name: 2nd Site Sampling - Analysis

Project Number:

Project Location: MAJUMENT, NM 88265

Invoice To: Stone

SAMPLE ID

DATE

TIME

comp

grab

Matrix

Bottle

Size

Pres.

Containers

CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

MAJOR CATIONS

ANIONS

AMONPH

BTEX

Intact? Y N

Temp: 3°C

PM review (initial):

Special Reporting Requirements

Standard QC

Level 3 QC

Level 4 QC

Raw Data

Special Detection Limits (specify):

Requested TAT

24hr 72hr

48hr Standard

Other

Laboratory remarks:

1. Relinquished by: [Signature]

2. Received by: [Signature]

3. Relinquished by: [Signature]

4. Received by: [Signature]

5. Relinquished by: [Signature]

6. Received by Laboratory: [Signature]

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777

1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9600001

4-01868

page 2 of 3

Requested Analysis

Client Name: Warren Petroleum Company

Address/Phone: P.O. Box 67 SOS-333-2823

Client Contact: OSCAR DELEON

Project Name: 2nd Qtr Analysis

Project Number:

Project Location: MARIANET, WVA 58205

Invoice To: Same

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis	Intact?	Temp:
MW# 6 A	6/26/96	11:00 AM			W	V	40	1		BTEX MAJOR CATE + ANIONS Anion pH	<input checked="" type="checkbox"/>	30C
" B	"	"			"	V	40	1			<input checked="" type="checkbox"/>	
" C	"	"			"	V	40	1			<input checked="" type="checkbox"/>	
" D	"	"			"	P	1	2			<input checked="" type="checkbox"/>	
" E	"	"			"	P	1				<input checked="" type="checkbox"/>	
MW# 7 A	6/26/96	10:45 AM			W	V	40	1			<input checked="" type="checkbox"/>	
" B	"	"			"	V	40	1			<input checked="" type="checkbox"/>	
" C	"	"			"	V	40	1			<input checked="" type="checkbox"/>	
" D	"	"			"	P	1	2			<input checked="" type="checkbox"/>	
" E	"	"			"	P	1				<input checked="" type="checkbox"/>	

Client/Consultant Remarks: Laboratory remarks:

Requested TAT

24hr 72hr
 48hr Standard
 Other

Special Reporting Requirements: Standard QC Level 3 QC Raw Data Level 4 QC Special Detection Limits (specify):

1. Relinquished by Sample: Oscar DeLeon
 3. Relinquished by: Oscar DeLeon
 5. Relinquished by: date

2. Received by: E. Brown 6/27/96 @ 10:00
 4. Received by: date
 6. Received by Laboratory: time

Intact? Y N
 Temp: 30C
 PM review (initial):

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
 459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777
 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
 1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 6/27/96	Time: 1000
---	--

SPL Sample ID:

9606D01

		Yes	No
1	Chain-of-Custody (COC) form is present.	<input checked="" type="checkbox"/>	
2	COC is properly completed.	<input checked="" type="checkbox"/>	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	<input checked="" type="checkbox"/>	
5	If yes, custody seals are intact.	<input checked="" type="checkbox"/>	
6	All samples are tagged or labeled.	<input checked="" type="checkbox"/>	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	<input checked="" type="checkbox"/>	
9	Temperature of samples upon arrival:	3° C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	8277532465
		Other:	
11	Method of sample disposal:	SPL Disposal	
		HOLD	
		Return to Client	

Name: S. West	Date: 6/27/96
---	---





3rd of 1000

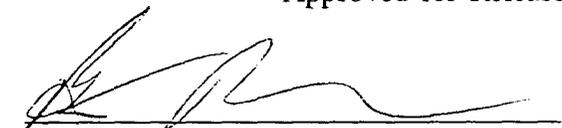
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 96-09-F72

COPY

Approved for Release by:


Brent Barrón, Client Services Supervisor

10/16/96
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 560-0901

Certificate of Analysis No. H9-9609F72-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 10:15:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	1100	10 P	µg/L
TOLUENE	33	10 P	µg/L
ETHYLBENZENE	68	10 P	µg/L
TOTAL XYLENE	280	10 P	µg/L
TOTAL BTEX	1481		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	87
4-Bromofluorobenzene	97

METHOD 5030/8020 ***

Analyzed by: RL
 Date: 10/10/96

Barium, Total	1.11	0.005	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 10/08/96			

Calcium, Total	128	0.1	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 10/08/96			

Iron, Total	33.8	0.02	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 10/08/96			

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 10:15:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	4	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	34.7	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96	10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96	202	5	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	830	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #1 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 10:15:00
DATE RECEIVED: 09/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 10/11/96		205	1	mg/L
pH METHOD 150.1 * Analyzed by: LAR Date: 10/01/96		7.43		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 10/01/96		0.555		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 10/08/96		8	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 10/10/96		1.012		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 10/11/96		1446	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 10:45:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	200	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1.1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL BTEX	201.1		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

97

4-Bromofluorobenzene

87

METHOD 5030/8020 ***

Analyzed by: RL

Date: 10/10/96

Barium, Total

0.31

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Calcium, Total

408

0.1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Iron, Total

3.82

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 10:45:00
 DATE RECEIVED: 09/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96		54	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96		117	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96		10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96		6150	100	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96		ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96		644	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 10:45:00
DATE RECEIVED: 09/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		4847	1	mg/L
	METHOD CALCULATION Analyzed by: DAM Date: 10/11/96			
pH		7.40		pH units
	METHOD 150.1 * Analyzed by: LAR Date: 10/01/96			
Resistivity		0.046		Mohms-cm
	EPA 120.1 * Analyzed by: LAR Date: 10/01/96			
Sulfate		2800	250	mg/L
	METHOD 375.4 * Analyzed by: ST Date: 10/08/96			
Specific Gravity		1.015		
	ASTM D1429 Analyzed by: ST Date: 10/10/96			
Total Dissolved Solids		15024	1	mg/L
	METHOD CALCULATION Analyzed by: DAM Date: 10/11/96			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 09:00:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	280	5 P	µg/L
TOLUENE	ND	5 P	µg/L
ETHYLBENZENE	910	5 P	µg/L
TOTAL XYLENE	500	5 P	µg/L
TOTAL BTEX	1690		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

80
 100

METHOD 5030/8020 ***

Analyzed by: RL
 Date: 10/10/96

Barium, Total 0.61 0.005 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 10/08/96

Calcium, Total 215 0.1 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 10/08/96

Iron, Total 18.7 0.02 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 10/08/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 09:00:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	20	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	129	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96	10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96	1670	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	752	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 09:00:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	857	1	mg/L
pH METHOD 150.1 * Analyzed by: LAR Date: 10/01/96	7.96		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 10/01/96	0.144		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 10/08/96	17	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 10/10/96	1.013		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	3678	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
9880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE 713) 660-0901

Certificate of Analysis No. H9-9609F72-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 08:15:00
DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL BTEX	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

83

4-Bromofluorobenzene

87

METHOD 5030/8020 ***

Analyzed by: RL

Date: 10/10/96

Barium, Total

0.13

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Calcium, Total

1080

1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Iron, Total

3.31

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 08:15:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	121	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	349	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96	10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96	15200	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 10/02/96	448	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 08:15:00
 DATE RECEIVED: 09/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 10/11/96		10790	1	mg/L
pH METHOD 150.1 * Analyzed by: LAR Date: 10/01/96		7.02		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 10/01/96		0.022		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 10/08/96		5720	500	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 10/10/96		1.033		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 10/11/96		33712	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 12:15:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	3400	50 P	µg/L
TOLUENE	ND	50 P	µg/L
ETHYLBENZENE	500	50 P	µg/L
TOTAL XYLENE	320	50 P	µg/L
TOTAL BTEX	4220		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

87

4-Bromofluorobenzene

87

METHOD 5030/8020 ***

Analyzed by: RL

Date: 10/10/96

Barium, Total

2.18

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Calcium, Total

481

0.1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

Iron, Total

32.6

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 10/08/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 12:15:00
DATE RECEIVED: 09/27/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96		13	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96		74.8	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96		10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96		975	50	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 10/02/96		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 10/02/96		1112	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 12:15:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	327	1	mg/L
pH METHOD 150.1 * Analyzed by: LAR Date: 10/01/96	7.53		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 10/01/96	0.225		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 10/08/96	9	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 10/10/96	1.015		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	3027	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 09/26/96 13:00:00
 DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	29	1 P	µg/L
TOLUENE	1.4	1 P	µg/L
ETHYLBENZENE	6.1	1 P	µg/L
TOTAL XYLENE	12	1 P	µg/L
TOTAL BTEX	48.5		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

83
 87

METHOD 5030/8020 ***

Analyzed by: RL
 Date: 10/10/96

Barium, Total 0.11 0.005 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 10/08/96

Calcium, Total 621 1 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 10/10/96

Iron, Total 2.21 0.02 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 10/08/96

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-06

Warren Petroleum
P.O. Box 57
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 13:00:00
DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	68	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 10/08/96	295	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: AMG Date: 10/02/96	10/02/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 10/10/96	11500	200	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 10/02/96	ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 10/02/96	784	2	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9609F72-06

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 10/12/96

PROJECT: 3rd Quarter Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 09/26/96 13:00:00
DATE RECEIVED: 09/27/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	6454	1	mg/L
pH METHOD 150.1 * Analyzed by: LAR Date: 10/01/96	7.54		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 10/01/96	0.031		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 10/08/96	29	2	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 10/10/96	1.041		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 10/11/96	19754	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION



* SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE961009105000

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	49	98.0	63 - 120
Benzene	ND	50	48	96.0	62 - 121
Toluene	ND	50	49	98.0	66 - 136
EthylBenzene	ND	50	52	104	70 - 136
O Xylene	ND	50	49	98.0	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	7.7	20	29	106	28	102	3.85	20	39 - 150
BENZENE	ND	20	20	95.4	19	90.4	5.38	25	39 - 150
TOLUENE	ND	20	20	98.2	19	93.2	5.22	26	56 - 134
ETHYLBENZENE	ND	20	21	101	20	96.4	4.66	38	61 - 128
O XYLENE	ND	20	20	98.6	18	88.6	10.7	29	40 - 130
M & P XYLENE	ND	40	42	103	39	96.0	7.04	20	43 - 152

Analyst: RL

Sequence Date: 10/09/96

SPL ID of sample spiked: 9609G50-05A

Sample File ID: J6__107.TX0

Method Blank File ID:

Blank Spike File ID: J6__105.TX0

Matrix Spike File ID: J6__109.TX0

Matrix Spike Duplicate File ID: J6__110.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = [(<4> - <5>) / [(<4> + <5>) x 0.5]] x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9609G50-04A 9610294-05A 9609F76-03A 9609F76-04A
 9609F78-01A 9610294-06A 9610294-7A 9609G50-02A
 9609G50-03A 9610053-01A 9609F72-06A 9609F72-02A
 9609F72-04A 9609F72-01A 9609F72-05A 9609G50-05A
 9610294-04A 9609G50-02A 9609G50-03A



* SPL BATCH QUALITY CONTROL REPORT **

METHOD 8020/602

HOUSTON LABORATORY
5880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: ug/L

Batch Id: VARE961010121600

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	52	104	63 - 120
Benzene	ND	50	48	96.0	62 - 121
Toluene	ND	50	49	98.0	66 - 136
EthylBenzene	ND	50	52	104	70 - 136
O Xylene	ND	50	50	100	74 - 134
M & P Xylene	ND	100	106	106	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	12	20	32		100	31
BENZENE	ND	20	20	97.5	19	92.5	5.26	25	39 - 150
TOLUENE	ND	20	19	94.0	19	94.0	0	26	56 - 134
ETHYLBENZENE	ND	20	20	98.8	20	98.8	0	38	61 - 128
O XYLENE	ND	20	19	94.2	19	94.2	0	29	40 - 130
M & P XYLENE	ND	40	42	104	41	101	2.93	20	43 - 152

Analyst: RL

Sequence Date: 10/10/96

SPL ID of sample spiked: 9610073-04A

Sample File ID: J6_139.TX0

Method Blank File ID:

Blank Spike File ID: J6_136.TX0

Matrix Spike File ID: J6_140.TX0

Matrix Spike Duplicate File ID: J6_141.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $\frac{((<1> - <2>) / <3>) \times 100}$

LCS % Recovery = $\frac{(<1> / <3>) \times 100}$

Relative Percent Difference = $\frac{|(<4> - <5>)|}{[(<4> + <5>) \times 0.5]} \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9610015-04A 9610161-07A 9610139-01A 9610073-03A
 9610073-02A 9610161-06A 9610161-01A 9610161-02A
 9610161-03A 9610161-04A 9610161-05A 9610324-11A
 9610324-12A 9610324-10A 9610324-09A 9610640-01A
 9609F72-03A 9610073-01A 9610073-04A 9610015-02A

Water Analysis
Mineral Pattern

Workorder: 9609F72-1C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	204.52	22.99	8.90
Calcium, Ca	128.00	20.04	6.39
Magnesium, Mg	34.70	12.16	2.85
Barium, Ba	1.11	68.67	0.02
Potassium, K	4.00	39.10	0.10
Iron, Fe	33.80	27.92	1.21
TOTAL CATIONS (w/o Na)			10.57
ANIONS			
Chloride, Cl	202.00	35.45	5.70
Sulfate, SO ₄	8.00	48.03	0.17
Carbonate, CaCO ₃	0.00	30.01	0.00
Bicarbonate, CaCO ₃	830.00	61.02	13.60
Bromide, Br	0.00	79.90	0.00
TOTAL ANIONS			19.47
TDS (calc.)	1446.13		

Water Analysis
Mineral Pattern

Workorder: 9609F72-2C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	4846.53	22.99	210.81
Calcium, Ca	408.00	20.04	20.36
Magnesium, Mg	117.00	12.16	9.62
Barium, Ba	0.31	68.67	0.00
Potassium, K	54.00	39.10	1.38
Iron, Fe	3.82	27.92	0.14

TOTAL CATIONS (w/o Na) 31.51

ANIONS

Chloride, Cl	6150.00	35.45	173.47
Sulfate, SO4	2800.00	48.03	58.29
Carbonate, CaCO3	0.00	30.01	0.00
Bicarbonate, CaCO3	644.00	61.02	10.55
Bromide, Br	0.00	79.90	0.00

TOTAL ANIONS 242.32

TDS (calc.) 15023.66

Water Analysis
Mineral Pattern

Workorder: 9609F72-3C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	856.43	22.99	37.25
Calcium, Ca	215.00	20.04	10.73
Magnesium, Mg	129.00	12.16	10.61
Barium, Ba	0.61	68.67	0.01
Potassium, K	20.00	39.10	0.51
Iron, Fe	18.70	27.92	0.67

TOTAL CATIONS (w/o Na) 22.53

ANIONS

Chloride, Cl	1670.00	35.45	47.10
Sulfate, SO4	17.00	48.03	0.35
Carbonate, CaCO3	0.00	30.01	0.00
Bicarbonate, CaCO3	752.00	61.02	12.32
Bromide, Br	0.00	79.90	0.00

TOTAL ANIONS 59.78

TDS (calc.) 3678.74

Water Analysis
Mineral Pattern

Workorder: 9609F72-4C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	10790.27	22.99	469.35
Calcium, Ca	1080.00	20.04	53.89
Magnesium, Mg	349.00	12.16	28.71
Barium, Ba	0.13	68.67	0.00
Potassium, K	121.00	39.10	3.09
Iron, Fe	3.31	27.92	0.12
TOTAL CATIONS (w/o Na)			85.82
ANIONS			
Chloride, Cl	15200.00	35.45	428.74
Sulfate, SO4	5720.00	48.03	119.08
Carbonate, CaCO3	0.00	30.01	0.00
Bicarbonate, CaCO3	448.00	61.02	7.34
Bromide, Br	0.00	79.90	0.00
TOTAL ANIONS			555.16
TDS (calc.)	33711.71		

Water Analysis
Mineral Pattern

Workorder: 9609F72-5C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	327.05	22.99	14.23
Calcium, Ca	481.00	20.04	24.00
Magnesium, Mg	74.80	12.16	6.15
Barium, Ba	2.18	68.67	0.03
Potassium, K	13.00	39.10	0.33
Iron, Fe	32.60	27.92	1.17

TOTAL CATIONS (w/o Na) 31.69

ANIONS

Chloride, Cl	975.00	35.45	27.50
Sulfate, SO4	9.00	48.03	0.19
Carbonate, CaCO3	0.00	30.01	0.00
Bicarbonate, CaCO3	1112.00	61.02	18.22
Bromide, Br	0.00	79.90	0.00

TOTAL ANIONS 45.91

TDS (calc.) 3026.63

Water Analysis
Mineral Pattern

Workorder: 9609F72-6C

CATIONS	mg/l	mg/me	me/l
Sodium, Na (calc.)	6454.44	22.99	280.75
Calcium, Ca	621.00	20.04	30.99
Magnesium, Mg	295.00	12.16	24.27
Barium, Ba	0.11	68.67	0.00
Potassium, K	68.00	39.10	1.74
Iron, Fe	2.21	27.92	0.08

TOTAL CATIONS (w/o Na) 57.08

ANIONS

Chloride, Cl	11500.00	35.45	324.37
Sulfate, SO4	29.00	48.03	0.60
Carbonate, CaCO3	0.00	30.01	0.00
Bicarbonate, CaCO3	784.00	61.02	12.85
Bromide, Br	0.00	79.90	0.00

TOTAL ANIONS 337.83

TDS (calc.) 19753.76



HOUSTON LABORATORY
5880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/10/96

Analyzed on: 10/10/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9609F72-01C	ND	50.00	102	102	0	93.2 - 109.3	2.7

-9610480

Samples in batch:

9609F72-01C 9609F72-02C 9609F72-03C 9609F72-04C
9609F72-05C 9609F72-06C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/10/96

Analyzed on: 10/10/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	51.60	51.48	99.8	90 - 110

-9610481

Samples in batch:

9609F72-01C 9609F72-02C 9609F72-03C 9609F72-04C
9609F72-05C 9609F72-06C

COMMENTS:

SPL LCS ID# 9553564-3

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JM

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0033

Date: 101096 Time: 0829 File Name: 101096M1

Checked:

By 10/10/96

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	19.96	100	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

96-09-F72 06B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 96-09-F51 09B

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	113	10.0	123.5	105.0	126.2	132.0	* 80 120	22.8	** 20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits



HOUSTON LABORATORY
4321 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/10/96

Analyzed on: 10/10/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9609F72-01C	1.0123	1.0125	0	1.0

-9610482

Samples in batch:

9609F72-01C 9609F72-02C 9609F72-03C 9609F72-04C
9609F72-05C 9609F72-06C 9610453-02B 9610453-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/02/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mg/L	Duplicate Sample Mg/L	RPD	RPD Max.
9609E18-01C	ND	ND	0	2.2

-9610083

Samples in batch:

9609E18-01C 9609E18-02C 9609E18-03C 9609E18-04C
9609E18-05C 9609E18-06C 9609F72-01C 9609F72-02C
9609F72-03C 9609F72-04C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96
Analyzed on: 10/02/96
Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mg/L	Duplicate Sample Mg/L	RPD	RPD Max.
9609F72-06C	ND	ND	0	2.2

-9610082

Samples in batch:

9609F72-05C 9609F72-06C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/02/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mg/L	Duplicate Sample Mg/L	RPD	RPD Max.
9609E18-01C	160	160	0	3

-9610080

Samples in batch:

9609E18-01C 9609E18-02C 9609E18-03C 9609E18-04C
9609E18-05C 9609E18-06C 9609F72-01C 9609F72-02C
9609F72-03C 9609F72-04C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/02/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration Mg/L	Duplicate Sample Mg/L	RPD	RPD Max.
9609F72-06C	788	780	1.0	3

-9610081

Samples in batch:

9609F72-05C 9609F72-06C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/01/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9609F72-01C	7.42	7.44	0.3	1.0

-9610096

Samples in batch:

9609F51-01A 9609F51-02A 9609F51-03A 9609F51-04A
9609F72-01C 9609F72-02C 9609F72-03C 9609F72-04C
9609F72-05C 9609F72-06C

COMMENTS:



HOUSTON LABORATORY
6650 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0931

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/01/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9609E18-01C	0.008	0.008	0	1.0

-9610093

Samples in batch:

9609E18-01C 9609E18-02C 9609E18-03C 9609E18-04C
9609E18-05C 9609E18-06C 9609F72-01C 9609F72-02C
9609F72-03C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/02/96

Analyzed on: 10/01/96

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9609F72-04C	0.022	0.022	0	1.0

-9610094

Samples in batch:

9609F72-04C 9609F72-05C 9609F72-06C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/09/96

Analyzed on: 10/08/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	19.00	95.0	90 - 110

-9610423

Samples in batch:

9609F51-09C 9609F59-01E 9609F72-01C 9609F72-02C
9609F72-03C 9609F72-04C 9609F72-05C 9609F72-06C
9609F73-01D

COMMENTS:

SPL LCS ID#9553564-1



HOUSTON LABORATORY
6850 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 10/09/96
Analyzed on: 10/08/96
Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max
9609F51-09C	ND	10.00	97.5	98.3	0.8	79.6 - 122	11.8

-9610422

Samples in batch:

9609F51-09C 9609F59-01E 9609F72-01C 9609F72-02C
9609F72-03C 9609F72-04C 9609F72-05C 9609F72-06C
9609F73-01D

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9609F72

H-08495

page 2 of 3

Requested Analysis

Client Name: Wadeen Petroleum Company
 Address/Phone: FARBOX 67 - 505-393-2823
 Client Contact: OSCAR DE LEON
 Project Name: 310 Ave - Analysis
 Project Number:
 Project Location: MONUMENT NM 88065
 Invoice To: SMAE
 SAMPLE ID

matrix bottle size pres.
 W=water S=soil SL=sludge O=other:
 P=plastic A=amber glass G=glass V=vial
 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz
 1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers	
BTEX	
MAJOR CATIONS & ANIONS	
PH	

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers								
MW 6 A	9-26-96	9:00am			W	V	40	1		X							
B					"	V	40	1		X							
C					"	V	40	1		X							
D					"	P	1	2			X						
EW					"	P	1				X						
MW 7 A		8:15am			W	V	40	1		X							
B					"	V	40	1		X							
C					"	V	40	1		X							
D					"	P	1	2			X						
EW					"	P	1				X						

Client/Consultant Remarks: Laboratory remarks: Intact? Y N Temp: 5°C PM review (initial):

Requested TAT

Special Reporting Requirements: Standard Level 3 Raw Data Level 4 Special Detection Limits (specify):

1. Relinquished by: OSCAR DE LEON date: 9-26-96 time: 9:17am

2. Received by: S. Wade date: 9/27/96 time: 10:00

3. Relinquished by: date: time:

4. Received by: date: time:

5. Relinquished by: date: time:

6. Received by Laboratory: date: time:

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777 1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 9/27/96	Time: 1000
---	--

SPL Sample ID:

9609F72

		<u>Yes</u>	<u>No</u>
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.		✓
3	If no, Non-Conformance Worksheet has been completed.	✓	
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:		5° C
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	3024108145 8286670522
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: S. West	Date: 9/27/96
---	---





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

January 17, 1997

Mr. Buddy Marley
Warren Petroleum
P.O. Box 67
Monument, NM 88265

COPY

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on January 15, 1997. The samples were assigned to Certificate of Analysis No.9701529 and analyzed for all parameters as listed on the chain of custody.....

Based on the conditions of the samples, procedures performed and quality controls implemented for this project, the following exceptions were noted for this data project.

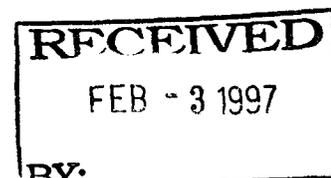
The Matrix Spike and Matrix Spike Duplicate were out of QC limits for Total Iron analysis, due to matrix interference. Sample spiked was not from your sampling batch. The laboratory control samples and standard recoveries are in, verifying that the calibration is still valid.

