

FOSTER WHEELER ENVIRONMENTAL CORPORATION

**JPL QUARTERLY GROUNDWATER
MONITORING PROGRAM ANNUAL REPORT
AUGUST 1996 TO JULY 1997**

Prepared for the:

**National Aeronautics and Space Administration -
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109**

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EXECUTIVE SUMMARY

This report summarizes the results from the first four quarterly long-term groundwater monitoring events of the Comprehensive Environmental Response, Compensation and Liability Act Remedial Investigation/Feasibility Study at the National Aeronautics and Space Administration-Jet Propulsion Laboratory (JPL). A long-term quarterly groundwater monitoring program was initiated in response to requests from the U.S. Environmental Protection Agency (USEPA). Between August, 1996 and July, 1997, groundwater samples were collected quarterly from 15 on-site JPL monitoring wells and from 5 off-site JPL monitoring wells. A summary of sampling procedures is included in Section 2.0. Samples were analyzed for a variety of organic and inorganic compounds and elements.

Of 60 volatile organic compounds analyzed for during the year, only three, carbon tetrachloride, trichloroethene and 1,2-dichloroethane, were detected in groundwater samples from the JPL monitoring wells at concentrations in excess of state and/or federal maximum contaminant levels (MCLs) for drinking water.

Prior to the long-term quarterly sampling program, samples were analyzed for semi-volatile organic compounds (SVOCs) during seven (7) separate sampling events without indication that SVOCs were constituents of concern. However, shortly before the long-term quarterly sampling program began, several SVOCs were detected in one of two samples collected from MW-12, screen 2. Laboratory contamination was considered the source of the anomalous results, but, as a result, SVOCs analyses were performed on samples from that screen during the first long-term quarterly sampling event. No SVOCs were detected, and analysis for SVOCs in the groundwater at JPL was subsequently discontinued.

Perchlorate (ClO_4^-) analyses were conducted during the last quarterly sampling event pursuant to requests from the California Department of Health Services (DHS) after the DHS detected ClO_4^- in nearby municipal production wells. Groundwater samples from several on-site JPL wells contained ClO_4^- at levels above the DHS interim action level. One sample from the JPL multipoint off-site wells contained ClO_4^- at a concentration above the DHS interim action level.

Aluminum (Al) analysis was conducted during the first long-term quarterly sampling event only. Although Al was detected in some samples, analysis of Al was not conducted during subsequent events, with regulatory agency approval, after risk screening indicated the levels of Al were well below levels considered to be a health risk. Arsenic and lead were occasionally detected sporadically at levels well below state and federal MCLs. Total chromium (Cr) was measured in one sample at a concentration equal to the state MCL (but below the federal MCL), while all other total Cr detects were below MCLs. Hexavalent Cr, for which state and federal MCLs have not yet been established, was detected in five wells at levels from 7 to 47 parts per billion.

Pursuant to requests from the California Department of Toxic Substances Control, samples from five JPL on-site wells were analyzed for tributyltin (TBT) to evaluate whether or not TBT was a concern. TBT was detected at extremely low concentrations (parts per trillion) in two wells. The concentrations were just slightly above the detection limit of 2 parts per trillion and three orders of magnitude below USEPA's preliminary remediation goal for TBT oxide in water.

Three different water types were delineated beneath JPL as suggested by differences in the concentrations of dominant anions and cations. In general, very little change in water type with time was observed during the four sampling events for each well/screen. Total phosphorous analysis was conducted during the first three sampling events, but because it was detected infrequently, and at concentrations near the detection limit, it was of little use in classification of water types and was subsequently dropped from the analytical program (with approval from the regulatory agencies).

Water elevation data collected during the year consistently showed that JPL regional groundwater flow was primarily south and east. During operation of Pasadena municipal pumping wells, a zone of depression was formed around the pumping wells. During the month of February, after pumping from the municipal wells had ceased and after the rainy season had begun, groundwater recharge from the mouth of the Arroyo Seco was substantial enough to reverse groundwater flow directions across JPL for a relatively short period of time. The apparent complete flow reversal across the JPL site was present for only approximately one week. Based on analytical results, this very short-term flow reversal is not believed to play a major role in contaminant migration.

1.0 INTRODUCTION

This report summarizes results from the first four groundwater sampling events of the Long-Term Quarterly Groundwater Monitoring Program currently being conducted at the National Aeronautics and Space Administration (NASA)-Jet Propulsion Laboratory (JPL). The program involves quarterly sampling of 20 groundwater monitoring wells (MWs) on or adjacent to the JPL site, and quantification of various analytes in the samples. Additionally, water level data are collected at each well and are used to determine groundwater flow directions and gradients. The purpose of this report is to summarize and review the data, to evaluate the effectiveness of the monitoring system, and to propose adjustments to the monitoring program, if required.

Locations of the JPL monitoring wells are shown in Figure 1-1. Monitoring wells MW-3, MW-4, MW-11, MW-12, MW-14, MW-17, MW-18, MW-19, MW-20 and MW-21 are deep, multi-port wells, each containing five screened intervals within a Westbay Instruments, Inc. (Westbay) multi-port casing system. Monitoring wells MW-1, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-13, MW-15, and MW-16 are relatively shallow standpipe wells, each containing a single screened interval at the water table. Deep, multi-port wells MW-17, MW-18, MW-19, MW-20 and MW-21 are located off-site, while all other monitoring wells are located on the JPL site. Shallow well MW-2 has been replaced with deep multiport well MW-14 as a JPL sampling point and was not sampled. A summary of well construction details is given in Table 1-1.

The four quarterly groundwater sampling events included in this report were completed over a period of one year. Event 1 occurred in August/September, 1996; Event 2 in October-November 1996; Event 3 in February-March, 1997; and Event 4 in June-July, 1997. Sampling procedures used are summarized in Section 2.0 of this report. The analytical program focused on: (i) quantification of various constituents of concern, and (ii) determination of general water quality type based on anion and cation concentrations. Constituents of concern were monitored to determine the nature and extent of contamination in groundwater beneath JPL, and will be discussed in Section 3.0. The water quality data were used to establish generalized groundwater types, and are discussed in Section 4.0.

In addition to groundwater samples, quality assurance/quality control (QA/QC) samples were collected for laboratory analysis. The QA/QC program will be summarized in Section 2.0 of this report. All sampling records, water level records (pressure profiling records), field data and instrument calibration forms, laboratory analytical reports and chain of custody forms for each sampling event are included in the appendices of their respective quarterly reports (Foster Wheeler, 1996a; 1997a, b, c) and are not included in this annual report.

2.0 SAMPLING AND FIELD QUALITY ASSURANCE/ QUALITY CONTROL PROCEDURES

Two different procedures were used in the collection and handling of groundwater samples at JPL: one designed for the shallow wells, and the other for the deep multi-port wells. These procedures are briefly outlined below (for details, please see Foster Wheeler, 1996a; 1997a, b, c).

2.1 SHALLOW MONITORING WELLS

Dedicated pumps were used to sample the shallow wells. These pumps were decontaminated prior to installation (Ebasco, 1993). Before sample collection, the water in each well casing was purged (by pumping) to remove groundwater that may have been exposed to the atmosphere and thus was not representative of aquifer conditions.

Temperature, pH, electrical conductivity and turbidity of the water removed from each well were monitored during purging. After these parameters had stabilized (when two successive measurements made approximately 3 minutes apart were within approximately 10 percent of each other) and the turbidity was less than 5 Nephelometric Turbidity Units, groundwater samples were collected with the dedicated pump.

All sample bottles were filled completely (not allowed to overflow), capped, labeled, and placed in a cooler with ice immediately after sample collection. Samples collected for volatile organic compounds (VOCs) had zero headspace.

2.2 DEEP MULTI-PORT MONITORING WELLS

Sampling of the deep JPL multi-port (MP) monitoring wells required specialized sampling equipment manufactured by Westbay. This equipment included a pressure profiling/sampling probe with a surface control unit. Copies of the detailed operations manuals for the Westbay pressure profiling/sampling probe are available elsewhere (Ebasco, 1993; 1994).

The Westbay sampling probe and sample bottles were decontaminated prior to sampling at each screened interval in the deep MP wells according to previously described procedures (Foster Wheeler, 1996a; 1997a, b, c).

Purging before sampling is not required in the deep MP monitoring wells because the groundwater sample is collected directly from the aquifer, and is not exposed to the atmosphere. However, at each screened interval an initial sample was collected in order to check pH, conductivity, temperature, and turbidity in the field, and to rinse the sampling container with formation water. Samples for laboratory analysis were then collected and transferred to bottles as described above (Section 2.1 final paragraph). A final sample was collected and analyzed for pH, conductivity, temperature, and turbidity to ensure continuity of aquifer conditions during sampling.