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Work Order Number during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Bernadette A. Fini
Project Manager





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-01-529

Approved for Release by:


Bernadette A. Fini, Project Manager

1-20-97
Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



Certificate of Analysis No.
9701529-01

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 01/17/97

Attn: Buddy Marley
PROJECT: 4th Quarter '96
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#5,ABCDEF

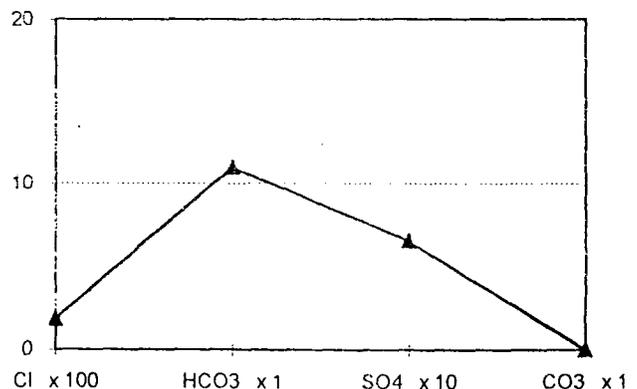
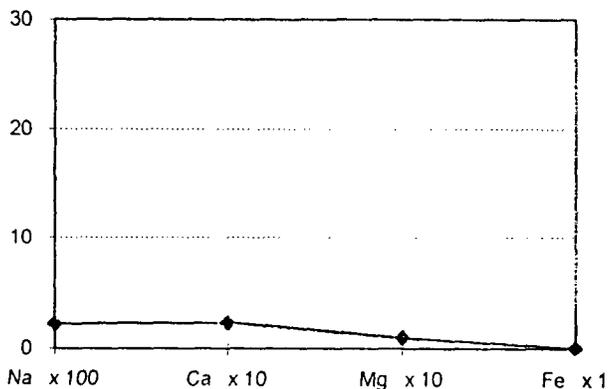
PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 01/14/97
DATE RECEIVED: 01/15/97

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	5065.62	220.34	Total Dissolved Solids (calc.) mg/L	15833
Calcium, Ca	460	22.95	Specific Gravity 60/60 deg. F.	1.0100
Magnesium, Mg	122	10.04	Resistivity (Mohm-cm) 75 deg. F.	0.0420
Chloride, Cl	6350	179.13	pH pH units	7.22
Bicarbonate, CaCO	668	10.95		
Sulfate SO4	3110	64.75		
Carbonate, CaCO3	0	0.00		
Iron, Fe(Total)	1.26	0.05		
Barium, Ba	0.12	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9701529-02

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 01/17/97

Attn: Buddy Marley
PROJECT: 4th Quarter '96
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#6,ABCDEF

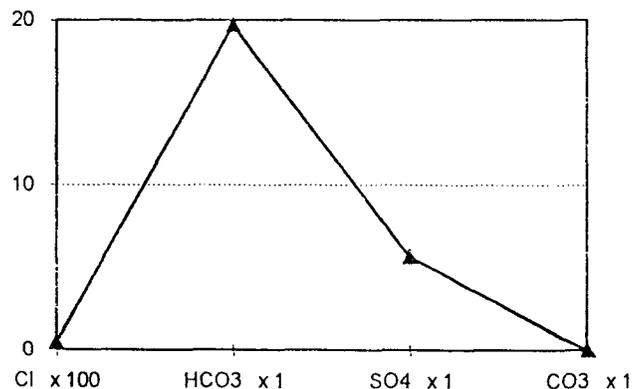
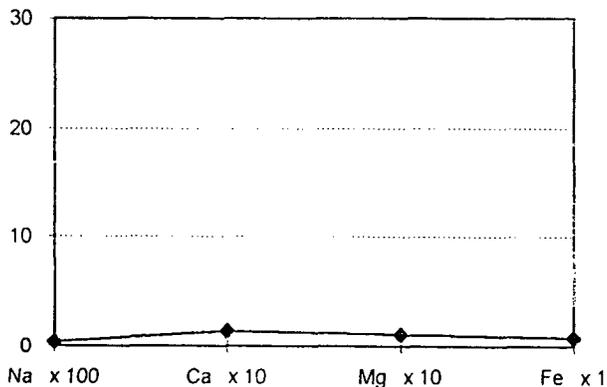
PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 01/14/97
DATE RECEIVED: 01/15/97

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	930.87	40.49	Total Dissolved Solids	
Calcium, Ca	287	14.32	(calc.) mg/L	4371.33
Magnesium, Mg	137	11.27	Specific Gravity	
Chloride, Cl	1500	42.31	60/60 deg. F.	1.0020
Bicarbonate, CaCO ₃	1200	19.67	Resistivity	
Sulfate SO ₄	268	5.58	(Mohm-cm) 75 deg. F.	0.1730
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	23.7	0.85	pH units	7.44
Barium, Ba	0.77	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9701529-03

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 01/17/97

Attn: Buddy Marley
PROJECT: 4th Quarter '96
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#7, ABCDEF

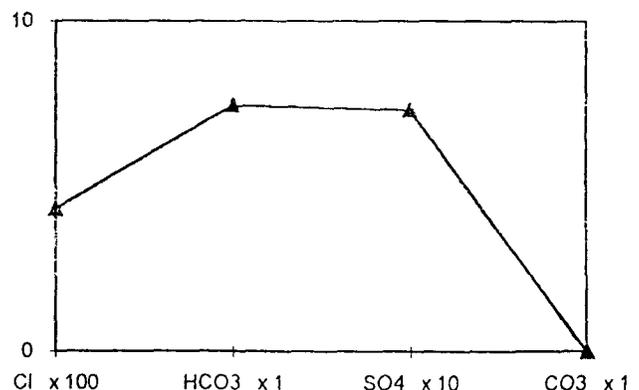
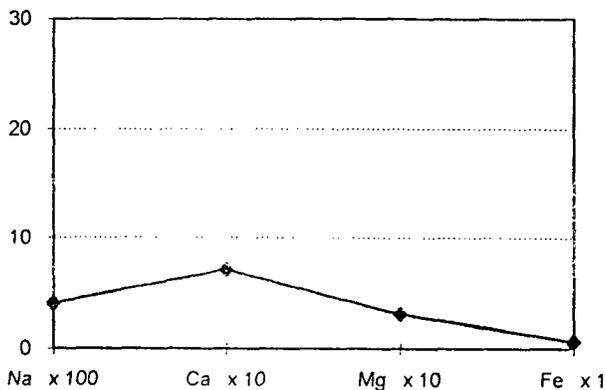
PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 01/14/97
DATE RECEIVED: 01/15/97

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	9287.73	403.99	Total Dissolved Solids	
Calcium, Ca	1420	70.86	(calc.) mg/L	30385.1
Magnesium, Mg	372	30.60	Specific Gravity	
Chloride, Cl	15200	428.77	60/60 deg. F.	1.0250
Bicarbonate, CaCO	454	7.44	Resistivity	
Sulfate SO4	3510	73.08	(Mohm-cm) 75 deg. F.	0.0210
Carbonate, CaCO3	0	0.00	pH	
Iron, Fe(Total)	18.8	0.67	pH units	6.98
Barium, Ba	0.57	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9701529-04

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 01/17/97

Attn: Buddy Marley
PROJECT: 4th Quarter '96
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW#13,ABCDEF

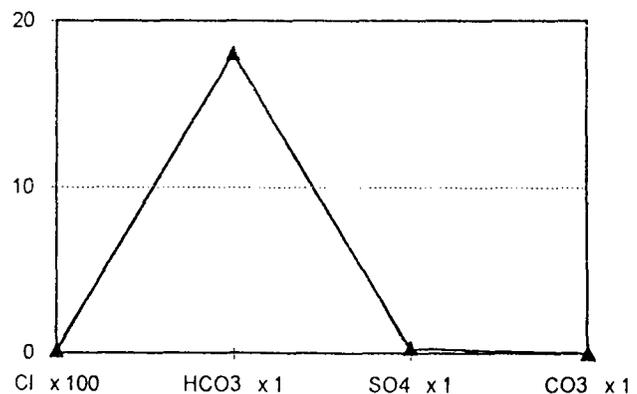
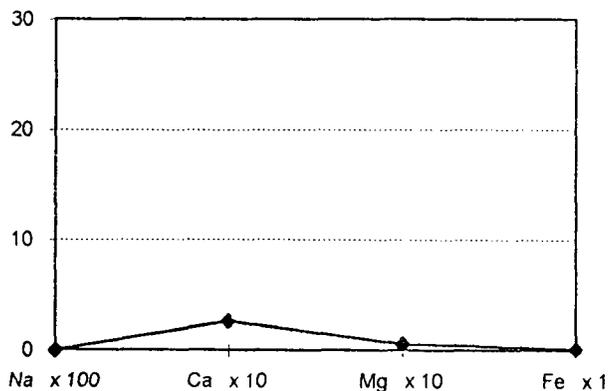
PROJECT NO: 0
MATRIX: Water
DATE SAMPLED: 01/14/97
DATE RECEIVED: 01/15/97

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	4.59	0.20	Total Dissolved Solids	
Calcium, Ca	514	25.65	(calc.) mg/L	2206.62
Magnesium, Mg	71	5.84	Specific Gravity	
Chloride, Cl	487	13.74	60/60 deg. F.	1.0020
Bicarbonate, CaCO ₃	1100	18.03	Resistivity	
Sulfate SO ₄	15	0.31	(Mohm-cm) 75 deg. F.	0.2150
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	3.56	0.13	pH units	7.24
Barium, Ba	3.47	0.05		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis No.
9701529-05

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Client: Warren Petroleum
P.O. Box 67
Monument, NM 88265

P.O. #:
DATE: 01/17/97

PROJECT: 4th Quarter '96

PROJECT NO: 0

SITE: Monument, NM

MATRIX: Water

SAMPLED BY: Warren Petroleum

DATE SAMPLED: 01/14/97

SAMPLE ID: MW#14,ABCDEF

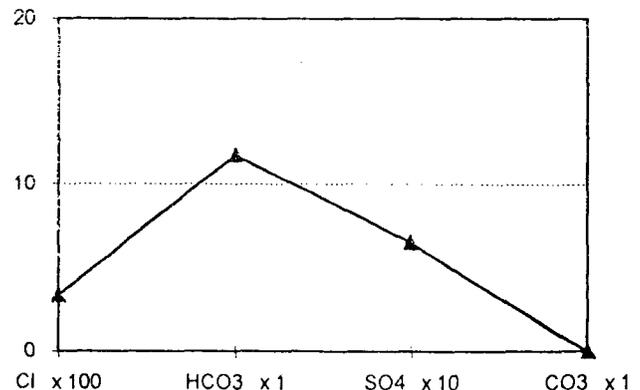
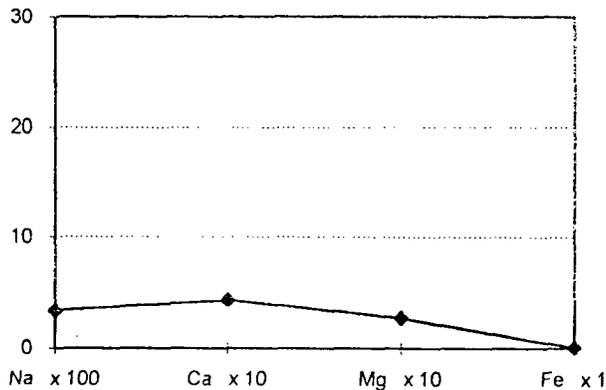
DATE RECEIVED: 01/15/97

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	7683.95	334.23	Total Dissolved Solids	
Calcium, Ca	866	43.21	(calc.) mg/L	24482.6
Magnesium, Mg	327	26.90		
Chloride, Cl	11700	330.04	Specific Gravity	
Bicarbonate, CaCO ₃	714	11.70	60/60 deg. F.	1.0170
Sulfate SO ₄	3110	64.75		
Carbonate, CaCO ₃	0	0.00	Resistivity	
Iron, Fe(Total)	3.42	0.12	(Mohm-cm) 75 deg. F.	0.0270
Barium, Ba	0.23	0.00		
			pH	
			pH units	6.98

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 13:00:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	260	1.0 P	µg/L
TOLUENE	1.9	1.0 P	µg/L
ETHYLBENZENE	2.2	1.0 P	µg/L
TOTAL XYLENE	ND	1.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	264.1		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	127
4-Bromofluorobenzene	90

METHOD 8020A ***
 Analyzed by: LJ
 Date: 01/16/97

Barium, Total	0.119	0.005	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 01/16/97			

Calcium, Total	460	0.1	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 01/16/97			

Iron, Total	1.26	0.02	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 01/16/97			

Potassium, Total	56	1	mg/L
METHOD 6010A ***			
Analyzed by: JM			
Date: 01/16/97			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
 QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/14/97 13:00:00
DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 01/16/97		122	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: GJ Date: 01/15/97		01/15/97		
Chloride METHOD 325.3 * Analyzed by: EG Date: 01/15/97		6350	100	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		668	1	mg/L
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 01/16/97		5066	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 13:00:00
 DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
pH	METHOD 150.1 * Analyzed by: LAR Date: 01/15/97	7.22		pH units
Resistivity	EPA 120.1 * Analyzed by: LAR Date: 01/15/97	0.042		Mohms-cm
Sulfate	METHOD 375.4 * Analyzed by: CA Date: 01/16/97	3110	250	mg/L
Specific Gravity	ASTM D1429 Analyzed by: LAR Date: 01/15/97	1.010		
Total Dissolved Solids	METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	15833	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 10:30:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	180	25 P	µg/L
TOLUENE	ND	25 P	µg/L
ETHYLBENZENE	580	25 P	µg/L
TOTAL XYLENE	ND	25 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	760		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

85
 89

METHOD 8020A ***

Analyzed by: LJ

Date: 01/16/97

Barium, Total

0.765

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Calcium, Total

287

0.1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Iron, Total

23.7

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Potassium, Total

24

1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 10:30:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 01/16/97	137	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: GJ Date: 01/15/97	01/15/97		
Chloride METHOD 325.3 * Analyzed by: EG Date: 01/15/97	1500	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 01/15/97	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 01/15/97	1200	1	mg/L
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	931	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis '96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 10:30:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
pH METHOD 150.1 * Analyzed by: LAR Date: 01/15/97	7.44		pH units
Resistivity EPA 120.1 * Analyzed by: LAR Date: 01/15/97	0.173		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: CA Date: 01/16/97	268	25	mg/L
Specific Gravity ASTM D1429 Analyzed by: LAR Date: 01/15/97	1.002		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	4371	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 10:00:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	5.0 P	µg/L
TOLUENE	ND	5.0 P	µg/L
ETHYLBENZENE	ND	5.0 P	µg/L
TOTAL XYLENE	ND	5.0 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

80
 87

METHOD 8020A ***

Analyzed by: LJ

Date: 01/16/97

Barium, Total

0.567

0.005

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Calcium, Total

1420

1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Iron, Total

18.8

0.02

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

Potassium, Total

122

1

mg/L

METHOD 6010A ***

Analyzed by: JM

Date: 01/16/97

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
 QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/14/97 10:00:00
DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 01/16/97		372	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: GJ Date: 01/15/97		01/15/97		
Chloride METHOD 325.3 * Analyzed by: EG Date: 01/15/97		15200	500	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		454	1	mg/L
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 01/16/97		9288	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/14/97 10:00:00
DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA		RESULTS	DETECTION LIMIT	UNITS
pH			6.98		pH units
METHOD 150.1 *					
Analyzed by: LAR					
Date: 01/15/97					
Resistivity			0.021		Mohms-cm
EPA 120.1 *					
Analyzed by: LAR					
Date: 01/15/97					
Sulfate			3510	250	mg/L
METHOD 375.4 *					
Analyzed by: CA					
Date: 01/16/97					
Specific Gravity			1.025		
ASTM D1429					
Analyzed by: LAR					
Date: 01/15/97					
Total Dissolved Solids			30385	1	mg/L
METHOD CALCULATION					
Analyzed by: DAM					
Date: 01/16/97					

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 11:00:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	2700	10 P	µg/L
TOLUENE	63	10 P	µg/L
ETHYLBENZENE	700	10 P	µg/L
TOTAL XYLENE	140	10 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	3603		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

93
 67

METHOD 8020A ***
 Analyzed by: LJ
 Date: 01/16/97

Barium, Total 3.47 0.005 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 01/16/97

Calcium, Total 514 1 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 01/16/97

Iron, Total 3.56 0.02 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 01/16/97

Potassium, Total 8 1 mg/L
 METHOD 6010A ***
 Analyzed by: JM
 Date: 01/16/97

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
 QUALITY ASSURANCE: These analyses are performed in accordance
 with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 11:00:00
 DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA		UNITS
	RESULTS	DETECTION LIMIT	
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 01/16/97	71.0	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: GJ Date: 01/15/97	01/15/97		
Chloride METHOD 325.3 * Analyzed by: EG Date: 01/15/97	487	5	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 01/15/97	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LAR Date: 01/15/97	1100	1	mg/L
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	5	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 11:00:00
 DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
pH	METHOD 150.1 * Analyzed by: LAR Date: 01/15/97	7.24		pH units
Resistivity	EPA 120.1 * Analyzed by: LAR Date: 01/15/97	0.215		Mohms-cm
Sulfate	METHOD 375.4 * Analyzed by: CA Date: 01/16/97	15	1	mg/L
Specific Gravity	ASTM D1429 Analyzed by: LAR Date: 01/15/97	1.002		
Total Dissolved Solids	METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	2207	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
 SITE: Monument, NM 88265
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
 MATRIX: WATER
 DATE SAMPLED: 01/14/97 12:30:00
 DATE RECEIVED: 01/15/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	25 P	µg/L
TOLUENE	ND	25 P	µg/L
ETHYLBENZENE	ND	25 P	µg/L
TOTAL XYLENE	ND	25 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

81
 85

METHOD 8020A ***

Analyzed by: LJ
 Date: 01/16/97

Barium, Total 0.232 0.005 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 01/16/97

Calcium, Total 866 1 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 01/16/97

Iron, Total 3.42 0.02 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 01/16/97

Potassium, Total 78 1 mg/L

METHOD 6010A ***

Analyzed by: JM
 Date: 01/16/97

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.
QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/14/97 12:30:00
DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Magnesium, Total METHOD 6010A *** Analyzed by: JM Date: 01/16/97		327	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: GJ Date: 01/15/97	01/15/97			
Chloride METHOD 325.3 * Analyzed by: EG Date: 01/15/97		11700	200	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LAR Date: 01/15/97		714	1	mg/L
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 01/16/97		7681	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701529-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Buddy Marley

DATE: 01/17/97

PROJECT: 4th Quarter Analysis 96'
SITE: Monument, NM 88265
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14 A B C D E & F

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 01/14/97 12:30:00
DATE RECEIVED: 01/15/97

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
pH	METHOD 150.1 * Analyzed by: LAR Date: 01/15/97	6.98		pH units
Resistivity	EPA 120.1 * Analyzed by: LAR Date: 01/15/97	0.027		Mohms-cm
Sulfate	METHOD 375.4 * Analyzed by: CA Date: 01/16/97	3110	250	mg/L
Specific Gravity	ASTM D1429 Analyzed by: LAR Date: 01/15/97	1.017		
Total Dissolved Solids	METHOD CALCULATION Analyzed by: DAM Date: 01/16/97	24483	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



** SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: VARE970116095600

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	47	94.0	63 - 120
Benzene	ND	50	44	88.0	62 - 121
Toluene	ND	50	46	92.0	66 - 136
EthylBenzene	ND	50	48	96.0	70 - 136
O Xylene	ND	50	50	100	74 - 134
M & P Xylene	ND	100	99	99.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	ND	20	19	95.0	21	105	10.0	20	39 - 150
BENZENE	ND	20	22	110	22	110	0	25	39 - 150
TOLUENE	ND	20	22	110	22	110	0	25	56 - 134
ETHYLBENZENE	ND	20	23	115	23	115	0	38	61 - 128
O XYLENE	ND	20	24	120	23	115	4.26	29	40 - 130
M & P XYLENE	ND	40	49	122	47	118	3.33	20	43 - 152

Analyst: LJ

Sequence Date: 01/16/97

SPL ID of sample spiked: 9701532-01A

Sample File ID: E_A7419.TX0

Method Blank File ID:

Blank Spike File ID: E_A7414.TX0

Matrix Spike File ID: E_A7415.TX0

Matrix Spike Duplicate File ID: E_A7416.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $[(<4> - <5>) / [(<4> + <5>) \times 0.5]] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9701529-03A 9701529-05A 9701472-01A 9701529-01A
 9701529-02A 9701529-04A 9701505-01A 9701505-02A
 9701532-03A 9701505-03A 9701507-03A 9701532-02A
 9701534-01A 9701560-02A 9701560-03A 9701531-01A
 9701531-02A 9701532-01A 9701228-01A

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JM **HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Date: 011697 Time: 0810 File Name: 011697M3

Checked: *1/17/97*

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.06	103	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	2.05	102	1.60	2.40
Beryllium						
Calcium	ND	20.00	20.40	102	16.00	24.00
Cadmium	ND	2.00	1.95	97	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.10	105	1.60	2.40
Copper	ND	2.00	2.05	103	1.60	2.40
Iron	ND	2.00	2.07	103	1.60	2.40
Potassium	ND	20.00	19.55	98	16.00	24.00
Magnesium	ND	20.00	20.32	102	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.04	102	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	2.05	103	1.60	2.40

Work Orders in Batch

Work Order	Fractions
97-01-455	03C-09C
97-01-456	10C
97-01-529	01B-05B
97-01-567	01B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 97-01-455 03C

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9269	92.7	0.9278	92.8	80 120	0.1	20.0
Aluminum									
Arsenic									
Barium	0.2135	1.0	1.124	91.1	1.144	93.1	80 120	2.2	20.0
Beryllium									
Calcium	3.92	10.0	12.68	87.6	12.73	88.1	80 120	0.6	20.0
Cadmium	ND	1.0	0.8852	88.5	0.8761	87.6	80 120	1.0	20.0
Cobalt									
Chromium	ND	1.0	0.9699	97.0	0.9674	96.7	80 120	0.3	20.0
Copper	ND	1.0	0.9151	91.5	0.9221	92.2	80 120	0.8	20.0
Iron	7.867	1.0	10.17	230.3	10.51	264.3	80 120	13.7	20.0
Potassium	4.748	10.0	13.77	90.2	14.08	93.3	80 120	3.4	20.0
Magnesium	2.684	10.0	11.89	92.1	12.05	93.7	80 120	1.7	20.0
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9485	94.9	0.9432	94.3	80 120	0.6	20.0
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	0.0466	1.0	0.9763	93.0	0.9728	92.6	80 120	0.4	20.0

* Spike Results Outside Method Limits



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9701529-01C	668	672	0.6	3

-9701457

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C

COMMENTS:



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97
 Analyzed on: 01/15/97
 Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO3
 METHOD SM 4500-CO2D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9701529-01C	ND	ND	0	2.2

-9701456

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
 9701529-05C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: EG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	27.23	26.49	97.3	90 - 110

-9701468

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C

COMMENTS:

LCS= SPL ID# 9553580-08



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: EG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 METHOD 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
				Result	Recovery	Result	Recovery		(%)	RPD
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	REC
9701529-03C	ND	30.5	50.0	78.48	96.0	79.48	98.0	2.1	2.7	93.2 -109.3

-9701469

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
 9701529-05C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9701548-01A	6.36	6.38	0.3	1.0

-9701458

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C 9701548-01A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mohms-cm	Duplicate Sample mohms-cm	RPD	RPD Max.
9701529-01C	0.042	0.042	0	1.0

-9701453

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/15/97

Analyst: LAR

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9701529-01C	1.010	1.010	0	1.0

-9701461

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/16/97

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.15	9.21	90.7	90 - 110

-9701466

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C 9701565-01B

COMMENTS:

SPL LCS ID# 9553580-08



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 01/16/97

Analyzed on: 01/16/97

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
				Result	Recovery	Result	Recovery		RPD	% REC
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9701529-03C	ND	2.54	10.00	13.55	110	12.97	104	5.6	11.8	79.6 -122

-9701465

Samples in batch:

9701529-01C 9701529-02C 9701529-03C 9701529-04C
9701529-05C 9701565-01B

COMMENTS:



Warren

March 13, 1996

Mr. William C. Olson
Hydrogeologist, Environmental Bureau
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

RECEIVED

MAR 13 1996

Environmental Bureau
Oil Conservation Division

RE: Ground Water Contamination
Warren Petroleum Monument Gas Plant
Lea County, New Mexico

Warren Petroleum Company

P. O. Box 1589
Tulsa, OK 74102
1350 South Boulder
Tulsa, OK 74119

**Health, Environment and
Loss Prevention**

Phone 918 560 4000
Fax 918 560 4111

Dear Mr. Olson,

This letter is in response to OCD correspondence dated June 20, 1995, and September 26, 1995.

The September 26, 1995 letter authorized Warren's work plan for additional groundwater investigation.

Refer to Attachment 1. As requested in item #5 of the approval letter, a copy of Geraghty and Miller's report describing the field activities, geologic logs, and well completion diagrams is attached. Groundwater analytical results are summarized and included in Attachment 2 below. In regards to item #5 c, a water table elevation map cannot be completed at this. We have had trouble getting an accurate survey of the monitor well elevations. We hope to have this resolved soon and will include a water table elevation in our next semi-annual report.

The June 20, 1995 letter authorized Warren's plan for product recovery, groundwater monitoring, and reporting.

Refer to Attachment 2. This attachment provides a summary of the activities for the last half of 1995 plus tables containing the requested information on water table elevations, product thickness, recovery volumes, and analytical results. Groundwater elevation and product thickness maps could not be developed at this time for the same reason as noted above. However, maps for this period as well as the next period will be provided in the next semi-annual report.

Please advise if any additional information is needed or if any changes in the recovery or monitoring program are required at this time. My phone number is 918-560-4114, or you may contact Donnie Wallis at 505-393-2823, if you have any questions. Thank you for your assistance in this matter.

Sincerely,


D. Morris

cc: Jerry Sexton
NMOCD District Office
1000 W. Broadway
Hobbs, NM 88240

K. A. Peterson - Tulsa
F. C. Noah - Monument
D. E. Wallis - Monument
L. T. Reed - Tulsa
File: (NM) VII B. 1.

ATTACHMENT 1

RECEIVED

February 29, 1996

MAR - 1 1996

**Environmental
Protection**

J.D. Morris
Warren Petroleum Company
P.O. Box 1589
Tulsa, Oklahoma 74102

**RE: Summary of Supplemental Field Activities at Warren Monument Gas Plant, Lea
County, New Mexico.**

Referenced Documents:

1. Liquid Hydrocarbon Assessment, Warren Petroleum Company Monument Gas Plant, Monument, New Mexico (April 6, 1995).
2. Expanded Work Plan for Groundwater Contamination, Warren Petroleum Monument Gas Plant, Lea County, New Mexico (August 31, 1995).

Geraghty & Miller, Inc. has prepared this correspondence to summarize supplemental field activities associated with the liquid hydrocarbon assessment at the Warren Monument Gas Plant (Plant) in Lea County, New Mexico. Supplemental field activities were approved by the New Mexico Oil Conservation Division (OCD) in a correspondence to Warren dated September 6, 1995, and consisted of drilling and installing five observation wells to assess subsurface conditions related to the occurrence and nature of liquid hydrocarbons detected at the site. Subsequent to installation, the newly installed observation wells were sampled by Warren Plant personnel during the next scheduled quarterly groundwater sampling event.

This correspondence describes the field activities and methods used by Geraghty & Miller during the supplemental hydrocarbon assessment and presents the groundwater quality data collected by Warren. Relevant documentation including geologic logs and well construction diagrams are provided as attachments.



FIELD ACTIVITIES AND METHODS

OBSERVATION WELL INSTALLATION

Five groundwater observation wells (WP-11, WP-12, WP-13, WP-14, and WP-15) were installed from November 7 through November 10, 1995. Observation well locations are shown on Figure 1. Geologic Logs and Well Construction Logs are presented in Attachments A and B, respectively.

All observation wells were installed by Eades Water Well of Hobbs, New Mexico using standard air rotary drilling methods. The formation was logged from cuttings which were circulated to the surface during the installation of a 6.75-inch borehole. In addition, one to two standard split spoon samples were collected from each borehole to confirm the lithology of the water bearing unit and/or bedrock unit. Cuttings and/or split spoon samples were containerized in Ziploc™ baggies, allowed to equilibrate to ambient temperature, and analyzed for the presence of volatile organic compounds (VOCs) using a photoionization device (PID). Field headspace results are included on the Geologic Logs presented in Attachment A.

Four of the five observation wells (WP-11, WP-12, WP-13, and WP-14) were completed "open hole" with 15 ft of 4-inch schedule 40 PVC flush-threaded, 0.020-inch mill-slotted screen. The remaining portion of the wells were constructed of 4-inch flush threaded schedule 40 PVC casing. The remaining observation well was constructed according to the above specifications but with 2-inch well materials. The screened portion of all observation wells was positioned to bracket to water table. Filter pack material (No. 10-20 sand) was added to the borehole annulus to a height of approximately 2-3 ft above the top of the screened interval. Approximately 3 ft of hydrated bentonite was installed above the filter pack. A Type I Portland cement grout with five percent bentonite was placed on top of the bentonite seal to an elevation of 3 ft below ground surface (bgs). Final completion included placing Type I Portland cement in the remaining annular space, constructing a 2 ft surface pad around the well and installing a lockable metal protective casing over the PVC well head. Schematic well construction details are provided in Attachment B.

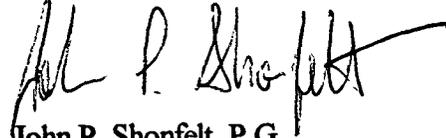
WELL DEVELOPMENT

The wells were developed by bailing and surging with a bailer until the majority of the fine grained sediment was removed from the well. Each well was developed until either 10 well volumes of fluid were removed or until the well was bailed dry on two occasions. All fluids were containerized and disposed onsite at the Plant wastewater system.

Please call if you have any questions regarding the supplemental observation well installation activities at the Warren Monument Gas Plant.

Sincerely,

GERAGHTY & MILLER, INC.



John P. Shonfelt, P.G.

Project Scientist/Project Manager



Brian Guillette

Associate/Office Manager

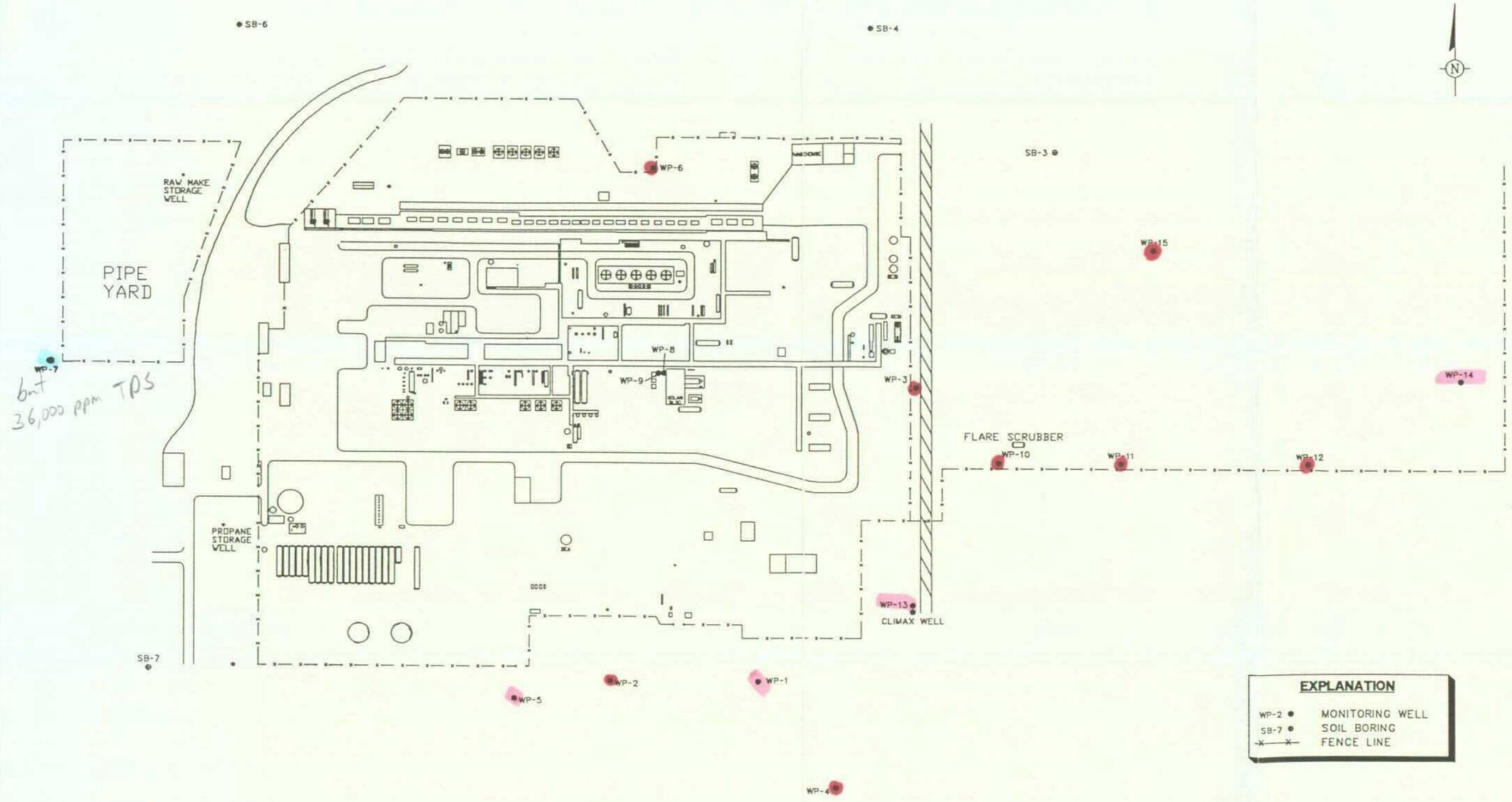
JPS:ndf

Enclosure

WARREN\OK532002\OCDLTR.DOC



DWG DATE: 31JAN96 | PRJCT NO.: DK0532.002 | FILE NO.: -- | DRAWING: SITE-3 | CHECKED: JOHN SHONFELT | APPROVED: JOHN SHONFELT | DRAFTER: JIM HARBESTON



EXPLANATION	
WP-2 ●	MONITORING WELL
SB-7 ●	SOIL BORING
-x-x-	FENCE LINE


GERAGHTY & MILLER, INC.
 Environmental Services
 A Heidemij Company

SITE MAP WITH SOIL BORINGS AND OBSERVATION WELL LOCATIONS

WARREN PETROLEUM MONUMENT, NEW MEXICO

FIGURE
1

ATTACHMENT A



JOB NUMBER OK0532.002	CLIENT WARREN PETROLEUM	LOCATION MONUMENT, NM	WELL NO. WP-11	PAGE 1 OF 2	WELL LOCATION 
DRILLING METHOD AIR ROTARY	SAMPLING METHOD CUTTINGS/SPLIT SPOON				
DRILLING START FINISH	11/8/95 11/8/95	DEVEL. START FINISH			
STATIC DTW DPO	TIME DATE	DRILLED BY EADES DRILLING			
ELEVATION TOC GL	LOGGED BY J. SHONFELT				

WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE	
	1	SP	SAND	TAN	V FINE GRAINED, WELL SORTED MOD WELL ROUNDED, MOSTLY QTZ	D						CU	
	2												
	3												
	4												
	5												
	6												
	7												
	8					THIN CALICHE LAYER HARD DRILLING (6 IN)	D						CU
	9												
	10		SM	SANDY SILT	TAN	V FINE SAND, ABUNDANT CALICHE CLASTS	D	BKG	1				CU
	11												
	12												
	13												
	14												
	15					HARD DRILLING - CALICHE LAYERS	D		1.0	2			CU
	16												
	17					CALICHE LAYERS	D						CU
	18					ODOR IN CUTTINGS - MED HC							
	19		SM	SILTY SAND	TAN	V FINE, ABUND SILT, SUB ROUNDED MED WELL SORTED SOME CALICHE CLASTS, MED HC ODOR	D						CU

JOB NUMBER OK0532.002	CLIENT WARREN PETROLEUM	LOCATION MONUMENT, NM	WELL NO. WP-12	PAGE 2 OF 2	WELL LOCATION SEE PAGE ONE N ↑
DRILLING METHOD SEE PAGE 1		SAMPLING METHOD SEE PAGE 1			
DRILLING START FINISH SEE PAGE 1		DEVEL START FINISH SEE PAGE 1			
STATIC DTW DATE SEE PAGE 1		DRILLED BY SEE PAGE 1			
ELEVATION TOC GL SEE PAGE 1		LOGGED BY J. SHONFELT			

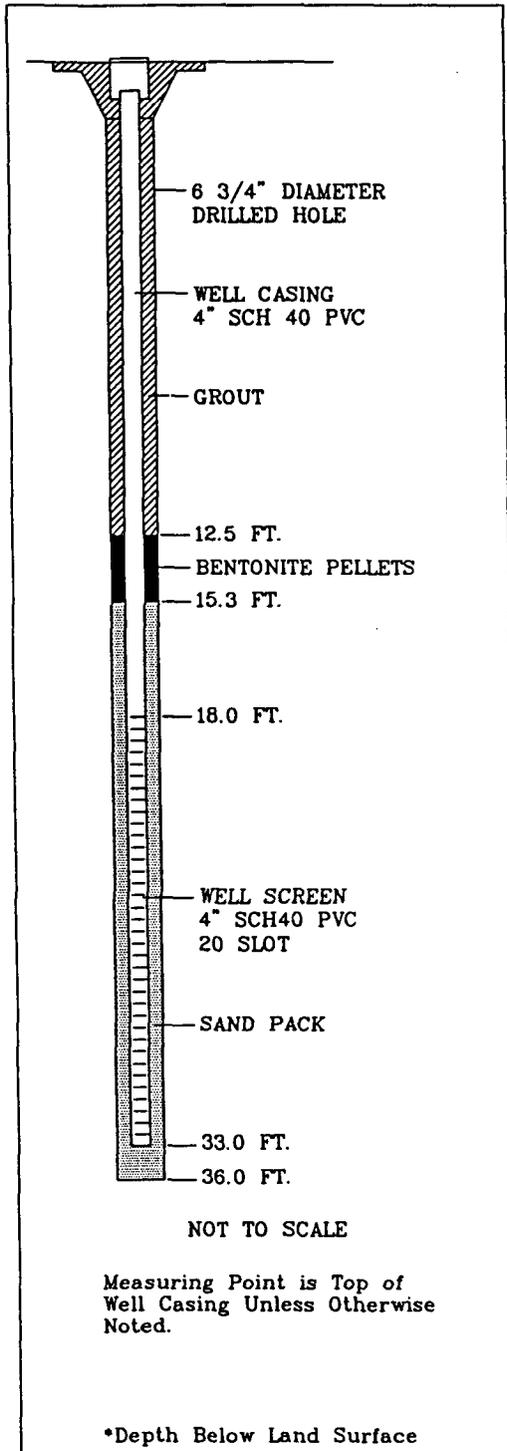
WELL CONSTRUCTION	DEPTH FEET	CLASS	NAME	COLOR	DESCRIPTION: GRADATION, SECONDARY CHARACTERISTICS, ODOR, REMARKS.	M.C.	HNU (PPM)	SAMPLE NO.	SAMPLE DEPTH	BLOWS	RECOV. %	TYPE	
[Patterned Column]	21	SP	SAND	TAN	SAME AS ABOVE	D		4				CU	
	22												
	23												
	24												
	25	SP	SAND	TAN			D		5			CU	
	26												
	27					HARD DRILLING - CALICHE LAYERS MORE CALICHE CLASTS IN CUTTINGS SL HC ODOR							
	28												
	29												
	30	SP	SAND	LT GY	VF GRAINED, SILTY, SOME CALICHE		D		6				SS
	31					CLASTS, MOD WELL SORTED, MOD HC ODOR							
	32	CL	CLAY/CALICHE	GY	MOTTLED TEXTURE - GREEN/GRAY								
	33			RD	PINK ABOVE CALCAREOUS ZONES								
34													
35						D		7				CU	
36													
37					SAME AS ABOVE								
38													
39		CLAY/SHALE	RD	RED BEDS-DENSE CLAY/SHALE MOTTLED									
					TEXTURE: BLOCKY STRUCTURE TD=42 FT	M		8				SS	

ATTACHMENT B



WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Project OK0532.002 Well WP-11

Town/City MONUMENT

County LEA State NEW MEXICO

Permit No. _____

Land-Surface Elevation and Datum _____ Feet

Installation Date(s) 11/8/95

Drilling Method AIR ROTARY

Drilling Contractor EADES

Drilling Fluid AIR

Development Technique(s) and Date(s)
BAIL/PUMP & SURGE 11/09/95

Fluid Loss During Drilling NONE Gallons

Water Removed During Development 30 Gallons

Static Depth to Water 29.69 Feet below M.P.

Pumping Depth to Water NA Feet below M.P.

Pumping Duration NA Hours

Yield NA Gpm Date NA

Specific Capacity NA Gpm/Ft.

Well Purpose MONITORING WELL

Fracture Zones _____

Remarks

OLGALBY NORTON 10-20 SAND

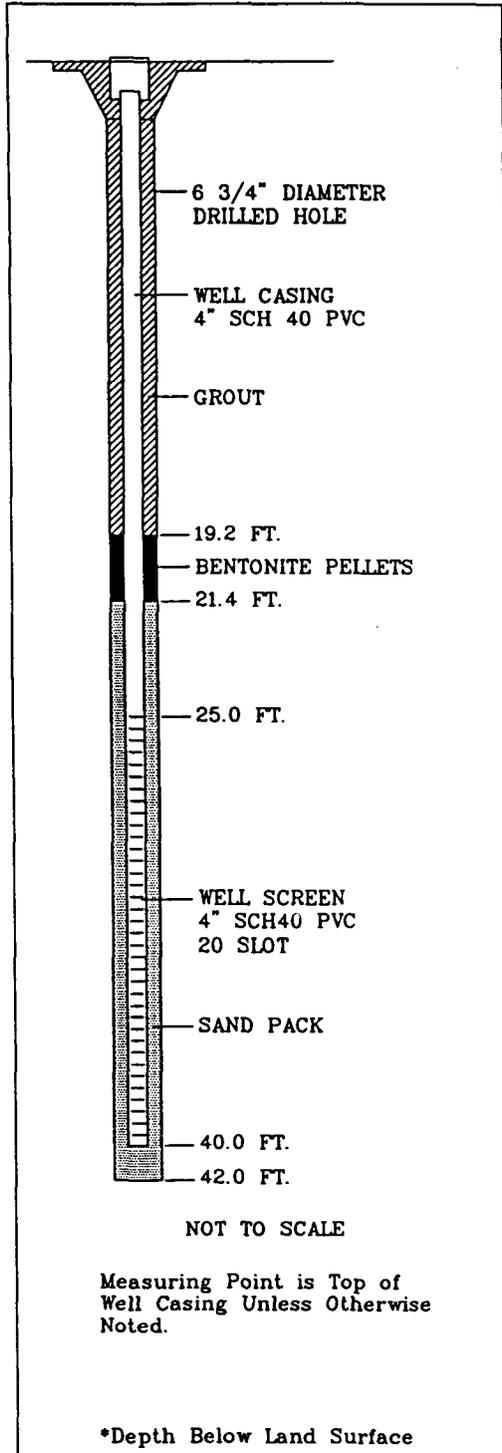
BAGS

3/4 BAG PURE GOLD CHIPS

Prepared By J. SHONFELT

WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Project OK0532.002 Well WP-12

Town/City MONUMENT

County LEA State NEW MEXICO

Permit No. _____

Land-Surface Elevation and Datum _____ Feet

Installation Date(s) 11/8/95;11/9/95

Drilling Method AIR ROTARY

Drilling Contractor EADES

Drilling Fluid AIR

Development Technique(s) and Date(s)
BAIL/PUMP & SURGE 11/09/95

Fluid Loss During Drilling NA Gallons

Water Removed During Development 13.0 Gallons

Static Depth to Water _____ Feet below M.P.

Pumping Depth to Water NA Feet below M.P.

Pumping Duration NA Hours

Yield NA Gpm Date NA

Specific Capacity NA Gpm/Ft.

Well Purpose MONITORING WELL

Fracture Zones _____

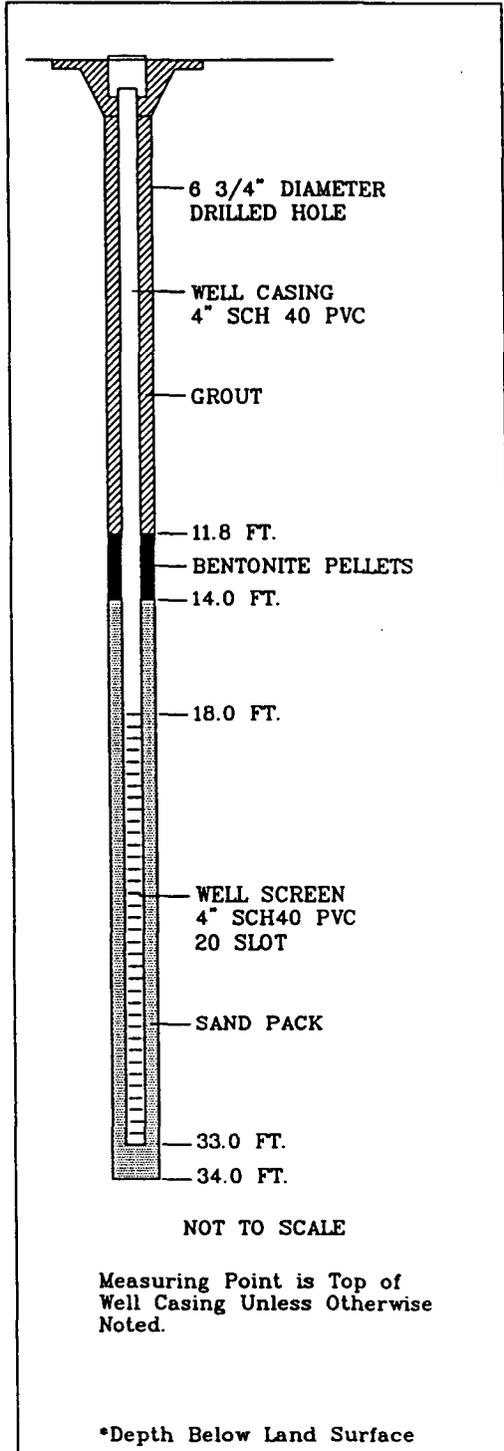
Remarks
BAILED DRY TWICE DURING DEVELOPMENT

Prepared By J. SHONFELT



WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Project OK0532.002 Well WP-13

Town/City MONUMENT

County LEA State NEW MEXICO

Permit No. _____

Land-Surface Elevation and Datum _____ Feet

Installation Date(s) 11/8/95

Drilling Method AIR ROTARY

Drilling Contractor EADES

Drilling Fluid AIR

Development Technique(s) and Date(s)
BAIL/PUMP & SURGE

Fluid Loss During Drilling NA Gallons

Water Removed During Development 14.0 Gallons

Static Depth to Water 29.96 Feet below M.P.

Pumping Depth to Water NA Feet below M.P.

Pumping Duration NA Hours

Yield NA Gpm Date NA

Specific Capacity NA Gpm/Ft.

Well Purpose MONITORING WELL

Fracture Zones _____

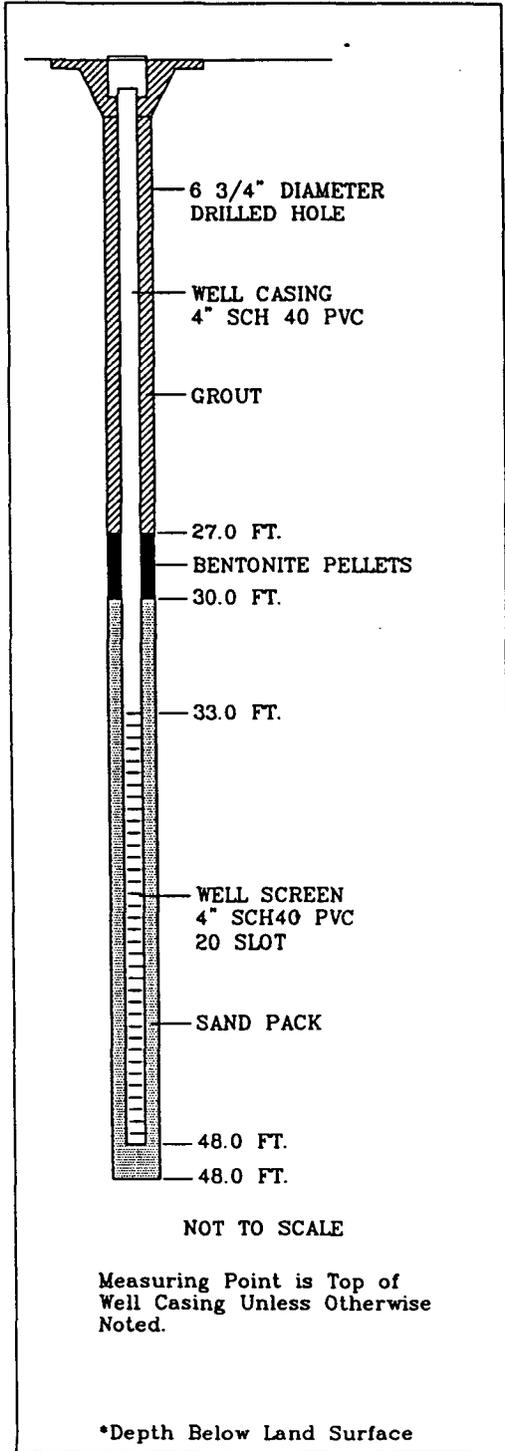
Remarks
BAILED DRY TWICE DURING DEVELOPMENT

Prepared By J. SHONFELT



WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Project OK0532.002 Well WP-14

Town/City MONUMENT

County LEA State NEW MEXICO

Permit No. _____

Land-Surface Elevation and Datum _____ Feet

Installation Date(s) 11/9/95

Drilling Method AIR ROTARY

Drilling Contractor EADES

Drilling Fluid AIR

Development Technique(s) and Date(s)

BAIL/PUMP & SURGE 11/9/95

Fluid Loss During Drilling NA Gallons

Water Removed During Development 47.0 Gallons

Static Depth to Water 40.76 Feet below M.P.

Pumping Depth to Water NA Feet below M.P.

Pumping Duration NA Hours

Yield NA Gpm Date NA

Specific Capacity NA Gpm/Ft.

Well Purpose MONITORING WELL

Fracture Zones _____

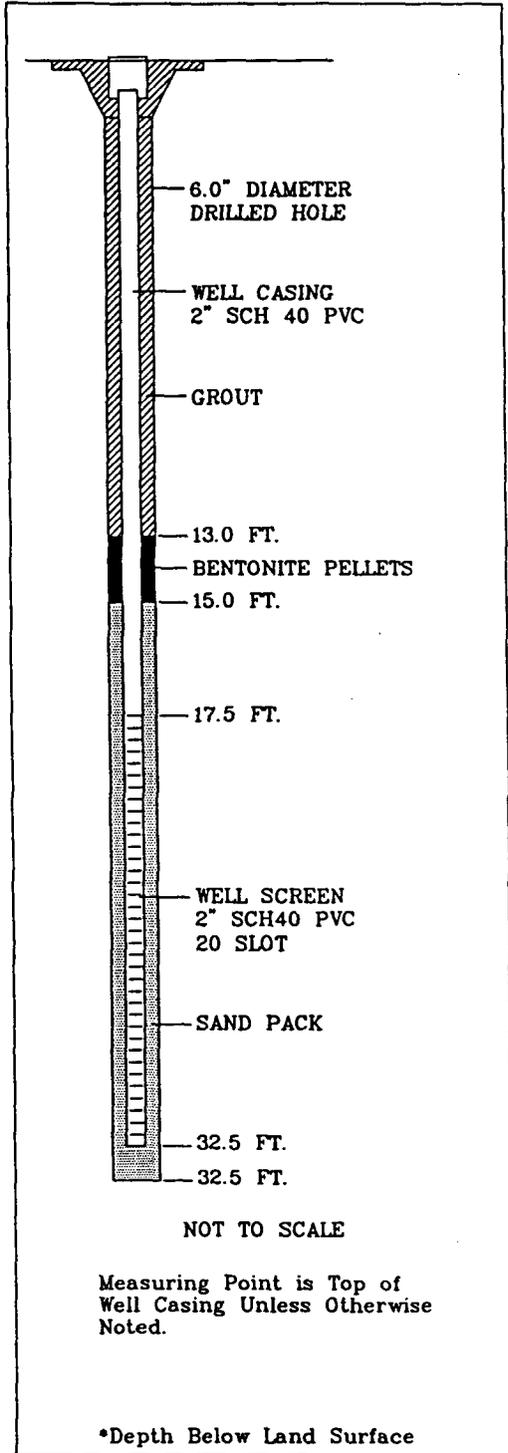
Remarks PRODUCTIVE WATER ZONE

Prepared By J. SHONFELT



WELL CONSTRUCTION LOG

(UNCONSOLIDATED)



Project OK0572.002 Well WP-15

Town/City MONUMENT

County LEA State NEW MEXICO

Permit No. _____

Land-Surface Elevation and Datum _____ Feet

Installation Date(s) 11/9/95

Drilling Method AIR ROTARY

Drilling Contractor EADES

Drilling Fluid AIR

Development Technique(s) and Date(s)

BAIL/PUMP & SURGE

Fluid Loss During Drilling NA Gallons

Water Removed During Development 20 Gallons

Static Depth to Water _____ Feet below M.P.

Pumping Depth to Water NA Feet below M.P.

Pumping Duration NA Hours

Yield NA Gpm Date NA

Specific Capacity NA Gpm/Ft.

Well Purpose OBSERVATION

Fracture Zones _____

Remarks

BAILED DRY TWICE DURING DEVELOPMENT

Prepared By J. SHONFELT

ATTACHMENT 2

Activity Summary

July 1995 through Dec., 1995

Five new wells were installed during this time. Four of these wells were installed to further delineate the eastern border of the groundwater contamination. These wells are WP-11, WP-12, WP-14, and WP-15. One well was installed to take the place of the Climax well. This well was WP-13. A report from Geraghty and Miller, Feb. 29, 1996, further describes the installation of these wells.

Monitoring and recovery efforts continued with results being recorded in the following tables:

Table 1 - Water Table Elevations and Hydrocarbon Thickness Measurements

Table 2 - Analytical Results

Table 3 - Recovered Volumes

Recovered volumes consisted mainly of water due to poor pump performance. To improve hydrocarbon recovery rates three new pumps have been purchased which increased the hydrocarbon recovery significantly. Two of these pumps are currently operating and we are planning installation of the third.

In regards to water table elevations, we have had trouble obtaining an accurate survey of the wellhead elevations. Three separate survey attempts have produced questionable results. At this time we are locating a new surveyor to resolve this problem. Consequently, the elevations reported may be in error and may be subject to correction in future reports.

Table 1 - Water Table Elevations and Hydrocarbon Thickness Measurements

Water Table Elevations and Hydrocarbon Thickness must be measured every three months for all Monitoring Wells.

Measurements should be taken during the first half of each quarter.

All wells should be gauged at the same time and the date noted in the space provided in the table.

Surveyed elevations are recorded on the Sheet labeled Well Information.

MSL water elevations and product thickness are automatically calculated in Tables 1-B and 1-C, respectively.

Table 1-A, ACTUAL FIELD MEASUREMENTS, from reference point on north side of casing, feet											
Monitor Well ID		1995		1996				1997			
		3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1	Product	32.00	25.80	28.00							
	Water	32.00	25.80	28.00							
WP-2	Product	30.70	30.95	31.53							
	Water	31.00	31.35	31.71							
WP-3	Product	29.40	29.30	29.17							
	Water	29.60	29.55	29.45							
WP-4	Product	33.60	33.75	33.96							
	Water	35.00	35.10	35.23							
WP-5	Product	31.90	32.10	32.62							
	Water	31.90	32.10	32.62							
WP-6	Product	28.80	28.80	28.75							
	Water	28.80	28.80	28.78							
WP-7	Product	31.25	34.30	31.77							
	Water	31.25	34.30	31.77							
WP-8	Product	NA	NA	NA							
	Water	NA	NA	NA							
WP-9	Product	NA	NA	NA							
	Water	NA	NA	NA							
WP-10	Product	28.35	28.15	28.10							
	Water	28.45	28.35	28.30							
WP-11	Product	NA	29.60	29.32							
	Water	NA	29.68	29.49							
WP-12	Product	NA	38.08	37.54							
	Water	NA	38.25	37.76							
WP-13	Product	NA	30.25	29.88							
	Water	NA	30.25	29.88							
WP-14	Product	NA	40.75	40.85							
	Water	NA	40.75	40.85							
WP-15	Product	NA	33.60	32.96							
	Water	NA	33.60	33.16							

Note: The bottom of well WP-2 is 31.71 feet from top of casing.
 NA indicates not measured or not able to measure.

Table 1-B, Water Table Elevations, Feet above MSL

Monitor Well ID	1995		1996				1996			
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1	3546.01	3552.21	3550.01							
WP-2	3546.73	3546.38	3546.02							
WP-3	3551.76	3551.81	3551.91							
WP-4	3542.17	3542.07	3541.94							
WP-5	3547.54	3547.34	3546.82							
WP-6	3556.54	3556.54	3556.56							
WP-7	3551.80	3548.75	3551.28							
WP-8	NA	NA	NA							
WP-9	NA	NA	NA							
WP-10	3551.73	3551.83	3551.88							
WP-11	NA	3553.52	3553.71							
WP-12	NA	3543.69	3544.18							
WP-13	NA	3549.41	3549.78							
WP-14	NA	3541.09	3540.99							
WP-15	NA	3548.74	3549.18							

The water table in well WP-3 may be below bottom of well which has an elevation of 3551.91 fasl.
 NA indicates not measured or not able to measure.

Table 1-C, Product Thickness, feet

Monitor Well ID	1995		1996				1996			
	3rd Qtr 10/31/95	4th Qtr 11/14/95	1st Qtr 1/24/96	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
WP-1										
WP-2	0.30	0.40	0.18							
WP-3	0.20	0.25	0.28							
WP-4	1.40	1.35	1.27							
WP-5										
WP-6			0.03							
WP-7										
WP-8	NA	NA	NA							
WP-9	NA	NA	NA							
WP-10	0.10	0.20	0.20							
WP-11	NA	0.08	0.17							
WP-12	NA	0.17	0.22							
WP-13	NA									
WP-14	NA									
WP-15	NA		0.20							

Blanks indicate no product measured. NA indicates not measured or not able to measure.