2.3 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

To verify the quality of the sampling procedures and analytical data, various field and laboratory QA/QC procedures were followed. These included collection of duplicate groundwater samples, equipment blanks, trip blanks, matrix spikes, and a field blank during each quarterly sampling event. The laboratory QA/QC program (matrix spikes, method blanks, etc.) was conducted according to specific procedural and analytical method requirements. QA/QC procedures are discussed in the quarterly sampling reports (Foster Wheeler, 1996a; 1997a, b, c). Field QA/QC data (trip blanks, equipment blanks, and field blanks) have consistently shown that the sampling procedures are not introducing contamination and therefore, the data are acceptable for their intended use.

3.0 ANALYTICAL RESULTS-CONSTITUENTS OF CONCERN

The analytical results for the constituents of concern (COCs), which include VOCs, semi-volatile organic compounds (SVOCs), perchlorate (ClO_4^-), metals, and tributyltin (TBT) are summarized in this section. Table 3-1 contains a summary of analyses performed during each of the four sampling events. Results from VOCs, and ClO_4^- analyses are compiled in Table 3-2, and results from metals and TBT analyses are presented in Table 3-3.

3.1 VOLATILE ORGANIC COMPOUNDS RESULTS

As shown in Table 3-2, several VOCs have been detected in JPL groundwater samples. However, only three compounds have been detected at concentrations exceeding state and/or federal maximum contaminant levels (MCLs) for drinking water. The three compounds in excess of state and/or federal MCLs are carbon tetrachloride (CCl_4), trichloroethene (TCE) and 1,2-dichloroethane (1,2-DCA).

Relatively low concentrations of CCl_4 have consistently been present in samples from on-site wells MW-4 screen 2, MW-8, MW-11 screen 2, MW-12 screens 2-5, and off-site wells MW-17 screen 3 and MW-18 screens 3 and 4. Relatively higher concentrations of CCl_4 have consistently been observed in samples from on-site wells MW-7, MW-13, and MW-16. CCl_4 has been detected intermittently at relatively low levels in samples from on-site wells MW-3 screen 3, MW-10, MW-11 screens 1 and 3, and off-site well MW-19 screen 4. Some of these constituents were in excess of drinking water standards.

The highest concentrations of TCE have consistently been measured in samples from on-site wells MW-4 screen 2, MW-7, MW-10, MW-13, MW-16, and from off-site wells MW-17 screens 3-5 and MW-21 screen 1. Relatively lower concentrations have been consistently found in samples from on-site wells MW-8, MW-14 screen 2, and from off-site wells MW-18 screen 3, MW-19 screen 4, and MW-21 screen 3. Occasional low level detects (below MCLs in all cases) have been noted in samples from on-site well MW-3 screen 3, MW-12 screen 2, and off-site well MW-21 screens 2 and 4.

1,2-DCA has consistently been found at levels exceeding the state MCL in samples from on-site wells MW-4 screen 2, MW-7, MW-13, and MW-16. The same trend was observed for 1,1-dichloroethene (1,1-DCE), although concentrations for 1,1-DCE are below MCLs in all cases. 1,1-Dichloroethane (1,1-DCA) was consistently detected at levels below its MCL in MW-14 at screens 1 and 2 only.

Tetrachloroethene, also known as perchloroethene (PCE), has consistently been found at levels which do not exceed state or federal MCLs in samples from on-site wells MW-7, MW-14 screen 2, MW-16, and from off-site wells MW-17 screen 5, MW-18 screens 3 and 4, MW-19 screens 2, 3 and 5, and MW-21 screens 2-5. Infrequent low level detects have also been noted in

samples from on-site wells MW-3 screen 3, MW-10, MW-13, MW-14 screen 1, and from off-site wells MW-17 screens 3 and 4, MW-19 screen 4, and MW-21 screen 1.

Other VOCs have been detected in JPL groundwater samples, but these have either been at concentrations far below MCLs or the detects have been exceedingly rare or generally attributable to laboratory contamination (see Table 3-2, "Other Volatile Organic Compounds").