**Table 2 -- Monitor Well Analytical Results
Monument Groundwater Analytical Results**

Each of the following monitor wells, WP-1, WP-5, WP-6, and WP-7, WP-13, and WP-14 must be sampled and analyzed on a quarterly basis coinciding with the measurements taken for Table 1.

Table 2-A, Analytical Results for Monitor well	WP-1					
	1995		1996		1997	
	3rd Qtr 10/31/95	4th Qtr 12/20/95	1st Qtr 2/19/96	2nd Qtr	3rd Qtr	4th Qtr
Benzene, ug/l	5100.00	5000.00	6300.00			
Toluene, ug/l	ND	ND	ND			
Ethylbenzene, ug/l	18.00	ND	ND			
Xylenes, ug/l	ND	ND	ND			
Total BTEX, ug/l	5118.00	5000.00	6300.00			
Chlorides, mg/l	30.00	16.00	21.00			
Total Dissolved Solids, mg/l	907.00	798.00	1164.00			
Sulfate, mg/l	ND	ND	ND			

Table 2-B, Analytical Results for Monitor well -	WP-5					
	1995		1996		1997	
	3rd Qtr 10/31/95	4th Qtr 12/20/95	1st Qtr 2/19/96	2nd Qtr	3rd Qtr	4th Qtr
Benzene, ug/l	140.00	110.00	140.00			
Toluene, ug/l	ND	ND	ND			
Ethylbenzene, ug/l	2.00	1.00	ND			
Xylenes, ug/l	2.00	ND	ND			
Total BTEX, ug/l	144.00	111.00	140.00			
Chlorides, mg/l	6700.00	7500.00	9000.00			
Total Dissolved Solids, mg/l	16229.00	17087.00	20202.00			
Sulfate, mg/l	2960.00	2670.00	3090.00			

Parameter	1995				1996				1997			
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr		
	10/31/95	12/20/95	2/19/96									
Benzene, ug/l	620.00	290.00	610.00									
Toluene, ug/l	ND	ND	ND									
Ethylbenzene, ug/l	880.00	320.00	630.00									
Xylenes, ug/l	180.00	70.00	ND									
Total BTEX, ug/l	1680.00	680.00	1240.00									
Chlorides, mg/l	2100.00	1900.00	1500.00									
Total Dissolved Solids, mg/l	5271.00	5259.00	4718.00									
Sulfate, mg/l	53.00	28.00	21.00									

Note: The 10/31/95 Cl, TDS, and Sulfate results were reversed for wells WP-6 and WP-7. These tables reflect this correction.

Parameter	1995				1996				1997			
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr		
	10/31/95	12/20/95	2/19/96									
Benzene, ug/l	ND	ND	ND									
Toluene, ug/l	ND	ND	ND									
Ethylbenzene, ug/l	ND	ND	1.00									
Xylenes, ug/l	ND	ND	ND									
Total BTEX, ug/l	ND	ND	1.00									
Chlorides, mg/l	16000.00	15000.00	16500.00									
Total Dissolved Solids, mg/l	35492.00	32986.00	36587.00									
Sulfate, mg/l	5830.00	5390.00	6160.00									

Note: The 10/31/95 Cl, TDS, and Sulfate results were reversed for wells WP-6 and WP-7. These tables reflect this correction.

Parameter	1995				1996				1997			
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr		
	NA	12/20/95	2/19/96									
Benzene, ug/l		5100.00	5700.00									
Toluene, ug/l		ND	ND									
Ethylbenzene, ug/l		170.00	150.00									
Xylenes, ug/l		ND	ND									
Total BTEX, ug/l		5270.00	5850.00									
Chlorides, mg/l		2300.00	1150.00									
Total Dissolved Solids, mg/l		5387.00	3495.00									
Sulfate, mg/l		11.00	5.00									

Table 2-E, Analytical Results for Monitor well - WP-13

Parameter	1995				1996				1997			
	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr		
	NA	12/20/95	2/19/96									
Benzene, ug/l		120.00	81.00									
Toluene, ug/l		ND	ND									
Ethylbenzene, ug/l		2.00	1.00									
Xylenes, ug/l		21.00	ND									
Total BTEX, ug/l		143.00	82.00									
Chlorides, mg/l		7750.00	10000.00									
Total Dissolved Solids, mg/l		15888.00	21366.00									
Sulfate, mg/l		1170.00	2670.00									

Table 2-F, Analytical Results for Monitor well - WP-14

Well Information

Monitoring Well Reference Point Elevations, feet	
Monitor Well ID	Reference Elevation
WP-1	3578.01
WP-2	3577.73
WP-3	3581.36
WP-4	3577.17
WP-5	3579.44
WP-6	3585.34
WP-7	3583.05
WP-8	3581.51
WP-9	3581.64
WP-10	3580.18
WP-11	3583.20
WP-12	3581.94
WP-13	3579.66
WP-14	3581.84
WP-15	3582.34

2/1/96 Difference

3578.01	
3577.73	
3581.36	
3581.55	4.38 higher
3582.84	3.40 higher
3578.71	6.63 lower
3583.20	0.15 higher
3581.94	0.43 higher
3581.84	0.20 higher
3580.18	
3583.20	
3581.94	
3579.66	
3581.84	
3582.34	



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 95 - 11 - 042

Approved for release by:

M. Scott Sample

M. Scott Sample, Laboratory Director

Date: 11/17/95

Debbie Proctor

Debbie Proctor, Project Manager

Date: 11/17/95



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9511042-01

For: Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014

P.O. #:
 DATE: 11/16/95

Attn: Donnie Wallis
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: Mon Well 1

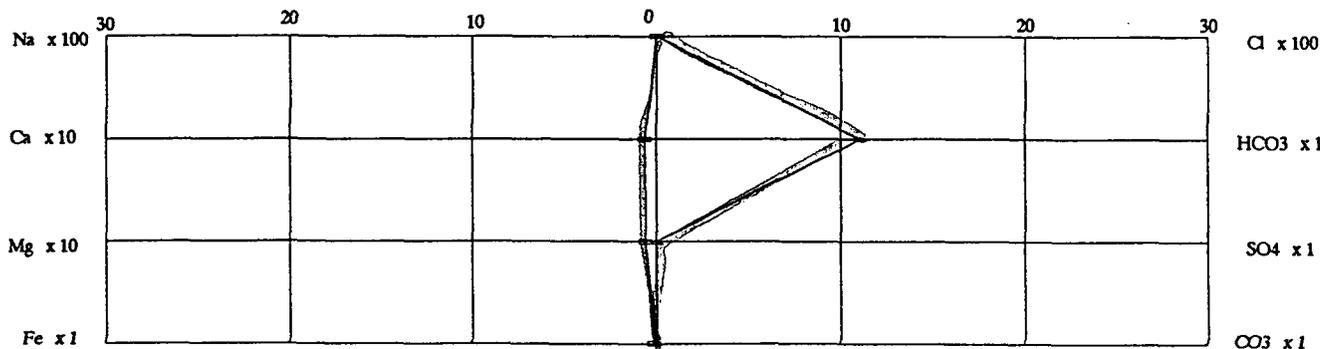
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 10/31/95 09:00:00
 DATE RECEIVED: 11/01/95

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	-9.28	-0.40	Total Dissolved Solids	
Calcium, Ca	123	6.14	(calc.) mg/L	907.57
Magnesium, Mg	71	5.84	Specific Gravity	
Chloride, Cl	30	0.85	60/60 deg. F.	0.0970
Bicarbonate, CaCO ₃	677	11.10	Resistivity	
Sulfate SO ₄	0	0.00	(Mohm-cm) 75 deg. F.	0.8990
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	3.27	0.12	pH units	7.16
Barium, Ba	6.58	0.10		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9511042-02

For: Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014

P.O. #:
 DATE: 11/16/95

Attn: Donnie Wallis
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: Mon Well 5

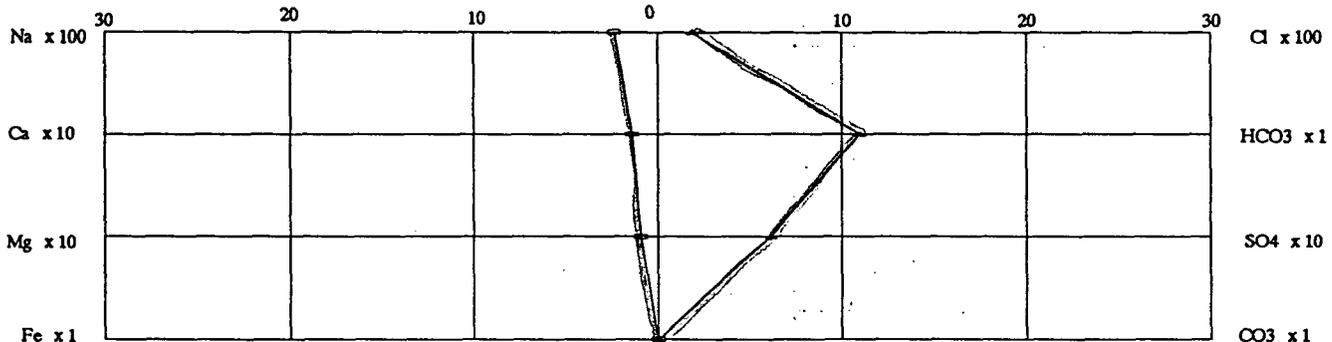
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 10/31/95 09:30:00
 DATE RECEIVED: 11/01/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	5434.95	236.40	Total Dissolved Solids	
Calcium, Ca	284	14.17	(calc.) mg/L	16229.01
Magnesium, Mg	113	9.30		
Chloride, Cl	6700	189.00	Specific Gravity	
Bicarbonate, CaCO ₃	670	10.98	60/60 deg. F.	. 1.0100
Sulfate SO ₄	2960	61.63		
Carbonate, CaCO ₃	0	0.00	Resistivity	
Iron, Fe(Total)	0.03	0.00	(Mohm-cm) 75 deg. F.	0.0520
Barium, Ba	0.03	0.00		
			pH	
			pH units	7.20

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





Certificate of Analysis NO. 9511042-03

HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

For: Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014

P.O. #:
 DATE: 11/16/95

Attn: Donnie Wallis
PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLE BY: Warren Petroleum
SAMPLE ID: Mon Well 7

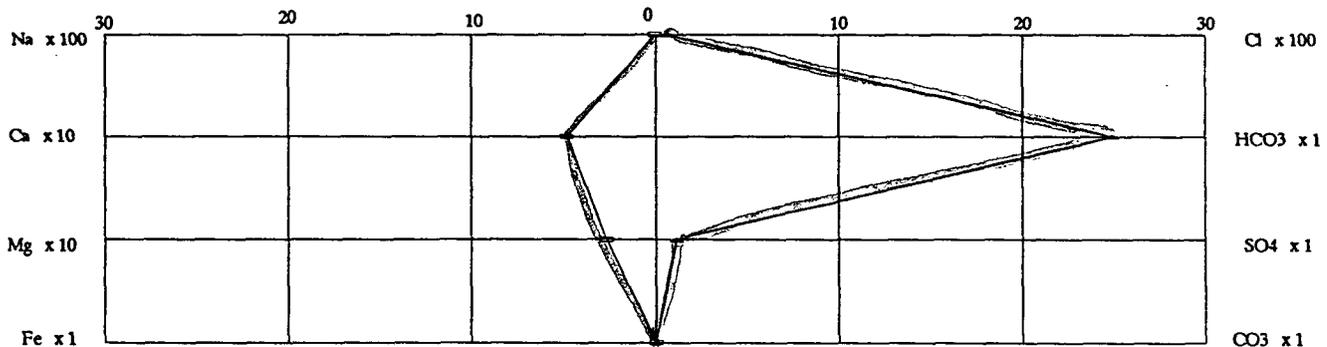
PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 08:00:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	123.18	5.36	Total Dissolved Solids	
Calcium, Ca	969	48.35	(calc.) mg/L	5271.23
Magnesium, Mg	328	26.98	Specific Gravity	
Chloride, Cl	2100	59.24	60/60 deg. F.	1.0100
Bicarbonate, CaCO ₃	1520	24.91	Resistivity	
Sulfate SO ₄	53	1.10	(Mohm-cm) 75 deg. F.	0.1420
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	0.03	0.00	pH units	7.40
Barium, Ba	0.03	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-01

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 1

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 09:00:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	5100	10 P	µg/L
TOLUENE	ND	10 P	µg/L
ETHYLBENZENE	18	10 P	µg/L
TOTAL XYLENE	ND	10 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	5118		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

134

4-Bromofluorobenzene

105

METHOD 8020***

Analyzed by: YN

Date: 11/05/95

Barium, Total

6.58

0.005

mg/L

METHOD 6010 ***

Analyzed by: DQ

Date: 11/09/95

Calcium, Total

123

0.1

mg/L

METHOD 6010 ***

Analyzed by: DQ

Date: 11/09/95

Iron, Total

3.27

0.02

mg/L

METHOD 6010 ***

Analyzed by: DQ

Date: 11/09/95

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-01

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 1

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 09:00:00
DATE RECEIVED: 11/01/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95		6	1	mg/L
Magnesium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95		71	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010 *** Analyzed by: AM Date: 11/02/95		11/02/95		
Chloride METHOD 325.3 * Analyzed by: ET Date: 11/03/95		30	2	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: JS Date: 11/01/95		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: JS Date: 11/01/95		677	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-01

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 1

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 09:00:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 11/14/95	64	1	mg/L
pH METHOD 150.1 * Analyzed by: JS Date: 11/01/95	7.16		pH units
Resistivity EPA 120.1 * Analyzed by: JS Date: 11/06/95	0.899		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 11/09/95	ND	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: JS Date: 11/06/95	0.097		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 11/14/95	907	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-02

Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014
 ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: Mon Well 5

PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 10/31/95 09:30:00
 DATE RECEIVED: 11/01/95

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
BENZENE	140	1 P	µg/L	
TOLUENE	ND	1 P	µg/L	
ETHYLBENZENE	2	1 P	µg/L	
TOTAL XYLENE	2	1 P	µg/L	
TOTAL VOLATILE AROMATIC HYDROCARBONS	144		µg/L	
Surrogate		% Recovery		
1,4-Difluorobenzene		111		
4-Bromofluorobenzene		107		
METHOD 8020*** Analyzed by: YN Date: 11/05/95				
Barium, Total	0.028	0.005	mg/L	
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				
Calcium, Total	284	0.1	mg/L	
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				
Iron, Total	0.03	0.02	mg/L	
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-02

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 5

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 09:30:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	67	1	mg/L
Magnesium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	113	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010 *** Analyzed by: AM Date: 11/02/95	11/02/95		
Chloride METHOD 325.3 * Analyzed by: ET Date: 11/03/95	6700	200	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: JS Date: 11/01/95	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: JS Date: 11/01/95	670	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-02

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 5

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 09:30:00
DATE RECEIVED: 11/01/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		5435	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 11/14/95				
pH		7.20		pH units
METHOD 150.1 *				
Analyzed by: JS				
Date: 11/01/95				
Resistivity		0.052		Mohms-cm
EPA 120.1 *				
Analyzed by: JS				
Date: 11/06/95				
Sulfate		2960	250	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 11/09/95				
Specific Gravity		1.010		
ASTM D1429				
Analyzed by: JS				
Date: 11/06/95				
Total Dissolved Solids		16229	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 11/14/95				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-03

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 7

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 08:00:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	97		
4-Bromofluorobenzene	93		
METHOD 8020*** Analyzed by: DAO Date: 11/03/95			
Barium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	0.025	0.005	mg/L
Calcium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	969	1	mg/L
Iron, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	0.03	0.02	mg/L

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-03

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 7

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 08:00:00
DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	178	1	mg/L
Magnesium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	328	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010 *** Analyzed by: AM Date: 11/02/95	11/02/95		
Chloride METHOD 325.3 * Analyzed by: ET Date: 11/03/95	2100	50	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: JS Date: 11/01/95	ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: JS Date: 11/01/95	1520	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-03

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 7

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 08:00:00
DATE RECEIVED: 11/01/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 11/14/95		123	1	mg/L
pH METHOD 150.1 * Analyzed by: JS Date: 11/01/95		7.40		pH units
Resistivity EPA 120.1 * Analyzed by: JS Date: 11/06/95		0.142		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 11/09/95		53	5	mg/L
Specific Gravity ASTM D1429 Analyzed by: JS Date: 11/06/95		1.010		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 11/14/95		5271	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-04

Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014
 ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: Mon Well 6

PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 10/31/95 08:30:00
 DATE RECEIVED: 11/01/95

PARAMETER	ANALYTICAL DATA		DETECTION LIMIT	UNITS
	RESULTS			
BENZENE	620		5 P	µg/L
TOLUENE	ND		5 P	µg/L
ETHYLBENZENE	880		5 P	µg/L
TOTAL XYLENE	180		5 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1680			µg/L
Surrogate		% Recovery		
1,4-Difluorobenzene		112		
4-Bromofluorobenzene		136		
METHOD 8020*** Analyzed by: YN Date: 11/05/95				
Barium, Total	0.554		0.005	mg/L
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				
Calcium, Total	160		0.1	mg/L
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				
Iron, Total	3.54		0.02	mg/L
METHOD 6010 *** Analyzed by: DQ Date: 11/09/95				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-04

Warren Petroleum
 P.O. Box 218
 Canadian, TX 79014
 ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: Mon Well 6

PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 10/31/95 08:30:00
 DATE RECEIVED: 11/01/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	18	1	mg/L
Magnesium, Total METHOD 6010 *** Analyzed by: DQ Date: 11/09/95	115	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010 *** Analyzed by: AM Date: 11/02/95	11/02/95		
Chloride METHOD 325.3 * Analyzed by: ET Date: 11/03/95	16000	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: JS Date: 11/01/95	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: JS Date: 11/01/95	446	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9511042-04

Warren Petroleum
P.O. Box 218
Canadian, TX 79014
ATTN: Donnie Wallis

DATE: 11/16/95

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well 6

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 10/31/95 08:30:00
DATE RECEIVED: 11/01/95

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		12919	1	mg/L
	METHOD CALCULATION			
	Analyzed by: DAM			
	Date: 11/14/95			
pH		6.92		pH units
	METHOD 150.1 *			
	Analyzed by: JS			
	Date: 11/01/95			
Resistivity		0.025		Mohms-cm
	EPA 120.1 *			
	Analyzed by: JS			
	Date: 11/06/95			
Sulfate		5830	625	mg/L
	METHOD 375.4 *			
	Analyzed by: ST			
	Date: 11/09/95			
Specific Gravity		1.020		
	ASTM D1429			
	Analyzed by: JS			
	Date: 11/06/95			
Total Dissolved Solids		35492	1	mg/L
	METHOD CALCULATION			
	Analyzed by: DAM			
	Date: 11/14/95			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION



Matrix: Aqueous
Units: µg/L

Batch Id: HP_J951105153810

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	45	90.0	61 - 123
Toluene	ND	150	140	93.3	62 - 122
EthylBenzene	ND	50	50	100	56 - 119
O Xylene	ND	100	97	97.0	32 - 160
M & P Xylene	ND	200	200	100	32 - 160

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	6	50	63			
TOLUENE	6	150	180	116	180	116	0	26	56 - 134
ETHYLBENZENE	ND	50	60	120	60	120	0	38	61 - 128
O XYLENE	4	100	110	106	110	106	0	20	40 - 130
M & P XYLENE	8	100	130	122	130	122	0	20	43 - 152

Analyst: YN
Sequence Date: 11/05/95
SPL ID of sample spiked: 9511204-01A
Sample File ID: J__389.TX0
Method Blank File ID:
Blank Spike File ID: J__382.TX0
Matrix Spike File ID: J__385.TX0
Matrix Spike Duplicate File ID: J__386.TX0

* = Values Outside QC Range
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5> | / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL Historical Data
(***) = Source: SPL-Houston Historical Data

- SAMPLES IN BATCH(SPL ID):
- 9511042-01C 9511126-01A 9511126-07A 9511126-09A
 - 9511203-05A 9511203-09A 9511203-03A 9511203-08A
 - 9511203-07A 9511203-06A 9511203-01A 9511203-02A
 - 9511203-04A 9511203-11A 9511203-10A 9511203-12A
 - 9511204-01A 9511042-02C 9511042-04C


QC Officer



Matrix: Aqueous
Units: µg/L

Batch Id: HP_J951102060710

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	47	94.0	61 - 123
Toluene	ND	150	150	100	62 - 122
EthylBenzene	ND	50	52	104	56 - 119
O Xylene	ND	100	100	100	32 - 160
M & P Xylene	ND	200	210	105	32 - 160

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
BENZENE	150	50	200	100	200	100	0	25	39 - 150
TOLUENE	9	150	200	127	190	121	4.84	26	56 - 134
ETHYLBENZENE	51	50	110	118	110	118	0	38	61 - 128
O XYLENE	8	100	130	122	120	112	8.55	20	40 - 130
M & P XYLENE	38	100	170	132	170	132	0	20	43 - 152

Analyst: DAO

Sequence Date: 11/02/95

SPL ID of sample spiked: 9510D28-03A

Sample File ID: J__271.TX0

Method Blank File ID:

Blank Spike File ID: J__265.TX0

Matrix Spike File ID: J__268.TX0

Matrix Spike Duplicate File ID: J__269.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

Relative Percent Difference = [(<4> - <5>) / [(<4> + <5>) x 0.5]] x 100

(**) = Source: SPL Historical Data

(***) = Source: SPL-Houston Historical Data

SAMPLES IN BATCH(SPL ID):

9510D28-02A 9511007-13A 9511009-04A 9511033-03A
 9511030-01A 9511010-01A 9511005-01A 9511023-01A
 9511023-02A 9511030-03A 9511033-01A 9511031-03A
 9511042-03C 9510C08-01A 9510880-05A 9511031-01A
 9510D28-03A 9510D28-04A 9510D28-05A


QC Officer

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: DO

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054

Date: 110995 Time: 0915

File Name: 110995Q2

Checked: *[Signature]*
01110195

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.889	94	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.340	97	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron	ND	2.00	2.047	102	1.60	2.40
Potassium	ND	20.00	18.790	94	16.00	24.00
Magnesium	ND	20.00	19.480	97	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions
95-11-042 01A-04A

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 95-11-042 04A

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver										
Aluminum										
Arsenic										
Barium	0.554	1.0	1.42	87	1.392	84	80	120	3.3	20.0
Beryllium										
Calcium	159.3	10.0	167.7	84	170	107	80	120	24.1	** 20.0
Cadmium										
Cobalt										
Chromium										
Copper										
Iron	3.54	1.0	4.688	115	4.63	109	80	120	5.2	20.0
Potassium	17.55	10.0	28.3	108	28.12	106	80	120	1.7	20.0
Magnesium	115	10.0	123.6	86	124.8	98	80	120	13.0	20.0
Manganese										
Sodium										
Nickel										
Lead										
Antimony										
Selenium										
Thallium										
Vanadium										
Zinc										

** Spike RPD Outside Method Limits

Cynthia Shreves
QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/07/95
Analyzed on: 11/03/95
Analyst: ET

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9511103-01C	ND	50	102	102	0	93. - 109	2.7

-9511209

Samples in batch:

9510C89-01D 9510C90-01E 9510D35-03A 9510D38-03A
9510D56-03A 9511042-01B 9511042-02B 9511042-03B
9511042-04B 9511103-01C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/07/95

Analyzed on: 11/03/95

Analyst: ET

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	51.6	51.98	101	90 - 110

-9511209

Samples in batch:

9510C89-Q1D 9510C90-01E 9510D35-03A 9510D38-03A
 9510D56-03A 9511042-01B 9511042-02B 9511042-03B
 9511042-04B 9511103-01C

COMMENTS:

LCS = SPL I.D #94463120-3

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/01/95

Analyzed on: 11/01/95

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/l	Duplicate Sample mg/l	RPD	RPD Max.
9511042-01B	ND	ND	0	2.2

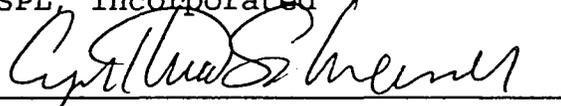
-9511041

Samples in batch:

9511042-01B 9511042-02B 9511042-03B 9511042-04B

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/01/95

Analyzed on: 11/01/95

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/l	Duplicate Sample mg/l	RPD	RPD Max.
9511042-01B	676	678	0.3	3

-9511040

Samples in batch:

9511042-01B

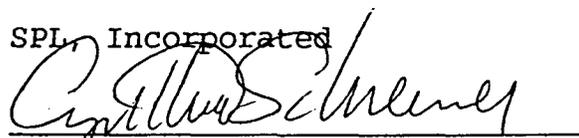
9511042-02B

9511042-03B

9511042-04B

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/01/95
 Analyzed on: 11/01/95
 Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
 METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ph units	Duplicate Sample ph units	RPD	RPD Max.
9511004-01A	7.90	7.90	0	1.0

-9511039

Samples in batch:

9511003-01F 9511003-02F 9511003-03F 9511003-04F
 9511004-01A 9511005-01C 9511042-01B 9511042-02B
 9511042-03B 9511042-04B

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/07/95

Analyzed on: 11/06/95

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9511103-01B	0.310	0.310	0	1.0

-9511187

Samples in batch:

9511042-01B
9511103-01B

9511042-02B

9511042-03B

9511042-04B

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/09/95
Analyzed on: 11/09/95
Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

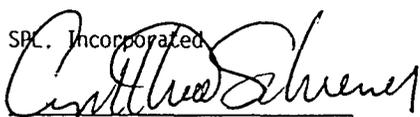
SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9511056-01F	ND	10.00	94.7	96.6	2.0	79. - 122	11.

-9511306

Samples in batch:

9511042-01B 9511042-02B 9511042-03B 9511042-04B
9511056-01F 9511103-01B 9511342-01F

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/09/95

Analyzed on: 11/09/95

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L,	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	19.89	99.4	90 - 110

-9511307

Samples in batch:

9511042-Q1B 9511042-02B 9511042-03B 9511042-04B
9511056-01F 9511103-01B 9511342-01F

COMMENTS:

SPL LCS ID#955356-6

SPL, Incorporated

QC officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 11/06/95

Analyzed on: 11/06/95

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9511042-01B	0.097	0.097	0	1.0

-9511156

Samples in batch:

9511042-01B

9511042-02B

9511042-03B

9511042-04B

9511103-01B

COMMENTS:

SPL, Incorporated


QC Officer

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



Environmental Laboratory
 8880 Interchange Drive
 Houston, Texas 77054
 713/660-0901

Analysis Request and Chain of Custody Record

Project No.		Client/Project Name				Project Location		ANALYSIS REQUESTED		LABORATORY REMARKS	
Field Sample No./ Identification		Date and Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, Etc.)	Preservative				
Monwell #7		10-31-95 8 am			Nalgene	Liquid	Nitric acid	Cat & Anion			
"		"			"	"	"	"			
"		"			Glass	"	HCL	BTEX			
"		"			"	"	"	"			
"		"			"	"	"	"			
Mon. Well 6		10-31-95 8:30 am			Nalgene	"	Nitric acid	Major Cat & Anion			
"		"			"	"	"	"			
"		"			Glass	"	HCL	BTEX			
"		"			"	"	"	"			
"		"			"	"	"	"			
Samplers: (Signature)		Date: Time:		Received by: (Signature)		Date: Time:		Intact			
[Signature]				[Signature]				Intact			
Relinquished by: (Signature)		Date: Time:		Received by: (Signature)		Date: Time:		Intact			
[Signature]				[Signature]				Intact			
Relinquished by: (Signature)		Date: Time:		Received by: (Signature)		Date: Time:		Intact			
[Signature]				[Signature]				Intact			
SAMPLER REMARKS:		Inquires thru Oscar DeLeon		505-393-2823		Data Results to: USDC-Monument		PO Box 67 Monument NM		58265	
Seal #											

30C



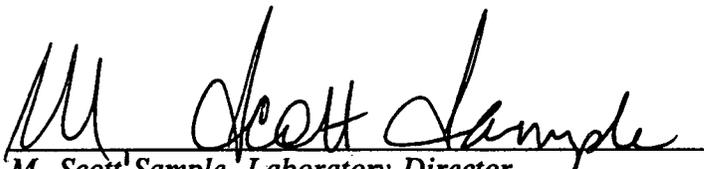
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 96 - 02 - 880

Approved for release by:


M. Scott Sample, Laboratory Director

Date: 3/6/96


Debbie Proctor, Project Manager

Date: 3/6/96



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CASE NARRATIVE

WORKORDER NO.: 9602880

Southern Petroleum Laboratories (SPL) is pleased to present the results of laboratory analysis to Warren Petroleum Company. Six water samples and one trip blank were received intact at our laboratory on 02/20/96 at a temperature of 4 degrees Celsius. The following is a brief narrative of the laboratory analysis.

The samples were analyzed for BTEX by SW 846 8020 and a variety of cations and anions. There were no deviations from the methods.

All of the quality control data was within acceptable limits for the samples associated with this work order, with the exception of the matrix spike/matrix spike duplicate (MS/MSD) analysis for Total Calcium, Potassium, and Magnesium on sample 9602880-02B, MW#5. The MS/MSD recoveries were higher than the advisory QC limits. However, the recovery of the laboratory control standard was within acceptable limits and the entire analysis is considered to be in control.

Please refer to this project by **9602880** to expedite any further discussions. I will be happy to address any questions or concerns you may have.

SOUTHERN PETROLEUM LABORATORIES

A handwritten signature in cursive script, appearing to read 'Debbie Proctor', is written over a horizontal line.

Debbie Proctor
Project Manager



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-01

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #1

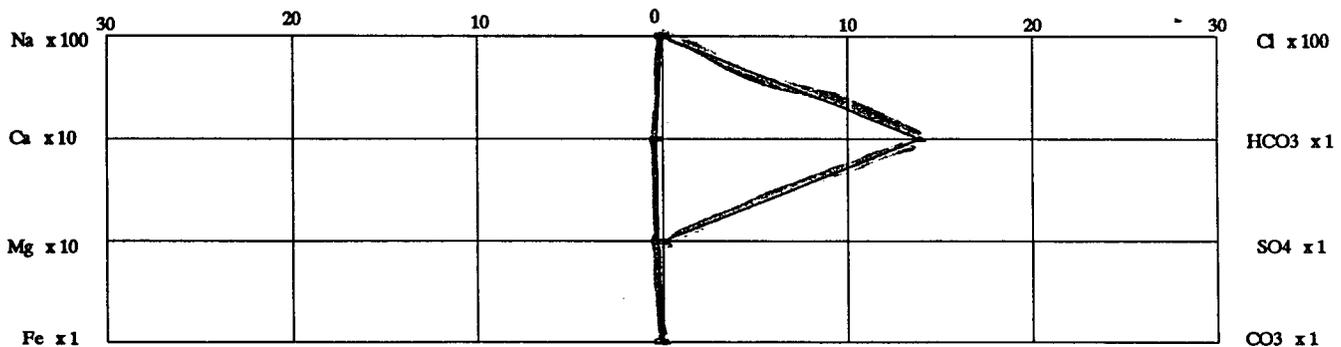
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	176.49	7.68	Total Dissolved Solids	
Calcium, Ca	74.7	3.73	(calc.) mg/L	1164.12
Magnesium, Mg	34.2	2.81	Specific Gravity	
Chloride, Cl	21	0.59	60/60 deg. F.	1.0000
Bicarbonate, CaCO3	848	13.90	Resistivity	
Sulfate SO4	0	0.00	(Mohm-cm) 75 deg. F.	0.6640
Carbonate, CaCO3	0	0.00	pH	
Iron, Fe(Total)	4.06	0.15	pH units	7.25
Barium, Ba	1.67	0.02		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-02

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLE BY: Warren Petroleum
SAMPLE ID: MW #5

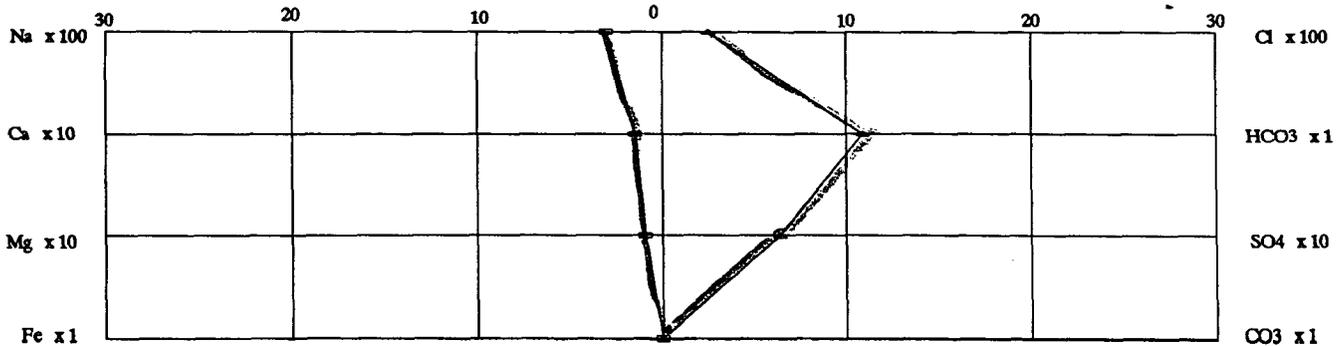
PROJECT NO: 118
MATRIX: Water
DATE SAMPLED: 02/19/96 13:30:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	6978.54	303.55	Total Dissolved Solids	
Calcium, Ca	295	14.72	(calc.) mg/L	20201.66
Magnesium, Mg	112	9.21	Specific Gravity	
Chloride, Cl	9000	253.88	60/60 deg. F.	1.0100
Bicarbonate, CaCO ₃	664	10.88	Resistivity	
Sulfate SO ₄	3090	64.33	(Mohm-cm) 75 deg. F.	0.0490
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	0.09	0.00	pH units	7.11
Barium, Ba	0.03	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-03
 For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #6

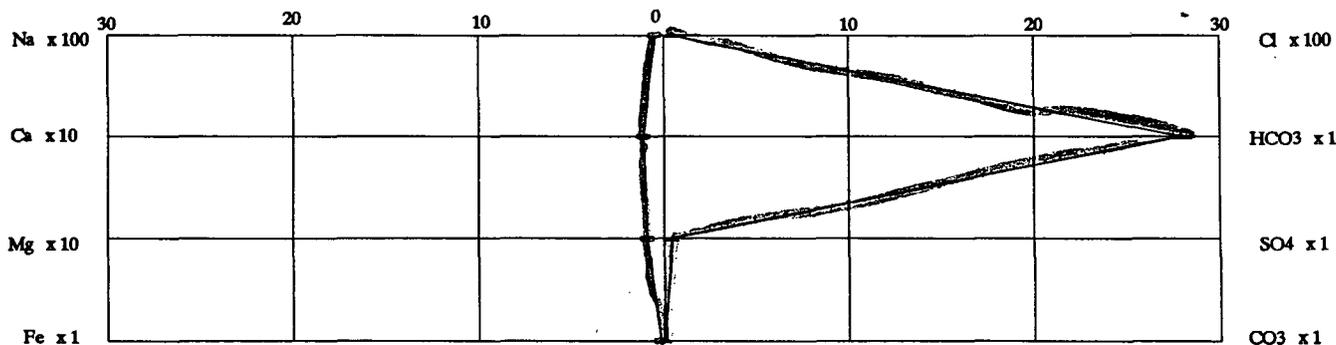
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	1133.2	49.29	Total Dissolved Solids	
Calcium, Ca	228	11.38	(calc.) mg/L	4718.46
Magnesium, Mg	113	9.30	Specific Gravity	
Chloride, Cl	1500	42.31	60/60 deg. F.	1.0020
Bicarbonate, CaCO ₃	1700	27.86	Resistivity	
Sulfate SO ₄	21	0.44	(Mohm-cm) 75 deg. F.	0.1540
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	5.53	0.20	pH units	7.37
Barium, Ba	0.73	0.01		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-04

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #7

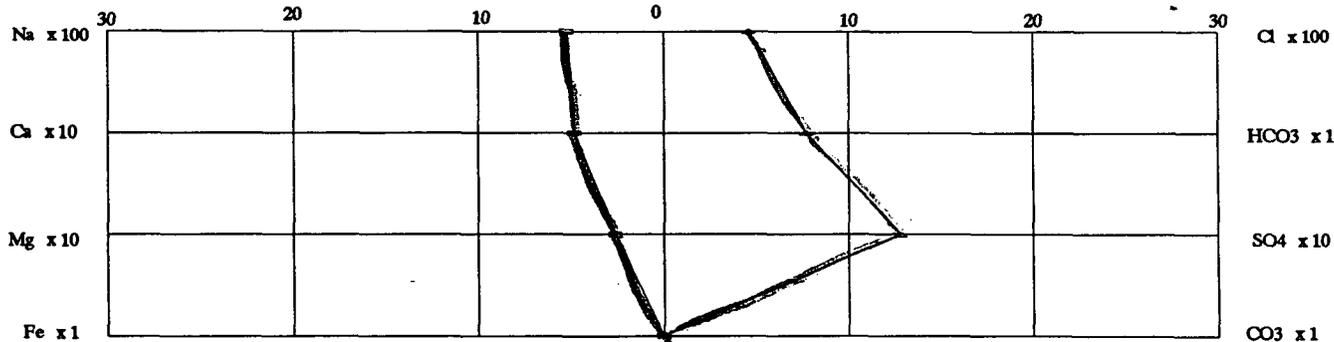
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	12029.18	523.24	Total Dissolved Solids	
Calcium, Ca	964	48.10	(calc.) mg/L	36586.83
Magnesium, Mg	320	26.32		
Chloride, Cl	16500	465.44	Specific Gravity	
Bicarbonate, CaCO ₃	470	7.70	60/60 deg. F.	1.0250
Sulfate SO ₄	6160	128.25		
Carbonate, CaCO ₃	0	0.00	Resistivity	
Iron, Fe(Total)	1.58	0.06	(Mohm-cm) 75 deg. F.	0.0230
Barium, Ba	0.07	0.00		
			pH	
			pH units	6.92

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-05

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #13

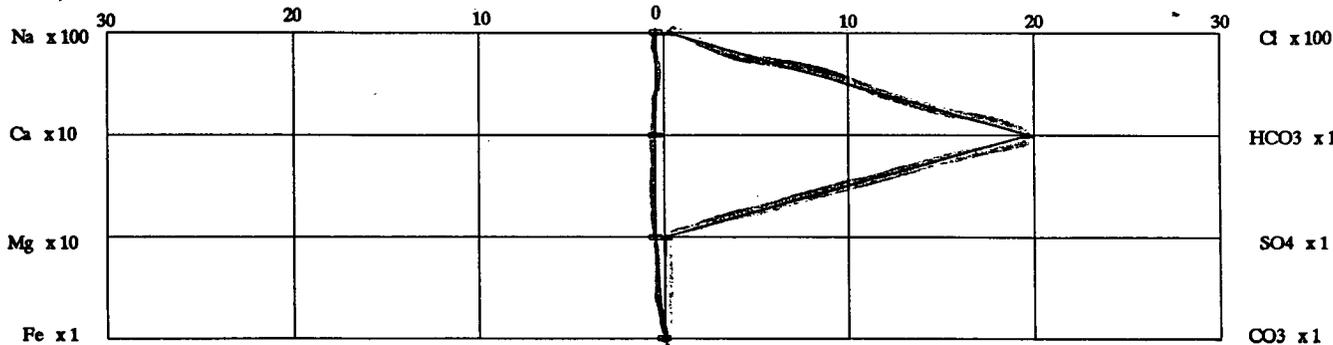
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 14:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	973.14	42.33	Total Dissolved Solids (calc.) mg/L	3494.65
Calcium, Ca	97.2	4.85	Specific Gravity 60/60 deg. F.	0.9990
Magnesium, Mg	57.6	4.74	Resistivity (Mohm - cm) 75 deg. F.	0.1980
Chloride, Cl	1150	32.44	pH pH units	7.19
Bicarbonate, CaCO3	1200	19.67		
Sulfate SO4	5	0.10		
Carbonate, CaCO3	0	0.00		
Iron, Fe(Total)	1.49	0.05		
Barium, Ba	2.22	0.03		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9602880-06

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 03/04/96

Attn: Oscar DeLeon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #14

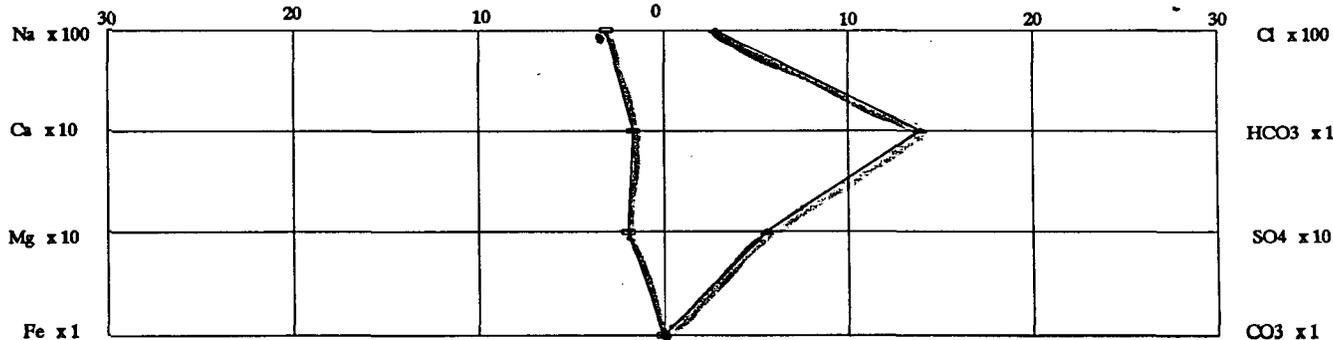
PROJECT NO: 118
 MATRIX: Water
 DATE SAMPLED: 02/19/96 14:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	7217.5	313.94	Total Dissolved Solids	
Calcium, Ca	334	16.67	(calc.) mg/L	21366.21
Magnesium, Mg	236	19.41		
Chloride, Cl	10000	282.09	Specific Gravity	
Bicarbonate, CaCO ₃	849	13.91	60/60 deg. F.	1.0140
Sulfate SO ₄	2670	55.59		
Carbonate, CaCO ₃	0	0.00	Resistivity	
Iron, Fe(Total)	1.62	0.06	(Mohm-cm) 75 deg. F.	0.0320
Barium, Ba	0.09	0.00		
			pH	
			pH units	6.91

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	6300	1000 P	µg/L
TOLUENE	ND	1000 P	µg/L
ETHYLBENZENE	ND	1000 P	µg/L
TOTAL XYLENE	ND	1000 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	6300		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

82
 68

METHOD 8020A ***

Analyzed by: YN
 Date: 03/01/96

Barium, Total 1.67 0.005 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

Calcium, Total 74.7 0.1 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

Iron, Total 4.06 0.02 mg/L

METHOD 6010A ***

Analyzed by: DQ
 Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #1

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	4	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	34.2	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	21	1	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	848	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #1

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 13:00:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	176	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.25		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.664		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	ND	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.000		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	1164	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #5

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 13:30:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	140	10 P	µg/L
TOLUENE	ND	10 P	µg/L
ETHYLBENZENE	ND	10 P	µg/L
TOTAL XYLENE	ND	10 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	140		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

83
 76

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.028

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

295

0.1

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

0.09

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 13:30:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	62	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	112	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	9000	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	664	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-02

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #5

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 13:30:00
DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		6978	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				
pH		7.11		pH units
METHOD 150.1 *				
Analyzed by: LC				
Date: 02/20/96				
Resistivity		0.049		Mohms-cm
EPA 120.1 *				
Analyzed by: LC				
Date: 02/20/96				
Sulfate		3090	250	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 02/20/96				
Specific Gravity		1.010		
ASTM D1429				
Analyzed by: ST				
Date: 02/20/96				
Total Dissolved Solids		20202	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	610	500 P	µg/L
TOLUENE	ND	500 P	µg/L
ETHYLBENZENE	630	500 P	µg/L
TOTAL XYLENE	ND	500 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1240		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

82
 80

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.734

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

228

0.1

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

5.53

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #6

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 11:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	17	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	113	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	1500	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	1700	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-03

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #6

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 11:00:00
DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	1133	1	mg/L
pH METHOD 150.1 * Analyzed by: LC Date: 02/20/96	7.37		pH units
Resistivity EPA 120.1 * Analyzed by: LC Date: 02/20/96	0.154		Mohms-cm
Sulfate METHOD 375.4 * Analyzed by: ST Date: 02/20/96	21	1	mg/L
Specific Gravity ASTM D1429 Analyzed by: ST Date: 02/20/96	1.002		
Total Dissolved Solids METHOD CALCULATION Analyzed by: DAM Date: 02/29/96	4718	1	mg/L

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #7

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 10:00:00
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	1		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

76
 80

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

Barium, Total

0.074

0.005

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Calcium, Total

964

0.5

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

Iron, Total

1.58

0.02

mg/L

METHOD 6010A ***

Analyzed by: DQ

Date: 02/22/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis PROJECT NO: 118
SITE: Monument, NM MATRIX: WATER
SAMPLED BY: Warren Petroleum Company DATE SAMPLED: 02/19/96 10:00:00
SAMPLE ID: MW #7 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	142	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96	320	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96	02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96	16500	500	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96	470	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #7

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 10:00:00
DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		12029	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				
pH		6.92		pH units
METHOD 150.1 *				
Analyzed by: LC				
Date: 02/20/96				
Resistivity		0.023		Mohms-cm
EPA 120.1 *				
Analyzed by: LC				
Date: 02/20/96				
Sulfate		6160	500	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 02/20/96				
Specific Gravity		1.025		
ASTM D1429				
Analyzed by: ST				
Date: 02/20/96				
Total Dissolved Solids		36587	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #13

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 14:00:00
DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
BENZENE		5700	50 P	µg/L
TOLUENE		ND	50 P	µg/L
ETHYLBENZENE		150	50 P	µg/L
TOTAL XYLENE		ND	50 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS		5850		µg/L
Surrogate		% Recovery		
1,4-Difluorobenzene		97		
4-Bromofluorobenzene		86		
METHOD 8020A ***				
Analyzed by: YN				
Date: 03/01/96				
Barium, Total		2.22	0.005	mg/L
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				
Calcium, Total		97.2	0.1	mg/L
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				
Iron, Total		1.49	0.02	mg/L
METHOD 6010A ***				
Analyzed by: DQ				
Date: 02/22/96				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #13

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:00:00
 DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96		8	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96		57.6	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96		02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96		1150	50	mg/L
Carbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96		ND	1	mg/L
Bicarbonate, as CaCO3 METHOD SM 4500-CO2D ** Analyzed by: LC Date: 02/21/96		1200	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #13

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 14:00:00
DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		973	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				
pH		7.19		pH units
METHOD 150.1 *				
Analyzed by: LC				
Date: 02/20/96				
Resistivity		0.198		Mohms-cm
EPA 120.1 *				
Analyzed by: LC				
Date: 02/20/96				
Sulfate		5	1	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 02/20/96				
Specific Gravity		0.999		
ASTM D1429				
Analyzed by: ST				
Date: 02/20/96				
Total Dissolved Solids		3495	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis PROJECT NO: 118
SITE: Monument, NM MATRIX: WATER
SAMPLED BY: Warren Petroleum Company DATE SAMPLED: 02/19/96 14:30:00
SAMPLE ID: MW #14 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	81	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	82		µg/L
Surrogate	% Recovery		
1,4-Difluorobenzene	90		
4-Bromofluorobenzene	101		
METHOD 8020A *** Analyzed by: YN Date: 03/01/96			
Barium, Total	0.088	0.005	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			
Calcium, Total	334	0.1	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			
Iron, Total	1.62	0.02	mg/L
METHOD 6010A *** Analyzed by: DQ Date: 02/22/96			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum Company
SAMPLE ID: MW #14

PROJECT NO: 118
MATRIX: WATER
DATE SAMPLED: 02/19/96 14:30:00
DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Potassium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96		58	1	mg/L
Magnesium, Total METHOD 6010A *** Analyzed by: DQ Date: 02/22/96		236	0.1	mg/L
Acid Digestion-Aqueous, ICP METHOD 3010A *** Analyzed by: MM Date: 02/21/96		02/21/96		
Chloride METHOD 325.3 * Analyzed by: CA Date: 02/21/96		10000	500	mg/L
Carbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LC Date: 02/21/96		ND	1	mg/L
Bicarbonate, as CaCO ₃ METHOD SM 4500-CO ₂ D ** Analyzed by: LC Date: 02/21/96		849	1	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-06

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum Company
 SAMPLE ID: MW #14

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/19/96 14:30:00
 DATE RECEIVED: 02/20/96

PARAMETER	ANALYTICAL DATA	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total		7218	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				
pH		6.91		pH units
METHOD 150.1 *				
Analyzed by: LC				
Date: 02/20/96				
Resistivity		0.032		Mohms-cm
EPA 120.1 *				
Analyzed by: LC				
Date: 02/20/96				
Sulfate		2670	250	mg/L
METHOD 375.4 *				
Analyzed by: ST				
Date: 02/20/96				
Specific Gravity		1.014		
ASTM D1429				
Analyzed by: ST				
Date: 02/20/96				
Total Dissolved Solids		21366	1	mg/L
METHOD CALCULATION				
Analyzed by: DAM				
Date: 02/29/96				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9602880-07

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 03/04/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Provided by SPL
 SAMPLE ID: Trip Blank

PROJECT NO: 118
 MATRIX: WATER
 DATE SAMPLED: 02/05/96
 DATE RECEIVED: 02/20/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

99

4-Bromofluorobenzene

60

METHOD 8020A ***

Analyzed by: YN

Date: 03/01/96

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



Matrix: Aqueous
Units: µg/L

Batch Id: HP_R960301012700

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
Benzene	ND	50	55	110	62 - 121
Toluene	ND	50	52	104	66 - 136
EthylBenzene	ND	50	46	92.0	70 - 136
O Xylene	ND	50	53	106	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
BENZENE	ND	20	21	105	21	105	0	25	39 - 150
TOLUENE	ND	20	21	105	20	100	4.88	26	56 - 134
ETHYLBENZENE	ND	20	17	85.0	17	85.0	0	38	61 - 128
O XYLENE	ND	20	19	95.0	19	95.0	0	29	40 - 130
M & P XYLENE	ND	40	39	97.5	38	95.0	2.60	20	43 - 152

Analyst: YN

Sequence Date: 03/01/96

SPL ID of sample spiked: 9602B39-04A

Sample File ID: R_160.TX0

Method Blank File ID:

Blank Spike File ID: R_153.TX0

Matrix Spike File ID: R_156.TX0

Matrix Spike Duplicate File ID: R_157.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS ‡ Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9602A23-03A 9602A23-01A 9602B37-02A 9602A09-05A
 9602B39-02A 9602B39-03A 9602B39-01A 9602880-06A
 9602977-02A 9602880-02A 9602880-05A 9602880-03A
 9602880-01A 9602B38-02A 9602A52-02A 9602A52-01A
 9602B38-01A 9602880-07A 9602B39-04A

QC Officer



Matrix: Aqueous
Units: µg/L

Batch Id: HP_R960301044600

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) ‡ Recovery Range
			Result <1>	Recovery ‡	
Benzene	ND	50	33	66.0	62 - 121
Toluene	ND	150	120	80.0	66 - 136
EthylBenzene	ND	50	41	82.0	70 - 136
O Xylene	ND	100	98	98.0	74 - 134
M & P Xylene	ND	200	190	95.0	77 - 140

MATRIX SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative ‡ Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	50	60			
TOLUENE	6.2	150	180	116	170	109	6.22	26	56 - 134
ETHYLBENZENE	2.1	50	53	102	53	102	0	38	61 - 128
O XYLENE	10	100	130	120	120	110	8.70	29	40 - 130
M & P XYLENE	11	100	140	129	130	119	8.06	20	43 - 152

Analyst: YN

Sequence Date: 03/01/96

SPL ID of sample spiked: 9602940-01A

Sample File ID: R__188.TX0

Method Blank File ID:

Blank Spike File ID: R__182.TX0

Matrix Spike File ID: R__185.TX0

Matrix Spike Duplicate File ID: R__186.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery = [(<1> - <2>) / <3>] x 100

LCS ‡ Recovery = (<1> / <3>) x 100

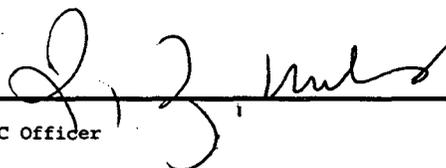
Relative Percent Difference = | (<4> - <5> | / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL-Houston Historical Data (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (4th Q '94)

SAMPLES IN BATCH(SPL ID):

9602880-04A 9602940-03A 9602940-04A 9602940-05A
 9602940-02A 9602940-08A 9602940-07A 9602940-06A
 9602976_01A 9602976-06A 9602976-05A 9602976-02A
 9602976-07A 9602976-08A 9602940-01A


 QC Officer

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water Units: mg/L

Analyst: DO
 HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE 281-560-0017

Date: 022296 Time: 0851 File Name: 022296Q1

Checked: *[Signature]*
 02/22/96

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.918	96	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.620	98	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron	ND	2.00	1.902	95	1.60	2.40
Potassium	ND	20.00	18.580	93	16.00	24.00
Magnesium	ND	20.00	19.720	99	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch
 Work Order Fractions
 96-02-880 01B-06B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 96-02-880 02B

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.0283	1.0	0.9976	97	0.9921	96	80 120	0.6	20.0
Beryllium									
Calcium	295.3	10.0	318.7	234 *	313.3	180 *	80 120	26.1 **	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron	0.0899	1.0	1.174	108	1.017	93	80 120	15.6	20.0
Potassium	62.5	10.0	79.96	175 *	76.02	135 *	80 120	25.4 **	20.0
Magnesium	112.1	10.0	127.7	156 *	124.7	126 *	80 120	21.3 **	20.0
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits
 ** Spike RPD Outside Method Limits

[Signature]
 QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/22/96
Analyzed on: 02/21/96
Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

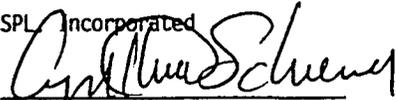
SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9602780-03A	ND	50.00	102	102	0	93. - 109	2.7

-9602780

Samples in batch:

9602780-03A 9602782-03A 9602853-04A 9602880-01C
9602880-02C 9602880-03C 9602880-04C 9602880-05C
9602880-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/22/96

Analyzed on: 02/21/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	51.60	51.98	101	90 - 110

-9602781

Samples in batch:

9602780-03A 9602782-03A 9602853-04A 9602880-01C
9602880-02C 9602880-03C 9602880-04C 9602880-05C
9602880-06C

COMMENTS:

SPL ID# 9553514-21

SPL Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/21/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
 METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9602880-06C	ND	ND	0	2.2

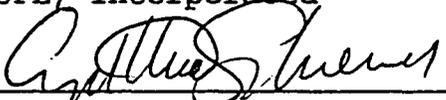
-9602776

Samples in batch:

9602853-04A 9602880-01C 9602880-02C 9602880-03C
 9602880-04C 9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated



 QC officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/21/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
 METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9602880-06C	850	848	0.2	3

-9602775

Samples in batch:

9602853-04A 9602880-01C 9602880-02C 9602880-03C
 9602880-04C 9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/20/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH UNITS	Duplicate Sample pH UNITS	RPD	RPD Max.
9602887-02C	8.39	8.42	0.4	1.0

-9602726

Samples in batch:

9602403-01A 9602880-01C 9602880-02C 9602880-03C
9602880-04C 9602880-05C 9602880-06C 9602887-02C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9602880-04C	6.91	6.92	0.1	1.0

-9602717

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9602880-02C	0.049	0.049	0	1.0

-9602716

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/21/96

Analyzed on: 02/20/96

Analyst: CA

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9602880-02C	0.049	0.049	0	1.0

-9602728

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated

QC officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9602880-05C	ND	10.00	99.4	93.8	5.8	79. - 122	11.