3.2 SEMI-VOLATILE ORGANIC COMPOUNDS RESULTS

Low levels of SVOCs were detected in one groundwater sample collected from MW-12 screen 2 prior to the beginning of the long-term quarterly groundwater monitoring program. A duplicate sample collected from this screen at the same time, as well as a sample collected during a subsequent sampling event, did not confirm the presence of SVOCs in this well. Nevertheless, the California Department of Toxic Substances Control (DTSC) requested that analysis for SVOCs be completed again on a groundwater sample from MW-12 screen 2 (plus a duplicate) during the first long-term quarterly sampling event. No SVOCs were detected in that sample or its duplicate, and analysis for SVOCs in all wells was subsequently discontinued.

3.3 PERCHLORATE RESULTS

ClO_4^- analysis was conducted during the fourth long-term quarterly sampling event after the California Department of Health Services (DHS) detected ClO_4^- in nearby City of Pasadena municipal wells and requested ClO_4^- analyses be performed. Groundwater samples from several on-site wells contained ClO_4^- at levels above the DHS interim action level of 18 $\mu\text{g}/\text{l}$, including MW-3 screen 3, MW-4 screen 2, MW-7, MW-13, and MW-16 (Table 3-2). Only one off-site well, MW-21 screen 1, contained ClO_4^- at a concentration above the interim action level. ClO_4^- was detected at levels below the interim action level in samples from on-site wells MW-6, MW-8, MW-10, MW-12 screens 2-5, MW-14 screen 3, and in off-site wells MW-17 screens 3-5, MW-18 screen 4, MW-19 screen 3, MW-20 screen 1, and MW-21 screen 4.

3.4 METALS RESULTS

Aluminum (Al) analysis was performed during the first long-term quarterly sampling event as a check on its presence in the aquifer pursuant to a request from the DTSC. Al was detected in some samples (Table 3-3), however, through risk assessment screening, it was determined that Al was of minimal concern and, with approval from the regulatory agencies, analysis of Al was not conducted during subsequent events. Arsenic (As) and lead (Pb) were occasionally detected at levels well below state or federal MCLs. Total Cr was consistently detected in MW-4 screen 2, MW-6, and MW-10. The concentration of total Cr in the sample from MW-6 from the first event was equal to the state MCL but was below the federal MCL. Hexavalent Cr [Cr(VI)] was detected consistently in MW-7 and MW-13, and during one event in three other wells (Table 3-3). State and federal MCLs for Cr(VI) have not yet been established.

3.5 TRIBUTYLTIN RESULTS

Analyses for TBT was completed at JPL because TBT was historically used by industry in cooling towers as an anti-foulant. The DTSC requested analyses for TBT be conducted on samples from select wells, including MW-4 screens 1 and 2, MW-8, MW-12 screens 1 and 2 and MW-13.

TBT was detected in samples from MW-4 screen 2 during event 4, and MW-12 screen 1 during events 1 and 4 at very low levels (<5 nanograms per liter (ng/L)). This is well below the U.S. Environmental Protection Agency's (USEPA's) preliminary remediation goal for TBT oxide in water of 1,100 ng/L (USEPA, 1996). Analyses for TBT has subsequently been discontinued except for MW-8, where analysis for TBT was inadvertently not completed during the fourth sampling event of this year.

4.0 GENERAL WATER CHEMISTRY

As part of the monitoring program, groundwater samples were submitted for analysis of general groundwater parameters including major cations and anions [sodium (Na^+), potassium (K^+), calcium (Ca^{2+}), magnesium (Mg^{2+}), sulfate (SO_4^{2-}), nitrate (NO_3^-), chloride (Cl^-), carbonate (CO_3^{2-}), bicarbonate (HCO_3^-)], total iron (Fe), total phosphorous (P), Total Dissolved Solids, and pH. These analyses were performed in order to further understand the natural chemistry of the groundwater beneath JPL and for potential use in interpreting groundwater flow. For a summary of analyses performed, refer to Table 3-1. Phosphorous was also analyzed for during the first three sampling events but was detected infrequently and at very low concentrations. Consequently it was of little use in determining water types and was dropped from the program after approval from the regulatory agencies. General groundwater chemistry data for each monitoring event are presented in respective quarterly reports (Foster Wheeler, 1996a; 1997a, b, c), and are not shown here. Several QA/QC checks were performed to determine that the data are acceptable for its intended use (Foster Wheeler, 1996a; 1997a, b, c).