-9602720

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
 METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	19.93	99.6	90 - 110

-9602721

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
 9602880-05C 9602880-06C

COMMENTS:

SPL LCS ID#9553514-21

SPL, Incorporated


 QC officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 02/20/96

Analyzed on: 02/20/96

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9602880-04C	1.025	1.025	0	1.0

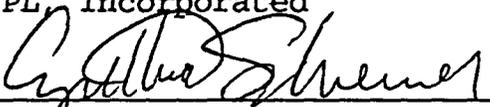
-9602719

Samples in batch:

9602880-01C 9602880-02C 9602880-03C 9602880-04C
9602880-05C 9602880-06C

COMMENTS:

SPL, Incorporated


QC Officer

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9602880

H-04184

page 1 of 2

Requested Analysis

Client Name: *Waters Petroleum Company*
Address/Phone: *P.O. Box 67-505-393-2823*

Client Contact: *OSCAR DELCEN*

Project Name: *MOUMENT NUM*

Project Number: *118*

Project Location: *11*

Invoice To:

SAMPLE ID

DATE TIME comp grab
matrix bottle size pres.
W=water S=soil SL=sludge O=other:
P=plastic A=amber glass G=glass V=vial
1=1 liter 4=4oz 40=vial
8=8oz 16=16oz
1=HCl 2=HNO3 3=H2SO4 O=other:

Number of Containers
BTX
MAJOR CATS
MAJOR ANIONS

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	BTX	MAJOR CATS	MAJOR ANIONS
MW # 19	2/19/96	1:00 PM		V	W	V	40	1	3	X		
MW # 1b	"	1:00 PM		V	W	OP	40	2	1		X	X
MW # 1c	"	1:00 PM		V	W	OP	40	2	1		X	X
MW # 5a	"	1:30 PM		V	W	V	40	1	3	X		
MW # 5b	"	1:30 PM		V	W	P	1	2	1		X	X
MW # 5c	"	1:30 PM		V	W	P	1	1	1		X	X
MW # 6a	"	1:00 PM		V	W	V	40	1	3	X		
MW # 6b	"	1:00 PM		V	W	P	1	2	1		X	X
MW # 6c	"	1:00 PM		V	W	P	1	1	1		X	X

Client/Consultant Remarks: *FA 505-393-4788*

Laboratory remarks:

Special Reporting Requirements: Standard QC Fax Results Raw Data Level 3 QC Level 4 QC Special Detection Limits (specify):

Requested TAT: 24hr 72hr 48hr Standard Other
1. Relinquished by Sample: *OSCAR DELCEN* date: *2-19-96* time: *4 PM*
2. Received by: *Exp*
3. Relinquished by: *OSCAR DELCEN* date: *2/20/96* time: *10:30*
4. Received by: *Exp*
5. Relinquished by: date: time:
6. Received by Laboratory: date: time:

Intact? Y N
Temp: *21°C*
PM review (initial): *OSCAR DELCEN*

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777
1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868



SPL, Inc.

SPL Workorder No:

H- 04185

Analysis Request & Chain of Custody Record

Requested Analysis

Page 2 of 2

matrix bottle

size

pres.

W=water S=soil
SL=sludge O=other:
P=plastic A=amber glass
G=glass V=vial

1=1 liter 4=4oz 40=vial
8=8oz 16=16oz

1=HCl 2=HNO3
3=H2SO4 O=other:

Number of Containers

BTEX

MAJOR CATIONS

MAJOR ANIONS

Client Name: Wetzel Reprochem Company
 Address/Phone: P.O. Box 67 - 505-393-2823
 Client Contact: OSCAR DECEAN
 Project Name: MONUMENT AUM 88265
 Project Number: #118
 Project Location:

voice To:

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis	Intact?	Temp:
MW # 79	2/19/96	10:00 AM			W	V	40	1	3	X		
MW # 76	"	10:00 AM			W	P	1	2	1	X		
MW # 7c	"	10:00 AM			W	P	1		1	X		
MW # 139	"	2:00 PM			W	V	40	1	3	X		
MW # 136	"	2:00 PM			W	P	1	2	1	X		
MW # 13c	"	2:00 PM			W	P	1		1	X		
MW # 14g	"	2:30 PM			W	V	40	1	3	X		
MW # 14s	"	2:30 PM			W	P	1	2	1	X		
MW # 14c	"	2:30 PM			W	P	1		1	X		

Client/Consultant Remarks:

FAK 505-393-4782

Laboratory remarks:

Intact? Y N
Temp: 4

Requested TAT

Special Reporting Requirements

Fax Results

Raw Data

Special Detection Limits (specify):

PM review (initial):

24hr 72hr
 48hr Standard
 Other

1. Relinquished by Sampler:
OSCAR DECEAN

3. Relinquished by:

5. Relinquished by:

Level 3 QC

Level 4 QC

date 2-19-96 time 7:00 PM

date 2/20/96 time 10:30

2. Received by: TOP EXPRESS

4. Received by: [Signature]

6. Received by Laboratory:

8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
 459 Hughes Drive, Traverse City, MI 49684 (616) 947-5777
 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
 1511 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 2/20/96	Time: 10:30
---	---

SPL Sample ID: 9602880

		<u>Yes</u>	<u>No</u>
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	836971314
		Other:	
11	Method of sample disposal:	SPL Disposal	
		HOLD	
		Return to Client	

Name: <i>Yveta Brown</i>	Date: 2/20/96
--	---



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 95 - 12 - 991

Approved for release by:

M. Scott Sample
M. Scott Sample, Laboratory Director

Date: 1/15/96

Debbie Proctor
Debbie Proctor, Project Manager

Date: 1/15/96



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CASE NARRATIVE

WORKORDER NO.: 9512991

Southern Petroleum Laboratories (SPL) is pleased to present the results of laboratory analysis to Warren Petroleum Company. Six water samples and a trip blank were received at our laboratory on 12/20/95 at a temperature of 4 degrees Celsius. Additional unpreserved sample for MW 1, 7, and 14 was received on 12/26/95 at a temperature of 3 degrees Celsius. The following is a brief narrative of the laboratory analysis.

The samples were analyzed for BTEX by SW 8020 and a variety of major cations and anions. There were no deviations from the methods.

All of the quality control data was within acceptable limits for the samples associated with this work order, with the exception of the matrix spike/matrix spike duplicate (MS/MSD) analysis for Total Potassium and Total Magnesium on sample 9512991-06B, MW-14. The MS/MSD recoveries were higher than the advisory QC limits. However, the recovery of the laboratory control standard was within acceptable limits and the entire analysis is considered to be in control.

Please refer to this project by 9512991 to expedite any further discussions. I will be happy to address any questions or concerns you may have.

SOUTHERN PETROLEUM LABORATORIES


Debbie Proctor
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-01

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: Mon Well #1

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/20/95 09:30:00
DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	5000	50 P	µg/L
TOLUENE	ND	50 P	µg/L
ETHYLBENZENE	ND	50 P	µg/L
TOTAL XYLENE	ND	50 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	5000		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	99
4-Bromofluorobenzene	99

METHOD 8020***
Analyzed by: SB
Date: 12/28/95

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-01

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: Mon Well #1

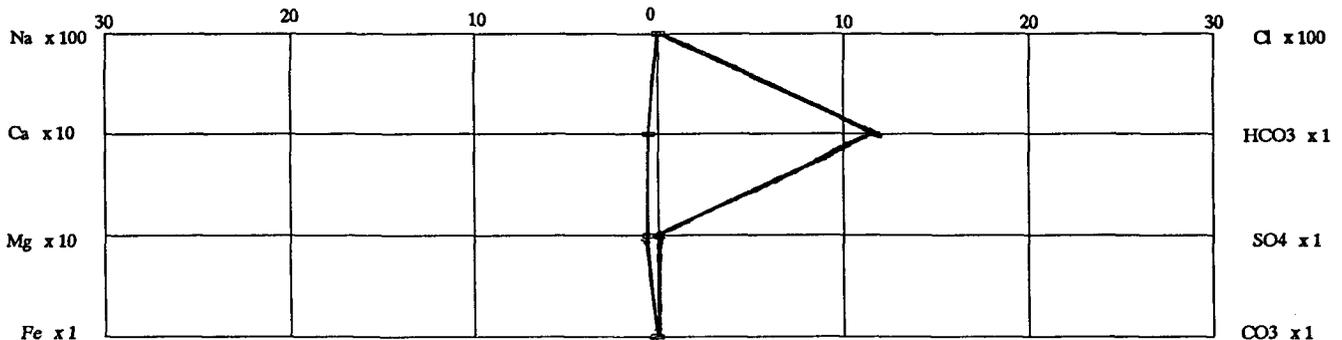
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 09:30:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	15.62	0.68	Total Dissolved Solids	
Calcium, Ca	111	5.54	(calc.) mg/L	931.22
Magnesium, Mg	67	5.51	Specific Gravity	
Chloride, Cl	16	0.45	60/60 deg. F.	0.9980
Bicarbonate, CaCO ₃	708	11.60	Resistivity	
Sulfate SO ₄	0	0.00	(Mohm-cm) 75 deg. F.	0.9260
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	3.35	0.12	pH units	7.40
Barium, Ba	5.25	0.08		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-02

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #5

PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 09:45:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	110	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	1	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	111		µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	102
4-Bromofluorobenzene	106

METHOD 8020***

Analyzed by: VHZ

Date: 01/03/96

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-02
 For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #5

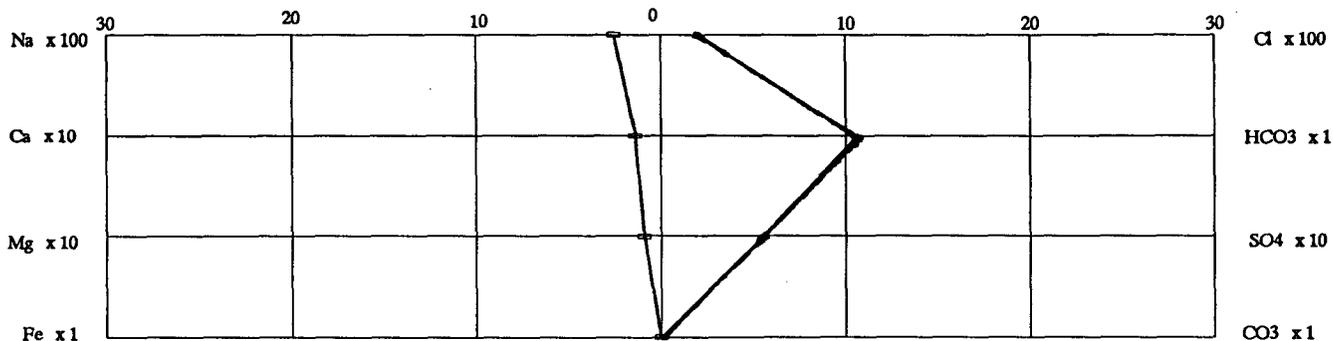
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 09:45:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	5814.11	252.90	Total Dissolved Solids	
Calcium, Ca	280	13.97	(calc.) mg/L	17087.22
Magnesium, Mg	113	9.30	Specific Gravity	
Chloride, Cl	7500	211.57	60/60 deg. F.	1.0080
Bicarbonate, CaCO ₃	648	10.62	Resistivity	
Sulfate SO ₄	2670	55.59	(Mohm-cm) 75 deg. F.	0.5200
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	0.08	0.00	pH units	6.97
Barium, Ba	0.03	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-03

Warren Petroleum
 P.O. Box 67
 Monument, NM 88265
 ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLED BY: Warren Petroleum
 SAMPLE ID: MW #7

PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 08:45:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
 4-Bromofluorobenzene

98
 101

METHOD 8020***

Analyzed by: SB

Date: 12/29/95

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
 **Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
 ***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-03
 For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #7

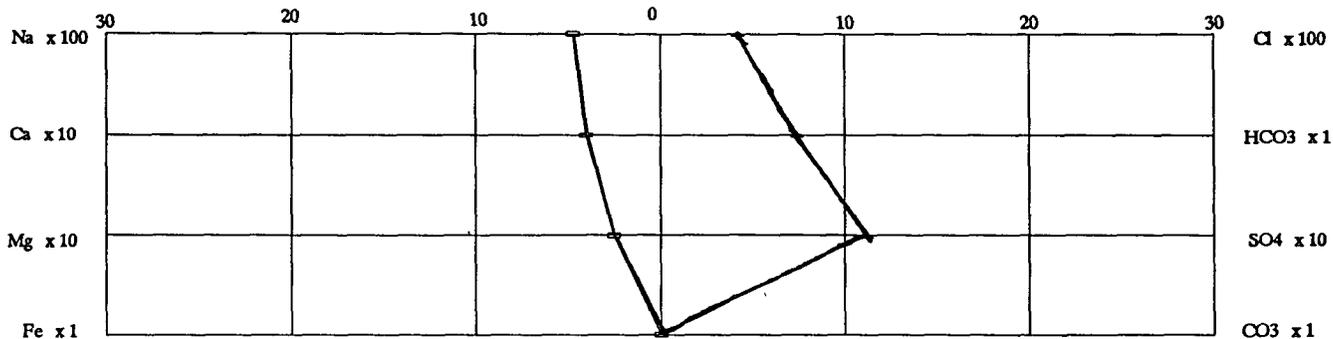
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 08:45:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

ION	mg/L	meq/L	WET CHEMISTRY	RESULT
Sodium, Na (Calc.)	10880.63	473.28	Total Dissolved Solids (calc.) mg/L	32985.97
Calcium, Ca	812	40.52	Specific Gravity 60/60 deg. F.	1.0250
Magnesium, Mg	308	25.34	Resistivity (Mohm-cm) 75 deg. F.	0.0250
Chloride, Cl	15000	423.13	pH pH units	7.05
Bicarbonate, CaCO ₃	454	7.44		
Sulfate SO ₄	5390	112.22		
Carbonate, CaCO ₃	0	0.00		
Iron, Fe(Total)	0.31	0.01		
Barium, Ba	0.03	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-04

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #6

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/20/95 09:00:00
DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	290	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	320	1 P	µg/L
TOTAL XYLENE	70	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	680		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

105

4-Bromofluorobenzene

177 <

METHOD 8020***

Analyzed by: VHZ

Date: 01/03/96

(P) - Practical Quantitation Limit ND - Not detected.

< - Recovery beyond control limits.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-04

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #6

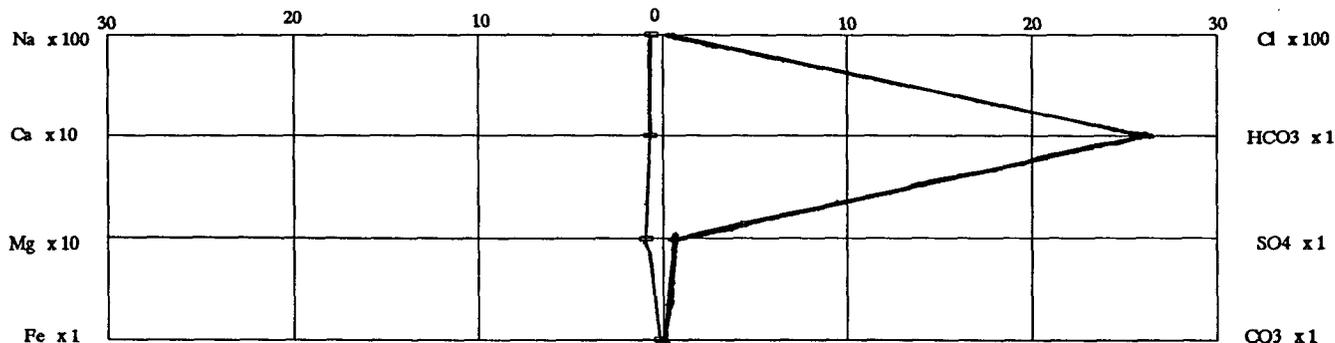
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 09:00:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	1465.86	63.76	Total Dissolved Solids	
Calcium, Ca	136	6.79	(calc.) mg/L	5258.94
Magnesium, Mg	112	9.21		
Chloride, Cl	1900	53.60	Specific Gravity	
Bicarbonate, CaCO ₃	1596	26.16	60/60 deg. F.	1.0000
Sulfate SO ₄	28	0.58		
Carbonate, CaCO ₃	0	0.00	Resistivity	
Iron, Fe(Total)	3.6	0.13	(Mohm-cm) 75 deg. F.	0.1540
Barium, Ba	0.48	0.01		
			pH	
			pH units	7.06

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-05

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #13

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/20/95 10:00:00
DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	5100	25 P	µg/L
TOLUENE	ND	25 P	µg/L
ETHYLBENZENE	170	25 P	µg/L
TOTAL XYLENE	ND	25 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	5270		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene

102

4-Bromofluorobenzene

102

METHOD 8020***

Analyzed by: SB

Date: 12/28/95

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-05

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon
PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLE BY: Warren Petroleum
SAMPLE ID: MW #13

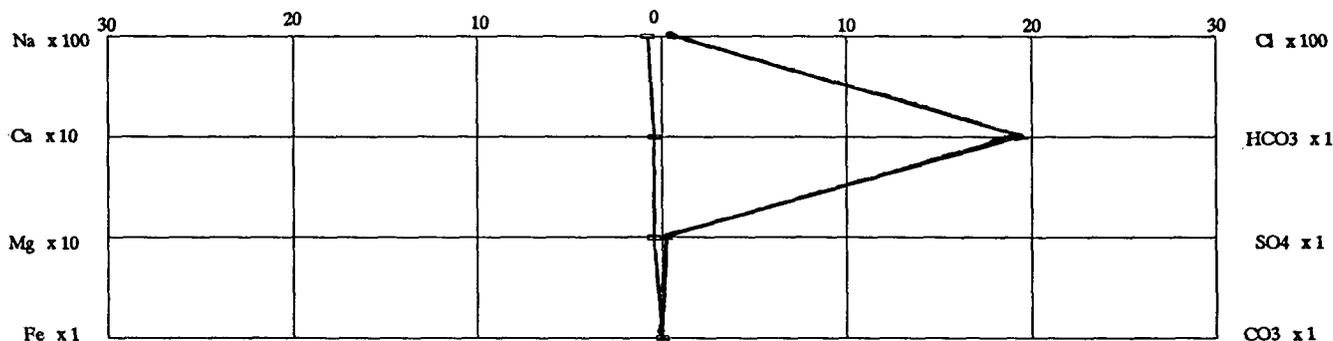
PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/20/95 10:00:00
DATE RECEIVED: 12/20/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	1743.91	75.86	Total Dissolved Solids (calc.) mg/L	5387.43
Calcium, Ca	80.8	4.03		
Magnesium, Mg	54.1	4.45		
Chloride, Cl	2300	64.88	Specific Gravity 60/60 deg. F.	0.9990
Bicarbonate, CaCO ₃	1188	19.47		
Sulfate SO ₄	11	0.23		
Carbonate, CaCO ₃	0	0.00	Resistivity (Mohm-cm) 75 deg. F.	0.2220
Iron, Fe(Total)	0.87	0.03		
Barium, Ba	1.75	0.03		
			pH pH units	7.07

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-06

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Warren Petroleum
SAMPLE ID: MW #14

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/20/95 10:30:00
DATE RECEIVED: 12/20/95

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
BENZENE	120	1 P	µg/L	
TOLUENE	ND	1 P	µg/L	
ETHYLBENZENE	2	1 P	µg/L	
TOTAL XYLENE	21	1 P	µg/L	
TOTAL VOLATILE AROMATIC HYDROCARBONS	143		µg/L	
Surrogate	% Recovery			
1,4-Difluorobenzene	101			
4-Bromofluorobenzene	108			
METHOD 8020***				
Analyzed by: SB				
Date: 12/29/95				

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis NO. 9512991-06

For: Warren Petroleum
 P.O. Box 67
 Monument, NM 88265

P.O. #:
 DATE: 01/03/96

Attn: Oscar Deleon
 PROJECT: Liquid Analysis
 SITE: Monument, NM
 SAMPLE BY: Warren Petroleum
 SAMPLE ID: MW #14

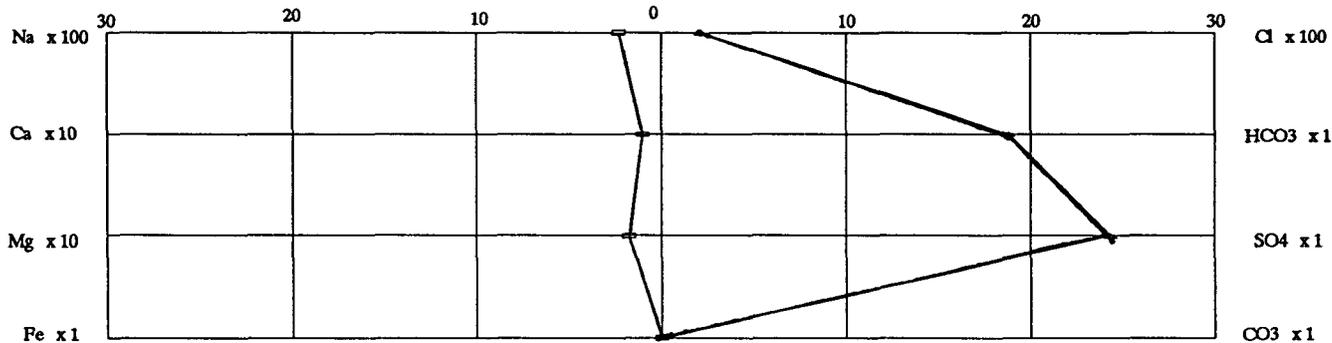
PROJECT NO:
 MATRIX: LIQUID
 DATE SAMPLED: 12/20/95 10:30:00
 DATE RECEIVED: 12/20/95

ANALYTICAL DATA

<u>ION</u>	<u>mg/L</u>	<u>meq/L</u>	<u>WET CHEMISTRY</u>	<u>RESULT</u>
Sodium, Na (Calc.)	5342.85	232.40	Total Dissolved Solids	
Calcium, Ca	207	10.33	(calc.) mg/L	15887.8
Magnesium, Mg	214	17.60	Specific Gravity	
Chloride, Cl	7750	218.62	60/60 deg. F.	1.0100
Bicarbonate, CaCO ₃	1148	18.81	Resistivity	
Sulfate SO ₄	1170	24.36	(Mohm-cm) 75 deg. F.	0.0470
Carbonate, CaCO ₃	0	0.00	pH	
Iron, Fe(Total)	0.87	0.03	pH units	7.45
Barium, Ba	0.08	0.00		

MINERAL ANALYSIS PATTERN

(Number Below Ion Name meq/liter/Scale Unit)





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9512991-07

Warren Petroleum
P.O. Box 67
Monument, NM 88265
ATTN: Oscar DeLeon

DATE: 01/15/96

PROJECT: Liquid Analysis
SITE: Monument, NM
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank

PROJECT NO:
MATRIX: LIQUID
DATE SAMPLED: 12/05/95
DATE RECEIVED: 12/20/95

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	1 P	µg/L
TOLUENE	ND	1 P	µg/L
ETHYLBENZENE	ND	1 P	µg/L
TOTAL XYLENE	ND	1 P	µg/L
TOTAL VOLATILE AROMATIC HYDROCARBONS	ND		µg/L

Surrogate

% Recovery

1,4-Difluorobenzene
4-Bromofluorobenzene

98
98

METHOD 8020***

Analyzed by: SB

Date: 12/29/95

ND - Not detected.