The water chemistry results were compiled as Stiff diagrams, which allowed for a general empirical classification of each sample. This analysis has suggested that the majority of groundwater sampled at JPL can be classified as one of three general water types, based on the predominant cation and anion(s). These types include:

1. Calcium-bicarbonate groundwater: Ca^{2+} as the dominant cation and HCO_3^- as the dominant anion;
2. Sodium-bicarbonate groundwater: Na^{2+} as the dominant cation and HCO_3^- as the dominant anion;
3. Calcium-bicarbonate/chloride/sulfate groundwater: Ca^{2+} as the dominant cation and HCO_3^- as the dominant anion, but with relatively elevated Cl^- and SO_4^{2-} concentrations.

Compiled in Table 4-1 are the classifications of groundwater from each sampling point, as reported during the four sampling events. In several cases, the data suggested possible blending of water types. It should be noted that there is some subjectivity inherent in this type of analysis. We can therefore make the assumption that the apparent blends may be classifiable as either water type represented. Allowing for this assumption, no apparent significant variation in water type was observed over the four sampling events for 50 of the 60 sampling points. The general water type was interpreted to have varied during the year at 10 sampling points.

5.0 WATER LEVEL MEASUREMENTS

Water levels in the on-site shallow monitoring wells were measured daily using dedicated transducers and data logging equipment which stores water level information electronically. The water level data was retrieved from the data loggers on a monthly basis. In addition, shallow well water levels were measured manually each month using a water-level tape/indicator. Water levels in the deep, multi-port wells were also monitored manually each month using a pressure-transducer probe manufactured by Westbay specifically for the unique casing in these wells. Details of water level measurement procedures have previously been described (Ebasco, 1993, 1994).

Monthly water-level elevations (August, 1996 to July, 1997) for both deep and shallow wells are summarized in Table 5-1. Hydrographs generated from monthly water-level data collected manually from the deep multi-port wells are presented in Figures 5-1 through 5-10. Hydrographs generated from daily water-level data collected with the dedicated pressure transducers from the shallow wells are presented in Figures 5-11 and 5-12. Daily water-level elevation data for the shallow wells are included in Appendix A.

As part of the monitoring program, water levels taken prior to, and after each sampling event were contoured to assess groundwater flow directions. This analysis has shown that flow is primarily to the south and east. This trend is illustrated in Figure 5-13, which depicts groundwater elevation contours and flow directions that are representative of those generally observed when nearby city of Pasadena production wells are not in operation. In many cases during collection of water-level data, however, the Pasadena municipal pumping wells are in operation, which typically causes a zone of depression to form around them. Figure 5-14 shows groundwater elevation contours and flow directions that reflect the operation of the municipal production wells.

As suggested on Figure 5-11, during the month of February, after pumping from the municipal wells had ceased and after the rainy season had begun, groundwater recharge from the mouth of the Arroyo Seco was apparently substantial enough to reverse groundwater flow directions across JPL for a relatively short period of time. This condition is present when water levels recorded in MW-6 (shallow well at far western end of the JPL site represented with relatively thick dark line on Figure 5-11) are lower than all other wells on-site, indicating MW-6 is downgradient from all other wells on-site. This condition was present for only approximately one week and, based on results of contaminant analyses, is not believed to play a major role in contaminant migration.

6.0 RECOMMENDATIONS

In an effort to improve sampling and monitoring efficiency, the analytical and groundwater elevation data from the first year of the long-term quarterly groundwater sampling event have been analyzed to evaluate the possibility of making changes to future groundwater sampling events. To identify sampling zones that yield redundant or superfluous data, each sampling zone has been preliminarily assigned to one of the following five categories based on proximity to groundwater contamination plumes pursuant to the classification scheme described in the RI/FS Work Plan (Foster Wheeler, 1996b):

1. *Plume (P)*: Wells or well screens where constituents have been detected above detection limit at any time during the year.
2. *Downgradient (D)*: Wells or well screens that lie on or near the "leading edge" of plumes where constituents have not been detected at any time during the last year but may appear in the future.
3. *Guard (G)*: Wells or well screens located near municipal drinking water supply wells that will provide early warning of plume migration.
4. *Cross-gradient (C)*: Wells or well screens located perpendicular to contaminant plumes. (Note: due to the shape of contaminant plumes and groundwater flow directions, no wells or well screens could be given this classification.)
5. *Upgradient (U)*: Wells or well screens that are not likely to be in the path of contaminant plumes.