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION



* SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020***

PAGE HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_S951228124600

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	35	70.0	61 - 123
Toluene	ND	50	44	88.0	62 - 122
EthylBenzene	ND	50	57	114	56 - 119
O Xylene	ND	50	60	120	32 - 160
M & P Xylene	ND	100	120	120	32 - 160

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	ND	50	39			
TOLUENE	ND	150	110	73.3	110	73.3	0	26	56 - 134
ETHYLBENZENE	ND	50	36	72.0	34	68.0	5.71	38	61 - 128
O XYLENE	ND	100	76	76.0	73	73.0	4.03	20	40 - 130
M & P XYLENE	ND	100	76	76.0	73	73.0	4.03	20	43 - 152

Analyst: SB
Sequence Date: 12/28/95
SPL ID of sample spiked: 9512991-03A
Sample File ID: SS_464.TX0
Method Blank File ID:
Blank Spike File ID: SS_426.TX0
Matrix Spike File ID: SS_462.TX0
Matrix Spike Duplicate File ID: SS_463.TX0

* = Values Outside QC Range
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [(<1> - <2>) / <3>] x 100
LCS % Recovery = (<1> / <3>) x 100
Relative Percent Difference = |(<4> - <5>)| / [(<4> + <5>) x 0.5] x 100
(**) = Source: SPL Historical Data
(***) = Source: SPL-Houston Historical Data

SAMPLES IN BATCH(SPL ID):
9512A29-03A 9512A29-14A 9512A29-10A 9512A29-11A
9512A29-08A 9512A29-12A 9512A29-17A 9512991-01A
9512937-02B 9512991-05A 9512B02-02A 9512A29-07A
9512991-03A 9512A29-04A 9512A29-13A 9512A29-01A
9512833-02A 9512A29-09A 9512A29-18A

QC Officer



Matrix: Aqueous
Units: µg/L

Batch Id: HP_S951229120500

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Benzene	ND	50	42	84.0	61 - 123
Toluene	ND	50	41	82.0	62 - 122
EthylBenzene	ND	50	43	86.0	56 - 119
O Xylene	ND	50	44	88.0	32 - 160
M & P Xylene	ND	100	89	89.0	32 - 160

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			BENZENE	3	50	58			
TOLUENE	7	150	170	109	170	109	0	26	56 - 134
ETHYLBENZENE	5	50	59	108	62	114	5.41	38	61 - 128
O XYLENE	14	100	120	106	120	106	0	20	40 - 130
M & P XYLENE	13	100	130	117	130	117	0	20	43 - 152

Analyst: SB

Sequence Date: 12/28/95

SPL ID of sample spiked: 9512997-02A

Sample File ID: SS_469.TX0

Method Blank File ID:

Blank Spike File ID: SS_456.TX0

Matrix Spike File ID: SS_475.TX0

Matrix Spike Duplicate File ID: SS_476.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [(<1> - <2>) / <3>] x 100

LCS % Recovery = (<1> / <3>) x 100

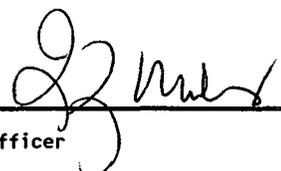
Relative Percent Difference = |(<4> - <5>)| / [(<4> + <5>) x 0.5] x 100

(**) = Source: SPL Historical Data

(***) = Source: SPL-Houston Historical Data

SAMPLES IN BATCH(SPL ID):

9512A76-03A 9512A76-04A 9512B02-01A 9512B02-03A
 9512B02-04A 9512B02-06A 9512B02-07A 9512B02-08A
 9512B02-09A 9512B02-05A 9512B02-11A 9512B02-10A
 9512991-06A 9512991-07A 9512996-01A 9512997-01A
 9512997-02A 9512A76-01A 9512A76-02A


QC Officer



Matrix: Aqueous
Units: µg/L

Batch Id: HP_S960102181500

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	45	90.0	56 - 135
Benzene	ND	50	46	92.0	61 - 123
Toluene	ND	50	44	88.0	62 - 122
EthylBenzene	ND	50	44	88.0	56 - 119
O Xylene	ND	50	46	92.0	32 - 160
M & P Xylene	ND	100	95	95.0	32 - 160

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
MTBE	120	20	130	NC	130	NC	NC	20	39 - 150
BENZENE	3	20	18	75.0	18	75.0	0	25	39 - 150
TOLUENE	2	20	15	65.0	15	65.0	0	26	56 - 134
ETHYLBENZENE	ND	20	12	60.0 *	12	60.0 *	0	38	61 - 128
O XYLENE	1	20	12	55.0	11	50.0	9.52	29	40 - 130
M & P XYLENE	1	40	21	50.0	22	52.5	4.88	20	43 - 152

Analyst: VHZ

Sequence Date: 01/03/96

SPL ID of sample spiked: 9512B11-01A

Sample File ID: SS_602.TX0

Method Blank File ID:

Blank Spike File ID: SS_613.TX0

Matrix Spike File ID: SS_611.TX0

Matrix Spike Duplicate File ID: SS_612.TX0

* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $[(<1> - <2>) / <3>] \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $| (<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data

(***) = Source:

SAMPLES IN BATCH(SPL ID):

9512A83-01A 9512A83-02A 9512A83-03A 9512A83-04A
 9512A90-01A 9512991-02A 9512991-04A 9512A79-07A
 9512A79-02A 9512A79-03A 9512A79-04A 9512A52-01A
 9512B03-01A 9512D00-01A 9512D00-02A 9512D00-03A
 9512B25-07A 9512A79-07A 9512B11-01A

QC Officer

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water Units: mg/L

Analyst: DO
HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Date: 122695 Time: 0953 File Name: 122695Q2

Checked

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.903	95	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.780	99	16.00	24.00
Cadmium	ND	2.00	1.990	100	1.60	2.40
Cobalt						
Chromium						
Copper	ND	2.00	1.955	98	1.60	2.40
Iron	ND	2.00	1.927	96	1.60	2.40
Potassium	ND	20.00	19.300	97	16.00	24.00
Magnesium	ND	20.00	20.290	101	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.961	98	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	0.020	2.00	2.026	101	1.60	2.40

Work Orders in Batch

Work Order	Fractions
95-12-991	01B-06B
95-12-A50	01C
95-12-A46	01A

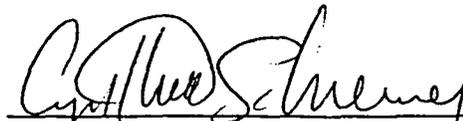
Matrix Spike - Spike Duplicate Results

Work Order Spiked: 95-12-991 06B

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery	% Recovery		
Silver										
Aluminum										
Arsenic										
Barium	0.0817	1.0	1.025	94	1.025	94	80	120	0.0	20.0
Beryllium										
Calcium	207.4	10.0	217.1	97	219.2	118	80	120	19.5	20.0
Cadmium	ND	1.0	0.9744	97	0.9874	99	80	120	2.0	20.0
Cobalt										
Chromium										
Copper	ND	1.0	0.999	100	1.004	100	80	120	0.5	20.0
Iron	0.869	1.0	1.81	94	1.819	95	80	120	1.0	20.0
Potassium	54.93	10.0	68.45	135 *	70.87	159 *	80	120	16.4	20.0
Magnesium	214.5	10.0	225.2	107	228.3	138 *	80	120	25.3 **	20.0
Manganese										
Sodium										
Nickel										
Lead	ND	1.0	0.9268	93	0.9309	93	80	120	0.4	20.0
Antimony										
Selenium										
Thallium										
Vanadium										
Zinc	ND	1.0	1.023	102	1.027	103	80	120	0.4	20.0

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits


 QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95
Analyzed on: 12/27/95
Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/l	Amt Added mg/l	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9512B14-03I	ND	50.00	100	100	0	93. - 109	2.7

-9512925

Samples in batch:

9512874-01A 9512991-01C 9512991-03C 9512991-06C
9512A85-03A 9512A89-03A 9512B14-01I 9512B14-02I
9512B14-03I 9512B14-04I

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95

Analyzed on: 12/27/95

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/l	LCS Concentration mg/l	Measured Concentration mg/l	% Recovery	QC Limits Recovery
LCS	ND	51.60	49.98	96.9	90 - 110

-9512927

Samples in batch:

9512874-01A 9512991-01C 9512991-03C 9512991-06C
9512A85-03A 9512A89-03A 9512B14-01I 9512B14-02I
9512B14-03I 9512B14-04I

COMMENTS:

LCS = SPL I.D. #9553510-3

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/22/95
Analyzed on: 12/22/95
Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/l	Amt Added mg/l	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9512581-03A	ND	50.0	104	104	0	93. - 109	2.7

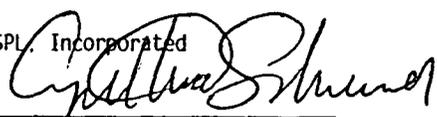
-9512849

Samples in batch:

9512477-02B 9512477-03B 9512478-01B 9512479-01B
9512579-03A 9512581-03A 9512782-01D 9512782-02D
9512806-01K 9512806-02K 9512806-03K 9512806-04K
9512991-02C 9512991-04C 9512991-05C

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/22/95

Analyzed on: 12/22/95

Analyst: DSE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
 METHOD 325.3 *

SPL Sample ID Number	Blank Value mg/l	LCS Concentration mg/l	Measured Concentration mg/l	% Recovery	QC Limits Recovery
LCS	ND	51.60	51.98	101	90 - 110

-9512851

Samples in batch:

9512477-02B 9512477-03B 9512478-01B 9512479-01B
 9512579-03A 9512581-03A 9512782-01D 9512782-02D
 9512806-01K 9512806-02K 9512806-03K 9512806-04K
 9512991-02C 9512991-04C 9512991-05C

COMMENTS:

LCS = SPL I.D. # 9553510-3

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/29/95
Analyzed on: 12/29/95
Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	Amt Added mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %	QC Limits Recovery	RPD Max.
9512991-06C	ND	10.00	113	108	4.5	79. - 122	11.

-9512A60

Samples in batch:

9512782-01D 9512782-02D 9512874-01A 9512991-01C
9512991-02C 9512991-03C 9512991-04C 9512991-05C
9512991-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/29/95

Analyzed on: 12/29/95

Analyst: ST

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
 METHOD 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	20.00	18.69	93.4	90 - 110

-9512A61

Samples in batch:

9512782-01D 9512782-02D 9512874-01A 9512991-01C
 9512991-02C 9512991-03C 9512991-04C 9512991-05C
 9512991-06C

COMMENTS:

SPL LCS ID#9553510-5

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95

Analyzed on: 12/27/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Bicarbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/l	Duplicate Sample mg/l	RPD	RPD Max.
9512991-03C	452	456	0.9	3

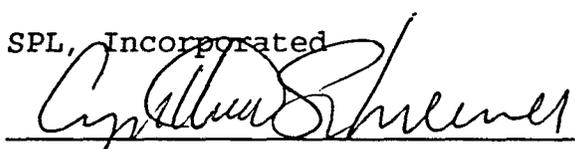
-9512961

Samples in batch:

9512874-01A 9512991-01C 9512991-02C 9512991-03C
9512991-04C 9512991-05C 9512991-06C

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95

Analyzed on: 12/27/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Carbonate, as CaCO₃
METHOD SM 4500-CO₂D **

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/l	Duplicate Sample mg/l	RPD	RPD Max.
9512991-03C	ND	ND	0	2.2

-9512962

Samples in batch:

9512874-01A 9512991-01C 9512991-02C 9512991-03C
9512991-04C 9512991-05C 9512991-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/28/95

Analyzed on: 12/27/95

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
 METHOD 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9512991-01C	796	800	0.5	20

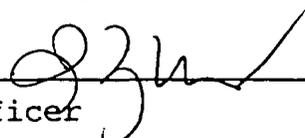
-9512A04

Samples in batch:

9512738-01B 9512739-01B 9512740-01B 9512741-01B
 9512991-01C

COMMENTS:

SPL, Incorporated


 QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/28/95
Analyzed on: 12/27/95
Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
METHOD 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	252.0	255.0	101	90 - 110

-9512A03

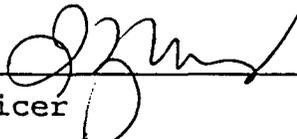
Samples in batch:

9512738-01B 9512739-01B 9512740-01B 9512741-01B
9512991-01C

COMMENTS:

LCS = SPL ID#: 9553510-18

SPL, Incorporated



QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/26/95
 Analyzed on: 12/26/95
 Analyst: ST

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Specific Gravity
 ASTM D1429

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration	Duplicate Sample	RPD	RPD Max.
9512991-06C	1.010	1.010	0	1.0

-9512876

Samples in batch:

9512782-01D 9512782-02D 9512975-03A 9512975-04A
 9512991-01C 9512991-02C 9512991-03C 9512991-04C
 9512991-05C 9512991-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95

Analyzed on: 12/27/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9512991-03C	0.025	0.025	0	1.0

-9512960

Samples in batch:

9512991-01C 9512991-03C 9512991-06C

COMMENTS:

SPL Incorporated

QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/22/95

Analyzed on: 12/21/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Resistivity
EPA 120.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration ohms-cm	Duplicate Sample ohms-cm	RPD	RPD Max.
9512991-05C	0.222	0.222	0	1.0

-9512832

Samples in batch:

9512991-02C 9512991-04C 9512991-05C

COMMENTS:

SPL, Incorporated


QC Officer



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/27/95

Analyzed on: 12/27/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
METHOD 150.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9512991-06C	7.44	7.46	0.3	1.0

-9512965

Samples in batch:

9512991-01C 9512991-03C 9512991-06C

COMMENTS:

SPL, Incorporated

QC Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/22/95

Analyzed on: 12/21/95

Analyst: LC

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

pH
 METHOD 150.1 *

-- DUPLICATE ANALYSIS --

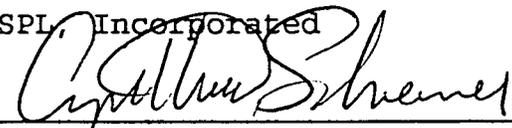
SPL Sample ID	Original Sample Concentration pH units	Duplicate Sample pH units	RPD	RPD Max.
9512991-05C	7.07	7.07	0	1.0

-9512820

Samples in batch:

9512737-01B 9512991-02C 9512991-04C 9512991-05C
 9512A20-01F 9512A20-02F 9512A20-03F 9512A20-04F

COMMENTS:

SPL, Incorporated

 QC Officer

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 10/30 11/1/95	Time: 1315
--------------------------------	------------

SPL Sample ID:

9511042

		<u>Yes</u>	<u>No</u>
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	3° C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	5397591006
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: S. West	Date: 11/1/95
---------------	---------------

John C. Good, Manager
Environmental/Safety Division

PO Box 2548
Hobbs, NM 88240
(505) 393-7143

CLIMAX CHEMICAL COMPANY
Monument, New Mexico

Wednesday, February 26, 1992

Dr. Bruce Swanton
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
525 Camino De Los Marquez
Santa Fe, NM 87502



REF: 4th Qrt and Annual Assessment Groundwater Reports

Bruce:

Enclosed please find the lab results for our 4th Quarter sampling event, Chain of Custody for this sampling event, and the Enclosure 5 Report (including Annual Summary) for the 4th Quarter.

There are a few things that I need to call your attention to:

1. Notice that Well 5-3, previously contaminated with TCE, has tested negative for any volatiles for four consecutive sampling events.
2. Notice Well 4-3. A new volatile constituent (Tetrachloroethene) has appeared and then dropped below detection limit twice in 1991.
3. Notice Well 1-3 (background). The 4th Quarter results show the presence of Lead at 33 ppb. We'll see if this repeats.
4. Notice that Well 12-9 was not sampled during the 4th Quarter sampling event. When I retrieved the bailer for the first sample, it came up full of crude oil. I have turned this over to OCD. They do not know if it came from Warren Petroleum's condensate plume, or from a pipeline or well casing leak. They are currently investigating. Irregardless, the well is useless as a RCRA monitoring well and will not be included in future sampling events. This problem will also affect the placement of downgradient boundary wells for completion of our Closure Plan and/or Post-Closure Plan.

If you have any questions or comments regarding these results or reports please call me.



John Good, Environmental Manager

**INTERIM STATUS MONITORING WELL
SAMPLING AND DATA SHEETS**

ASSESSMENT QUARTERLY REPORT

This set of data sheets is for use by all facilities with RCRA monitoring wells and should be completed by facilities in assessment. HWMR-5, Part VI, Section 265.93(d)(d)(i).

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 1-3 SAMPLE COLLECTION BY J. GOOD

WELL DEPTH 38.000 ft. LABORATORY NAME SWL, INC.

DATE SAMPLED 12/26/91 LABORATORY SAMPLE ID# 75860

TIME SAMPLED 9:00 DATE RECEIVED BY LAB 12/27/91

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DATE ANALYZED</u>
Elevation of G. Water	71993	ft.	<u>3619.10</u>	<u>12/26/91</u>
Well Casing Volume	-----	gal.	<u>8.15</u>	<u>12/26/91</u>
Pump Rate	-----	gal/min	<u>10.00</u>	<u>12/26/91</u>
Pump Period	72004	min.	<u>3.00</u>	<u>12/26/91</u>
Volume Evacuated	73675	gal.	<u>30.00</u>	<u>12/26/91</u>
Well Sampling Method	84077	---	<u>BAILER</u>	<u>12/26/91</u>
Sampler Material	-----	---	<u>TEFLON</u>	<u>NA</u>
Well Sampling Method:			<u>BAILER</u>	

INDICATOR PARAMETERS

WELL #: 1-3
QRT: 4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
<u>pH</u>	00400	S.U.	<u>7.19</u>	NA	12/31-1/12	4500-H*
	00400	S.U.	<u>7.18</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.20</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.21</u>	NA	12/31-1/12	
<u>Specific Conductivity</u>	00095	umohs/cm	<u>1681.00</u>	0	12/31-1/12	2510-B*
	00095	umohs/cm	<u>1671.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>1681.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>1671.00</u>	0	12/31-1/12	
<u>T.O.X.</u>	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	NT
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
<u>T.O.C.</u>	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	NT
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

GROUND WATER QUALITY PARAMETERS

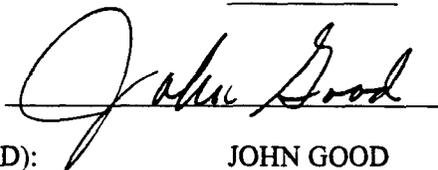
WELL #:
QRT:

1-3
4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>		<u>DATE ANALYZED</u>	<u>METHOD USED</u>
Chloride	00940	mg/l (ppm)	<u>269</u>	14	ppm	12/31-1/12	4500-Cl*
Iron	01045	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Manganese	71883	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Phenols	32730	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Sodium	00929	mg/l (ppm)	<u>NT</u>	NT	ppm	12/31-1/12	NT
Sulfate	00945	mg/l (ppm)	<u>213</u>	1	ppm	12/31-1/12	4500-SO4*

DATE OF THIS REPORT: 26-Feb-92

SIGNATURE:



NAME (PRINTED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

MONITORING WELL APPENDIX IX DATA FOR FACILITIES IN ASSESSEMENT

Under assessment monitoring as per HWMR-5 Part VI Section 263.93(d)(4)(i) and 42 Federal Register, 259.42 (July 9, 1987), please list values for the Appendix IX parameters which were found in your Appendix IX scan.

<u>WELL #:</u>	<u>1-3</u>	<u>4TH QRT</u>						
<u>PARAMETER</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>	
LEAD	?	ug/l	33.0	20.000	1/12/92	1/12/92	SW846	
VOLATILES	?	ug/l	ND	VARIABLE	0.000	0.000	EPA624	

WELL # 1-3

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

ANNUAL SUMMARY OF MONITOR WELL DATA

This form is for annual presentation of data by all facilities operating under interim status.

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME: CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 1-3

SAMPLE DATES

<u>3-27-91</u>		<u>6-26-91</u>		<u>10/10/91</u>		<u>12/26/91</u>
----------------	--	----------------	--	-----------------	--	-----------------

<u>PARAMETERS</u>	<u>UNITS</u>	<u>VALUES</u>			
		<u>3-27-91</u>	<u>6-26-91</u>	<u>10/10/91</u>	<u>12/26/91</u>
G. Water Elev.	ft.	<u>3619.142</u>	<u>3618.892</u>	<u>3619.100</u>	<u>3619.100</u>
pH (Avg.)	S.U.	<u>6.9</u>	<u>7.2</u>	<u>6.9</u>	<u>7.2</u>
Spec Cond(Avg.)	umohs/cm	<u>1658</u>	<u>1651</u>	<u>1555</u>	<u>1676</u>
T.O.X (Avg.)	ug/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
T.O.C. (Avg.)	mg/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Chloride	mg/l	<u>284.0</u>	<u>284.0</u>	<u>269.0</u>	<u>269.0</u>
Iron	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Manganese	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Phenols	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sodium	mg/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sulfate	mg/l	<u>217.0</u>	<u>220.0</u>	<u>199.0</u>	<u>213.0</u>

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

APPENDIX IX PARAMETERS

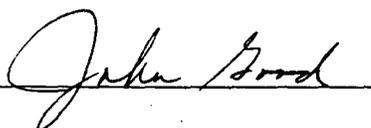
WELL #: 1-3

ANNUAL SUMMARY

<u>PARAMETERS</u>	<u>UNITS</u>	<u>SAMPLE DATES</u>				<u>VALUES</u>
		<u>3-27-91</u>	<u>6-26-91</u>	<u>10/10/91</u>	<u>12/26/91</u>	
HEAVY METALS (LEAD)	ug/l	ND	ND	ND	33.0	
VOLATILES	ug/l	ND	ND	ND	ND	

DATE OF REPORT:
26-Feb-92

SIGNATURE:



NAME (TYPED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

**INTERIM STATUS MONITORING WELL
SAMPLING AND DATA SHEETS**

ASSESSMENT QUARTERLY REPORT

This set of data sheets is for use by all facilities with RCRA monitoring wells and should be completed by facilities in assessment. HWMR-5, Part VI, Section 265.93(d)(d)(i).

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 4-3 SAMPLE COLLECTION BY J. GOOD

WELL DEPTH 39.000 ft. LABORATORY NAME SWL, INC.

DATE SAMPLED 12/26/91 LABORATORY SAMPLE ID# 75862

TIME SAMPLED 12:00N DATE RECEIVED BY LAB 12/27/91

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DATE ANALYZED</u>
Elevation of G. Water	71993	ft.	<u>3563.74</u>	<u>12/26/91</u>
Well Casing Volume	-----	gal.	<u>8.85</u>	<u>12/26/91</u>
Pump Rate	-----	gal/min	<u>10.00</u>	<u>12/26/91</u>
Pump Period	72004	min.	<u>1.00</u>	<u>12/26/91</u>
Volume Evacuated	73675	gal.	<u>10.00</u>	<u>12/26/91</u>
Well Sampling Method	84077	---	<u>BAILER</u>	<u>12/26/91</u>
Sampler Material	-----	---	<u>TEFLON</u>	<u>NA</u>
Well Sampling Method:			<u>BAILER</u>	

INDICATOR PARAMETERS

WELL #: 4-3
QRT: 4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
<u>pH</u>	00400	S.U.	<u>6.82</u>	NA	12/31-1/12	4500-H*
	00400	S.U.	<u>6.81</u>	NA	12/31-1/12	
	00400	S.U.	<u>6.79</u>	NA	12/31-1/12	
	00400	S.U.	<u>6.80</u>	NA	12/31-1/12	
<u>Specific Conductivity</u>	00095	umohs/cm	<u>76363.00</u>	0	12/31-1/12	2510-B*
	00095	umohs/cm	<u>76670.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>77183.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>76465.00</u>	0	12/31-1/12	
<u>T.O.X.</u>	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	NT
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
<u>T.O.C.</u>	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	NT
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

GROUND WATER QUALITY PARAMETERS

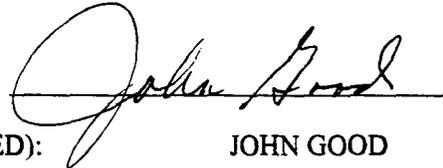
WELL #:
QRT:

4-3
4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>		<u>DATE ANALYZED</u>	<u>METHOD USED</u>
Chloride	00940	mg/l (ppm)	<u>30493</u>	14	ppm	12/31-1/12	4500-Cl*
Iron	01045	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Manganese	71883	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Phenols	32730	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Sodium	00929	mg/l (ppm)	<u>NT</u>	NT	ppm	12/31-1/12	NT
Sulfate	00945	mg/l (ppm)	<u>6506</u>	1	ppm	12/31-1/12	4500-SO4*

DATE OF THIS REPORT: 26-Feb-92

SIGNATURE:



NAME (PRINTED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

MONITORING WELL APPENDIX IX DATA FOR FACILITIES IN ASSESSEMENT

Under assessment monitoring as per HWMR-5 Part VI Section 263.93(d)(4)(i) and 42 Federal Register, 259.42 (July 9, 1987), please list values for the Appendix IX parameters which were found in your Appendix IX scan.

<u>WELL #:</u>	<u>4-3</u>	<u>4TH QRT</u>						
<u>PARAMETER</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>	
CADMIUM	?	ug/l	88.0	10	1/7/92	1/7/92	7130	
LEAD	?	ug/l	26.0	20	1/12/92	1/12/92	7420	
1,2-DICHLOROETHANE	?	ug/l	16.3	5	1/9/92	1/9/92	EPA624	

WELL # 4-3

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

ANNUAL SUMMARY OF MONITOR WELL DATA

This form is for annual presentation of data by all facilities operating under interim status.

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
 RADIOACTIVE and HAZARDOUS WASTE BUREAU
 525 CAMINO DE LOS MARQUEZ
 SANTA FE, NEW MEXICO 87502**

FACILITY NAME: CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 4-3

SAMPLE DATES

<u>3-27-91</u>		<u>6/26/91</u>		<u>10/10/91</u>		<u>12/26/91</u>
----------------	--	----------------	--	-----------------	--	-----------------

<u>PARAMETERS</u>	<u>UNITS</u>	<u>VALUES</u>			
		<u>3-27-91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
G. Water Elev.	ft.	<u>3564.195</u>	<u>3563.778</u>	<u>3563.650</u>	<u>3563.737</u>
pH (Avg.)	S.U.	<u>6.3</u>	<u>6.6</u>	<u>6.3</u>	<u>6.8</u>
Spec Cond(Avg.)	umohs/cm	<u>71425</u>	<u>70957</u>	<u>63625</u>	<u>76670</u>
T.O.X (Avg.)	ug/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
T.O.C. (Avg.)	mg/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Chloride	mg/l	<u>29926.0</u>	<u>30493.0</u>	<u>30848.0</u>	<u>30493.0</u>
Iron	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Manganese	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Phenols	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sodium	mg/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sulfate	mg/l	<u>7782.0</u>	<u>7448.0</u>	<u>6889.0</u>	<u>6506.0</u>

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

APPENDIX IX PARAMETERS

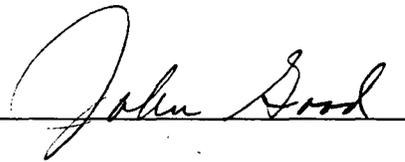
WELL #: 4-3

ANNUAL SUMMARY

<u>PARAMETERS</u>	<u>UNITS</u>	<u>SAMPLE DATES</u>				<u>VALUES</u>
		<u>3-27-91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>	
CADMIUM	ug/l	100.0	70.0	94.0	88.0	
SILVER	ug/l	91.0	20.0	54.0	26.0	
1,2-DICHLOROETHANE	ug/l	18.0	21.0	27.0	16.3	
TETRACHLOROETHENE	ug/l	7.0		16.0		

DATE OF REPORT:
26-Feb-92

SIGNATURE:



NAME (TYPED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

**INTERIM STATUS MONITORING WELL
SAMPLING AND DATA SHEETS**

ASSESSMENT QUARTERLY REPORT

This set of data sheets is for use by all facilities with RCRA monitoring wells and should be completed by facilities in assessment. HWMR-5, Part VI, Section 265.93(d)(d)(i).

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 5-3 SAMPLE COLLECTION BY J. GOOD

WELL DEPTH 39.000 ft. LABORATORY NAME SWL, INC.

DATE SAMPLED 12/26/91 LABORATORY SAMPLE ID# 75863

TIME SAMPLED 10:00 DATE RECEIVED BY LAB 12/27/91

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DATE ANALYZED</u>
Elevation of G. Water	71993	ft.	<u>3562.19</u>	<u>12/26/91</u>
Well Casing Volume	-----	gal.	<u>9.56</u>	<u>12/26/91</u>
Pump Rate	-----	gal/min	<u>10.00</u>	<u>12/26/91</u>
Pump Period	72004	min.	<u>4.00</u>	<u>12/26/91</u>
Volume Evacuated	73675	gal.	<u>40.00</u>	<u>12/26/91</u>
Well Sampling Method	84077	---	<u>BAILER</u>	<u>12/26/91</u>
Sampler Material	-----	---	<u>TEFLON</u>	<u>NA</u>
Well Sampling Method:			<u>BAILER</u>	

INDICATOR PARAMETERS

WELL #: 5-3
 QRT: 4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
<u>pH</u>	00400	S.U.	<u>7.46</u>	NA	12/31-1/12	4500-H*
	00400	S.U.	<u>7.47</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.44</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.46</u>	NA	12/31-1/12	
<u>Specific Conductivity</u>	00095	umohs/cm	<u>26753.00</u>	0	12/31-1/12	2510-B*
	00095	umohs/cm	<u>26958.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>26958.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>27060.00</u>	0	12/31-1/12	
<u>T.O.X.</u>	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	NT
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
<u>T.O.C.</u>	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	NT
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

GROUND WATER QUALITY PARAMETERS

WELL #:
QRT:

5-3
4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
Chloride	00940	mg/l (ppm)	6382	14 ppm	12/31-1/12	4500-Cl*
Iron	01045	ug/l (ppb)	NT	NT ppb	12/31-1/12	NT
Manganese	71883	ug/l (ppb)	NT	NT ppb	12/31-1/12	NT
Phenols	32730	ug/l (ppb)	NT	NT ppb	12/31-1/12	NT
Sodium	00929	mg/l (ppm)	NT	NT ppm	12/31-1/12	NT
Sulfate	00945	mg/l (ppm)	6329	1 ppm	12/31-1/12	4500-SO4*

DATE OF THIS REPORT: 26-Feb-92

SIGNATURE:



NAME (PRINTED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

MONITORING WELL APPENDIX IX DATA FOR FACILITIES IN ASSESSEMENT

Under assessment monitoring as per HWMR-5 Part VI Section 263.93(d)(4)(i) and 42 Federal Register, 259.42 (July 9, 1987), please list values for the Appendix IX parameters which were found in your Appendix IX scan.

<u>WELL #:</u>	<u>5-3</u>	<u>4TH QRT</u>					
<u>PARAMETER</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
CADMIUM	?	ug/l	31.0	10	1/7/92	1/7/92	7130
SILVER	?	ug/l	ND	10	1/7/92	1/7/92	7760
ARSENIC	?	ug/l	ND	5	1/9/92	1/9/92	7060
VOLATILES	?	ug/l	ND	5	1/9/92	1/9/92	EPA 624

WELL # 5-3

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

ANNUAL SUMMARY OF MONITOR WELL DATA

This form is for annual presentation of data by all facilities operating under interim status.

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
 RADIOACTIVE and HAZARDOUS WASTE BUREAU
 525 CAMINO DE LOS MARQUEZ
 SANTA FE, NEW MEXICO 87502**

FACILITY NAME: CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 5-3

SAMPLE DATES

<u>3-27-91</u>		<u>6/26/91</u>		<u>10/10/91</u>		<u>12/26/91</u>
----------------	--	----------------	--	-----------------	--	-----------------

<u>PARAMETERS</u>	<u>UNITS</u>	<u>VALUES</u>			
		<u>3-27-91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
G. Water Elev.	ft.	<u>3562.610</u>	<u>3562.048</u>	<u>3562.360</u>	<u>3562.193</u>
pH (Avg.)	S.U.	<u>6.9</u>	<u>7.1</u>	<u>6.7</u>	<u>7.5</u>
Spec Cond(Avg.)	umohs/cm	<u>25125</u>	<u>27481</u>	<u>27500</u>	<u>26932</u>
T.O.X (Avg.)	ug/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
T.O.C. (Avg.)	mg/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Chloride	mg/l	<u>7801.0</u>	<u>7446.0</u>	<u>7801.0</u>	<u>6382.0</u>
Iron	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Manganese	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Phenols	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sodium	mg/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sulfate	mg/l	<u>6385.0</u>	<u>6296.0</u>	<u>6666.0</u>	<u>6329.0</u>

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

APPENDIX IX PARAMETERS

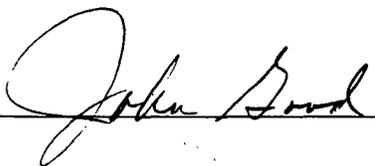
WELL #: 5-3

ANNUAL SUMMARY

<u>PARAMETERS</u>	<u>UNITS</u>	<u>SAMPLE DATES</u>			
		<u>3-27-91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
		<u>VALUES</u>			
CADMIUM	ug/l	40.0	30.0	42.0	31.0
SILVER	ug/l	36.0	ND	ND	ND
ARSENIC	ug/l	12.0	ND	ND	ND
VOLATILES	ug/l	ND	ND	ND	ND

DATE OF REPORT:
26-Feb-92

SIGNATURE:



NAME (TYPED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

**INTERIM STATUS MONITORING WELL
SAMPLING AND DATA SHEETS**

ASSESSMENT QUARTERLY REPORT

This set of data sheets is for use by all facilities with RCRA monitoring wells and should be completed by facilities in assessment. HWMR-5, Part VI, Section 265.93(d)(d)(i).

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 10-10 SAMPLE COLLECTION BY J. GOOD

WELL DEPTH 74.000 ft. LABORATORY NAME SWL, INC.

DATE SAMPLED 12/26/91 LABORATORY SAMPLE ID# 75864

TIME SAMPLED 12:30 DATE RECEIVED BY LAB 12/27/91

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DATE ANALYZED</u>
Elevation of G. Water	71993	ft.	<u>3550.54</u>	<u>12/26/91</u>
Well Casing Volume	-----	gal.	<u>45.42</u>	<u>12/26/91</u>
Pump Rate	-----	gal/min	<u>10.00</u>	<u>12/26/91</u>
Pump Period	72004	min.	<u>6.00</u>	<u>12/26/91</u>
Volume Evacuated	73675	gal.	<u>60.00</u>	<u>12/26/91</u>
Well Sampling Method	84077	---	<u>BAILER</u>	<u>12/26/91</u>
Sampler Material	-----	---	<u>TEFLON</u>	<u>NA</u>
Well Sampling Method:			<u>BAILER</u>	

INDICATOR PARAMETERS

WELL #: 10-10
 QRT: 4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
<u>pH</u>	00400	S.U.	<u>7.25</u>	NA	12/31-1/12	4500-H*
	00400	S.U.	<u>7.38</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.36</u>	NA	12/31-1/12	
	00400	S.U.	<u>7.28</u>	NA	12/31-1/12	
<u>Specific Conductivity</u>	00095	umohs/cm	<u>43870.00</u>	0	12/31-1/12	2510-B*
	00095	umohs/cm	<u>43870.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>43768.00</u>	0	12/31-1/12	
	00095	umohs/cm	<u>43973.00</u>	0	12/31-1/12	
<u>T.O.X.</u>	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	NT
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
	70354	ug/l (ppb)	<u>NT</u>	NT	12/31-1/12	
<u>T.O.C.</u>	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	NT
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	
	00680	mg/l (ppm)	<u>NT</u>	NT	12/31-1/12	

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

GROUND WATER QUALITY PARAMETERS

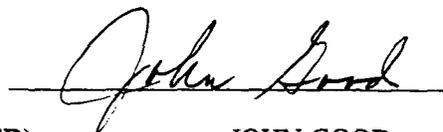
WELL #:
QRT:

10-10
4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>		<u>DATE ANALYZED</u>	<u>METHOD USED</u>
Chloride	00940	mg/l (ppm)	<u>15247</u>	14	ppm	12/31-1/12	4500-Cl*
Iron	01045	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Manganese	71883	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Phenols	32730	ug/l (ppb)	<u>NT</u>	NT	ppb	12/31-1/12	NT
Sodium	00929	mg/l (ppm)	<u>NT</u>	NT	ppm	12/31-1/12	NT
Sulfate	00945	mg/l (ppm)	<u>3802</u>	1	ppm	12/31-1/12	4500-SO4*

DATE OF THIS REPORT: 26-Feb-92

SIGNATURE:



NAME (PRINTED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

MONITORING WELL APPENDIX IX DATA FOR FACILITIES IN ASSESSEMENT

Under assessment monitoring as per HWMR-5 Part VI Section 263.93(d)(4)(i) and 42 Federal Register, 259.42 (July 9, 1987), please list values for the Appendix IX parameters which were found in your Appendix IX scan.

<u>WELL #:</u>	<u>10-10</u>	<u>4TH QRT</u>			<u>DETECTION</u>	<u>DATE</u>	<u>DATE</u>	<u>METHOD</u>
<u>PARAMETER</u>	<u>STORET</u>	<u>UNITS</u>	<u>VALUE</u>	<u>LIMIT</u>	<u>EXTRACTED</u>	<u>ANALYZED</u>	<u>USED</u>	
CADMIUM	?	ug/l	46.0	10		1/8/92	1/8/92	7130
SILVER	?	ug/l	ND	10		1/7/92	1/7/92	7760
VOLATILES	?	ug/l	ND	5		1/9/92	1/9/92	EPA 624

WELL # 10-10

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

ANNUAL SUMMARY OF MONITOR WELL DATA

This form is for annual presentation of data by all facilities operating under interim status.

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME: CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 10-10

SAMPLE DATES

<u>3-27-91</u>		<u>6/26/91</u>		<u>10/10/91</u>		<u>12/26/91</u>
----------------	--	----------------	--	-----------------	--	-----------------

<u>PARAMETERS</u>	<u>UNITS</u>	<u>VALUES</u>			
G. Water Elev.	ft.	<u>3540.082</u>	<u>3550.748</u>	<u>3550.710</u>	<u>3550.540</u>
pH (Avg.)	S.U.	<u>6.8</u>	<u>7.0</u>	<u>6.7</u>	<u>7.3</u>
Spec Cond(Avg.)	umohs/cm	<u>42400</u>	<u>40962</u>	<u>37450</u>	<u>43870</u>
T.O.X (Avg.)	ug/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
T.O.C. (Avg.)	mg/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Chloride	mg/l	<u>17020.0</u>	<u>15956.0</u>	<u>14538.0</u>	<u>15247.0</u>
Iron	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Manganese	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Phenols	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sodium	mg/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sulfate	mg/l	<u>3834.0</u>	<u>3745.0</u>	<u>3662.0</u>	<u>3802.0</u>

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

APPENDIX IX PARAMETERS

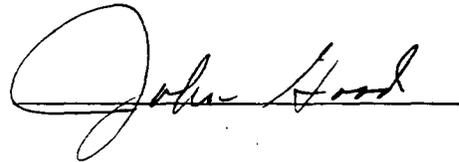
WELL #: 10-10

ANNUAL SUMMARY

<u>PARAMETERS</u>	<u>UNITS</u>	<u>SAMPLE DATES</u>			
		<u>3-27-91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
CADMIUM	ug/l	40.0	40.0	55.0	46.0
SILVER	ug/l	46.0	ND	ND	ND
VOLATILES	ug/l	ND	ND	ND	ND
	ug/l	0.0			

DATE OF REPORT:
26-Feb-92

SIGNATURE:



NAME (TYPED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

**INTERIM STATUS MONITORING WELL
SAMPLING AND DATA SHEETS**

ASSESSMENT QUARTERLY REPORT

This set of data sheets is for use by all facilities with RCRA monitoring wells and should be completed by facilities in assessment. HWMR-5, Part VI, Section 265.93(d)(d)(i).

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 12-9 SAMPLE COLLECTION BY J. GOOD

WELL DEPTH 40.000 ft. LABORATORY NAME SWL, INC.

DATE SAMPLED 12/26/91 LABORATORY SAMPLE ID# NT

TIME SAMPLED 1:00 DATE RECEIVED BY LAB NT

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DATE ANALYZED</u>
Elevation of G. Water	71993	ft.	<u>3558.51</u>	<u>12/26/91</u>
Well Casing Volume	-----	gal.	<u>7.10</u>	<u>12/26/91</u>
Pump Rate	-----	gal/min	<u>10.00</u>	<u>12/26/91</u>
Pump Period	72004	min.	<u>3.00</u>	<u>12/26/91</u>
Volume Evacuated	73675	gal.	<u>30.00</u>	<u>12/26/91</u>
Well Sampling Method	84077	---	<u>NT</u>	<u>12/26/91</u>
Sampler Material	-----	---	<u>TEFLON</u>	<u>NA</u>
Well Sampling Method:			<u>NT</u>	

INDICATOR PARAMETERS

WELL #: 12-9
QRT: 4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>
<u>pH</u>	00400	S.U.	<u>NT</u>	NA	NT	4500-H*
	00400	S.U.	<u>NT</u>	NA	NT	
	00400	S.U.	<u>NT</u>	NA	NT	
	00400	S.U.	<u>NT</u>	NA	NT	
<u>Specific Conductivity</u>	00095	umohs/cm	<u>NT</u>	0	NT	2510-B*
	00095	umohs/cm	<u>NT</u>	0	NT	
	00095	umohs/cm	<u>NT</u>	0	NT	
	00095	umohs/cm	<u>NT</u>	0	NT	
<u>T.O.X.</u>	70354	ug/l (ppb)	<u>NT</u>	NT	NT	NT
	70354	ug/l (ppb)	<u>NT</u>	NT	NT	
	70354	ug/l (ppb)	<u>NT</u>	NT	NT	
	70354	ug/l (ppb)	<u>NT</u>	NT	NT	
<u>T.O.C.</u>	00680	mg/l (ppm)	<u>NT</u>	NT	NT	NT
	00680	mg/l (ppm)	<u>NT</u>	NT	NT	
	00680	mg/l (ppm)	<u>NT</u>	NT	NT	
	00680	mg/l (ppm)	<u>NT</u>	NT	NT	

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

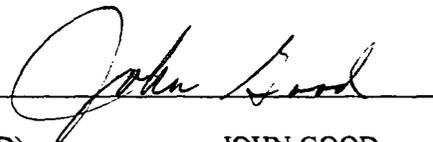
GROUND WATER QUALITY PARAMETERS

WELL #:
QRT:

12-9
4TH

<u>PARAMETERS</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>		<u>DATE ANALYZED</u>	<u>METHOD USED</u>
Chloride	00940	mg/l (ppm)	<u>NT</u>	14	ppm	NT	4500-Cl*
Iron	01045	ug/l (ppb)	<u>NT</u>	NT	ppb	NT	NT
Manganese	71883	ug/l (ppb)	<u>NT</u>	NT	ppb	NT	NT
Phenols	32730	ug/l (ppb)	<u>NT</u>	NT	ppb	NT	NT
Sodium	00929	mg/l (ppm)	<u>NT</u>	NT	ppm	NT	NT
Sulfate	00945	mg/l (ppm)	<u>NT</u>	1	ppm	NT	4500-SO4*

DATE OF THIS REPORT: 26-Feb-92

SIGNATURE: 
NAME (PRINTED): JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

* Standard Methods, 17th Ed.

MONITORING WELL APPENDIX IX DATA FOR FACILITIES IN ASSESSEMENT

Under assessment monitoring as per HWMR-5 Part VI Section 263.93(d)(4)(i) and 42 Federal Register, 259.42 (July 9, 1987), please list values for the Appendix IX parameters which were found in your Appendix IX scan.

<u>WELL #:</u>	<u>12-9</u>	<u>4TH QRT</u>						
<u>PARAMETER</u>	<u>STORET CODE</u>	<u>UNITS</u>	<u>VALUE</u>	<u>DETECTION LIMIT</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>METHOD USED</u>	
CADMIUM	?	ug/l	NT	10	NT	NT	NT	
SILVER	?	ug/l	NT	10	NT	NT	NT	
ARSENIC	?	ug/l	NT	10	NT	NT	NT	
VOLATILES	?	ug/l	NT	5	NT	NT	NT	

WELL # 12-9

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

ANNUAL SUMMARY OF MONITOR WELL DATA

This form is for annual presentation of data by all facilities operating under interim status.

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
RADIOACTIVE and HAZARDOUS WASTE BUREAU
525 CAMINO DE LOS MARQUEZ
SANTA FE, NEW MEXICO 87502**

FACILITY NAME: CLIMAX CHEMICAL COMPANY

EPA I.D. NUMBER NMD 990753931

WELL NUMBER 12-9

SAMPLE DATES

<u>3/27/91</u>		<u>6/26/91</u>		<u>10/10/91</u>		<u>12/26/91</u>
----------------	--	----------------	--	-----------------	--	-----------------

<u>PARAMETERS</u>	<u>UNITS</u>	<u>VALUES</u>			
		<u>3/27/91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
G. Water Elev.	ft.	<u>3560.177</u>	<u>3559.739</u>	<u>3557.630</u>	<u>3558.510</u>
pH (Avg.)	S.U.	<u>6.9</u>	<u>7.1</u>	<u>6.9</u>	<u>0.0</u>
Spec Cond(Avg.)	umohs/cm	<u>56475</u>	<u>51721</u>	<u>48800</u>	<u>0</u>
T.O.X (Avg.)	ug/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
T.O.C. (Avg.)	mg/l	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Chloride	mg/l	<u>19856.0</u>	<u>19147.0</u>	<u>19147.0</u>	<u>NT</u>
Iron	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Manganese	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Phenols	ug/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sodium	mg/l	<u>NT</u>	<u>NT</u>	<u>NT</u>	<u>NT</u>
Sulfate	mg/l	<u>10339.0</u>	<u>10123.0</u>	<u>9703.0</u>	<u>NT</u>

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

APPENDIX IX PARAMETERS

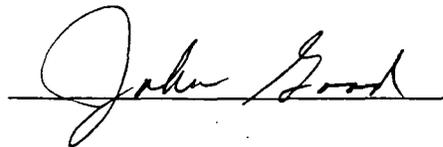
WELL #: 12-9

ANNUAL SUMMARY

<u>PARAMETERS</u>	<u>UNITS</u>	<u>SAMPLE DATES</u>			
		<u>3/27/91</u>	<u>6/26/91</u>	<u>10/10/91</u>	<u>12/26/91</u>
CADMIUM	ug/l	70.0	60.0	50.0	NT
SILVER	ug/l	50.0	ND	ND	NT
ARSENIC	ug/l	17.0	ND	ND	NT
VOLATILES	ug/l	ND	ND	ND	NT

DATE OF REPORT:
26-Feb-92

SIGNATURE:



NAME (TYPED):

JOHN GOOD

ND = NOT DETECTED	N/A = NOT APPLICABLE
NT = NOT TESTED FOR	N/R = NOT REPORTED

CHAIN OF CUSTODY RECORD

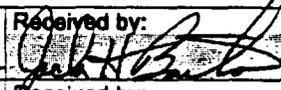
Proj. NO.	PROJECT NAME: CLIMAX CHEMICAL COMPANY ASSESSMENT MONITORING				4TH QUARTER		YEAR: 1991	
SAMPLERS:	(Signature) John Good				LABORATORY: SOUTHWESTERN LABORATORIES INC. MIDLAND, TEXAS			

STATION NUMBER	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONT	WATER DEPTH	ANALYSIS REQUIRED				REMARKS
W-1	12/28/91	0900	X		Well # 1-3	8	25.75'	A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
W-2	12/28/91	0930	X		Well # 2-3	8	44.17'	A	B	C		Cl-, SO4=, pH*, Spec Cond* VOA, THM, TDS @180° C.
W-3			X		Well # 3-3		DRY					Dry Well
W-4	12/28/91	1200	X		Well # 4-3	8	26.58'	A	B	C		Cl-, SO4=, pH*, Spec Cond* VOA, THM, TDS @180° C.
W-5	12/28/91	1000	X		Well # 5-3	8	25.42'	A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
W-10	12/28/91	1230	X		Well # 10-10	8	35.25'	A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
W-12	12/28/91	1300			Well # 12-9	0	29.50'	No samples - well contaminated w/ oil				
TRIP BLANKS	12/28/91		X		LAB	8		A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
FIELD BLANKS	12/28/91		X		FIELD	8		A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
BLIND SAMPLES	12/28/91		X			8		A	B			Cl-, SO4=, pH*, Spec Cond* VOA, THM
SOIL-N	12/28/91	1030	X		Irrigation System	1		D				Soil pH
SOIL-E	12/28/91	1030	X		Irrigation System	1		D				Soil pH
SOIL-S	12/28/91	1030	X		Irrigation System	1		D				Soil pH
SOIL-W	12/28/91	1030	X		Irrigation System	1		D				Soil pH

ANALYSIS DESCRIPTION:

- A = Chloride (Cl-), Sulfate (SO4=), pH*, Specific Conductivity* (*=4 replicates)
- B = Volatile Organics (VOA), Total Heavy Metals (THM)
- C = Total Dissolved Solids (TDS) @180°C.
- D = pH (Soil Analysis)

Custody Signatures

Relinquished by: 	Date / Time: 12-27-91/252	Received by: 	Relinquished by:	Date / Time:	Received by:
Relinquished by:	Date / Time:	Received by:	Relinquished by:	Date / Time:	Received by:
Relinquished by:	Date / Time:	Received by:	Date/Time	Remarks:	



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75860
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-1
Sampled 12-26-91 by John Good

REPORT OF CHEMICAL ANALYSIS

<u>Parameters</u>	<u>Results</u> mg/L	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Method</u>
Sulfate	213	12-31-91	W. Jaycox	S.M. 4500-SO ₄ , C
Chloride	269	12-31-91	W. Jaycox	S.M. 4500-Cl, B

<u>Parameters</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>
Conductivity, micromhos/cm @ 25°C	1681	1671	1681	1671
Date of Analysis 12-30-91				
Analyst W. Jaycox				
Method Std. Meth., 17th Ed., 2510-B				
pH	7.19	7.18	7.20	7.21
Date of Analysis 12-30-91				
Analyst W. Jaycox				
Method Std. Meth., 17th Ed., 4500-H				

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

Reviewed by

SOUTHWESTERN LABORATORIES



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75860
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-1
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	* 0.010	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead	0.033	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

Reviewed by

JJC

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75861
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-2
Sampled 12-26-91 by John Good

REPORT OF VOLATILE ORGANICS ANALYSIS

Date of Analysis 1-9-92
Analyst R.K.W.

Method EPA 624

Compound	ug/L
Chloromethane	* 10
Bromomethane	* 10
Vinyl Chloride	* 10
Chloroethane	* 10
Methylene Chloride	* 5
1,1-Dichloroethene	* 5
1,1-Dichloroethane	* 5
trans-1,2-Dichloroethene	* 5
Chloroform	* 5
1,2-Dichloroethane	* 5
1,1,1-Trichloroethane	* 5
Carbon Tetrachloride	* 5
Bromodichloromethane	* 5
1,2-Dichloropropane	* 5
trans-1,3-Dichloropropene	* 5
Trichloroethene	* 5
Dibromochloromethane	* 5
1,1,2-Trichloroethane	* 5
Benzene	* 5
cis-1,3-Dichloropropene	* 5
2-Chloroethylvinylether	* 10
Bromoform	* 5
Tetrachloroethene	* 5
1,1,2,2-Tetrachloroethane	* 5
Toluene	* 5
Chlorobenzene	* 5
Ethylbenzene	* 5
Total Xylenes	* 5
Acrolein	* 50
Acrylonitrile	* 50

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

Reviewed by

SOUTHWESTERN LABORATORIES



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75862
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-4
Sampled 12-26-91 by John Good

REPORT OF CHEMICAL ANALYSIS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Method</u>
Sulfate	6506	12-31-91	W. Jaycox	S.M. 4500-SO ₄ , C
Chloride	30493	12-31-91	W. Jaycox	S.M. 4500-Cl, B
Total Dissolved Solids @ 180° C	60760	12-31-91	W. Jaycox	S.M. 2540-C

<u>Parameters</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>
Conductivity, micromhos/cm @ 25°C Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 2510-B	76363	76670	77183	76465
pH Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 4500-H	6.82	6.81	6.79	6.80

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

JXC

Reviewed by

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75862
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-4
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	0.088	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead	0.026	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

XXC

Reviewed by

SOUTHWESTERN LABORATORIES

Alan B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75863
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-5
Sampled 12-26-91 by John Good

REPORT OF VOLATILE ORGANICS ANALYSIS

Date of Analysis 1-9-92
Analyst R.K.W.

Method EPA 624

Compound	ug/L
Chloromethane	* 10
Bromomethane	* 10
Vinyl Chloride	* 10
Chloroethane	* 10
Methylene Chloride	* 5
1,1-Dichloroethene	* 5
1,1-Dichloroethane	* 5
trans-1,2-Dichloroethene	* 5
Chloroform	* 5
1,2-Dichloroethane	* 5
1,1,1-Trichloroethane	* 5
Carbon Tetrachloride	* 5
Bromodichloromethane	* 5
1,2-Dichloropropane	* 5
trans-1,3-Dichloropropene	* 5
Trichloroethene	* 5
Dibromochloromethane	* 5
1,1,2-Trichloroethane	* 5
Benzene	* 5
cis-1,3-Dichloropropene	* 5
2-Chloroethylvinylether	* 10
Bromoform	* 5
Tetrachloroethene	* 5
1,1,2,2-Tetrachloroethane	* 5
Toluene	* 5
Chlorobenzene	* 5
Ethylbenzene	* 5
Total Xylenes	* 5
Acrolein	* 50
Acrylonitrile	* 50

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

Reviewed by

KYC

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75863
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-5
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results mg/L</u>	<u>Date Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	0.031	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead	* 0.020	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

Reviewed by

JXC

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75864
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-10
Sampled 12-26-91 by John Good

REPORT OF CHEMICAL ANALYSIS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Method</u>
Sulfate	3802	12-31-91	W. Jaycox	S.M. 4500-SO ₄ , C
Chloride	15247	12-31-91	W. Jaycox	S.M. 4500-Cl, B

<u>Parameters</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>
Conductivity, micromhos/cm @ 25°C Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 2510-B	43870	43870	43768	43973
pH Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 4500-H	7.25	7.38	7.36	7.28

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

JGC
Reviewed by

SOUTHWESTERN LABORATORIES
Allen B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75864
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, W-10
Sampled 12-26-91 by John Good

REPORT OF VOLATILE ORGANICS ANALYSIS

Date of Analysis 1-9-92
Analyst R.K.W.

Method EPA 624

Compound	ug/L
Chloromethane	* 10
Bromomethane	* 10
Vinyl Chloride	* 10
Chloroethane	* 10
Methylene Chloride	* 5
1,1-Dichloroethene	* 5
1,1-Dichloroethane	* 5
trans-1,2-Dichloroethene	* 5
Chloroform	* 5
1,2-Dichloroethane	* 5
1,1,1-Trichloroethane	* 5
Carbon Tetrachloride	* 5
Bromodichloromethane	* 5
1,2-Dichloropropane	* 5
trans-1,3-Dichloropropene	* 5
Trichloroethene	* 5
Dibromochloromethane	* 5
1,1,2-Trichloroethane	* 5
Benzene	* 5
cis-1,3-Dichloropropene	* 5
2-Chloroethylvinylether	* 10
Bromoform	* 5
Tetrachloroethene	* 5
1,1,2,2-Tetrachloroethane	* 5
Toluene	* 5
Chlorobenzene	* 5
Ethylbenzene	* 5
Total Xylenes	* 5
Acrolein	* 50
Acrylonitrile	* 50

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

XKC

Reviewed by

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75865
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, Blind
Sampled 12-26-91 by John Good

REPORT OF CHEMICAL ANALYSIS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Method</u>
Sulfate	6349	12-31-91	W. Jaycox	S.M. 4500-SO ₄ , C
Chloride	6382	12-31-91	W. Jaycox	S.M. 4500-Cl, B

<u>Parameters</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>
Conductivity, micromhos/cm @ 25°C	27778	27368	27060	26958
Date of Analysis 12-30-91				
Analyst W. Jaycox				
Method Std. Meth., 17th Ed., 2510-B				
pH	7.40	7.48	7.46	7.50
Date of Analysis 12-30-91				
Analyst W. Jaycox				
Method Std. Meth., 17th Ed., 4500-H				

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

JXC

Reviewed by

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75865
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, Blind
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	0.031	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead (a)	0.16	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

(a) Laboratory suspects contamination from an outside source.

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

YXC
Reviewed by

SOUTHWESTERN LABORATORIES
Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75866
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, Trip Blank
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	* 0.010	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead	* 0.020	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

JXC

Reviewed by

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75867
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, Field Blank
Sampled 12-26-91 by John Good

REPORT OF CHEMICAL ANALYSIS

<u>Parameters</u>	<u>Results</u> mg/L	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Method</u>
Sulfate	* 10	12-31-91	W. Jaycox	S.M. 4500-SO ₄ , C
Chloride	* 7	12-31-91	W. Jaycox	S.M. 4500-Cl, B

<u>Parameters</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>
Conductivity, micromhos/cm @ 25°C Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 2510-B	* 10	* 10	* 10	* 10
pH Date of Analysis 12-30-91 Analyst W. Jaycox Method Std. Meth., 17th Ed., 4500-H	5.24	5.20	5.19	5.10

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

JXC

Reviewed by

SOUTHWESTERN LABORATORIES

Albert B. Johnston



SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
1703 West Industrial Avenue • P.O. Box 2150 • Midland, Texas 79702

Report of tests on Water
Client Climax Chemical Co.
Delivered by John Good

File No. 6147600
Report No. 75867
Report Date 1-31-92
Date Received 12-27-91

Identification Monitor Wells for the 4th Quarter of 1991, Field Blank
Sampled 12-26-91 by John Good

REPORT OF TOTAL METALS

<u>Parameters</u>	<u>Results</u> <u>mg/L</u>	<u>Date</u> <u>Performed</u>	<u>Analyst</u>	<u>Test Method</u>
Arsenic	* 0.050	1-8-92	G. Bunch	SW846, 7061
Barium	* 0.50	1-8-92	G. Bunch	SW846, 7080
Cadmium	* 0.010	1-7-92	G. Bunch	SW846, 7130
Chromium	* 0.050	1-7-92	G. Bunch	SW846, 7190
Lead	* 0.020	1-12-92	G. Bunch	SW846, 7420
Mercury	* 0.0020	1-7-92	G. Bunch	SW846, 7470
Selenium	* 0.010	1-8-92	G. Bunch	SW846, 7741
Silver	* 0.050	1-7-92	G. Bunch	SW846, 7760

*Denotes "less than"

Copies: Climax Chemical Co.
Attn: John Good

XJC

Reviewed by

SOUTHWESTERN LABORATORIES