Preliminary classification of all JPL wells/screens has been provided in Table 6-1. After one additional complete year of quarterly sampling during which all wells and screens will be sampled for all constituents of concern, similar to the program completed this past year, the JPL wells and screens will be reclassified, if required, and the sampling program revised pursuant to the classification of the wells or screens. As proposed and approved in the RI/FS Work Plan (Foster Wheeler, 1996b) the sampling frequency for some screens and constituents during the long-term monitoring program will change pursuant to their classification. Figure 6-1 (from the RI/FS Work Plan) summarizes the potential changes that may be made to the long-term sampling frequencies.

7.0 REFERENCES

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TABLES

TABLE 1-1
SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-1	Shallow Standpipe	1989	Mud Rotary	120	70-110	1116.7	1006.70-1046.70	-	99		4" PVC
MW-2	Shallow Standpipe	1989	Mud Rotary	177	127-167	1168.85	1001.85-1041.85	-			
MW-3	Deep Multi-Port	1990	Mud Rotary	700	170-180	1099.82	919.82-929.82	1	37	0.010	4" low-carbon steel
					250-260			2	47	0.010	4" low-carbon steel
					344-354			3	45	0.010	4" low-carbon steel
					555-565			4	39	0.010	4" low-carbon steel
					650-660			5	64	0.010	4" low-carbon steel
MW-4	Deep Multi-Port	1990	Mud Rotary	559	147-157	1082.72	925.72-935.72	1	48	0.010	4" low-carbon steel
					237-247			2	34	0.010	4" low-carbon steel
					318-328			3	42	0.010	4" low-carbon steel
					389-399			4	54	0.010	4" low-carbon steel
					509-519			5	52	0.010	4" low-carbon steel
MW-5	Shallow Standpipe	1990	Air Percussion	140	85-135	1071.6	936.60-986.60	-	71	0.010	4" low-carbon steel
MW-6	Shallow Standpipe	1990	Air Percussion	245	195-245	1188.52	943.52-993.52	-	62	0.010	4" low-carbon steel
MW-7	Shallow Standpipe	1990	Air Percussion	275	225-275	1212.88	937.88-987.88	-	63	0.010	4" low-carbon steel
MW-8	Shallow Standpipe	1992	Air Percussion	205	155-205	1139.53	934.53-984.53	-	75	0.010	4" low-carbon steel
MW-9	Shallow Standpipe	1992	Air Percussion	68	18-68	1106.02	1038.02-1088.02	-	56	0.010	4" PVC
MW-10	Shallow Standpipe	1992	Air Percussion	155	105-155	1087.71	932.71-982.71	-	67.5	0.010	4" PVC (0-85')
											4" stainless steel (85'-105')
MW-11	Deep Multi-Port	1992	Mud Rotary	680	140-150	1139.35	989.35-999.35	1	24	0.010	4" low-carbon steel
					250-260			2	22	0.010	4" low-carbon steel
					420-430			3	26	0.010	4" low-carbon steel
					515-525			4	26	0.010	4" low-carbon steel
					630-640			5	28	0.010	4" low-carbon steel

TABLE 1-1
SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-12	Deep Multi-Port	1994	Mud Rotary	596	135-145	1102.14	957.14-967.14	1	22	0.010	4" low-carbon steel
					240-250		852.14-862.14	2	19	0.010	4" low-carbon steel
					315-325		777.14-787.14	3	21	0.010	4" low-carbon steel
					430-440		662.14-672.14	4	22	0.010	4" low-carbon steel
					546-556		546.14-556.14	5	21	0.010	4" low-carbon steel
MW-13	Shallow Standpipe	1994	Air Rotary	235	180-230	1183.47	953.47-1003.47	-	65	0.010	4" PVC
MW-14	Deep Multi-Port	1994	Mud Rotary	588	205-215	1173.42	958.42-968.42	1	22	0.010	4" low-carbon steel
					275-285		888.42-898.42	2	26	0.010	4" low-carbon steel
					380-390		783.42-793.42	3	22	0.010	4" low-carbon steel
					453-463		710.42-720.42	4	27	0.010	4" low-carbon steel
					538-548		625.42-635.42	5	21	0.010	4" low-carbon steel
MW-15	Shallow Standpipe	1994	Air Percussion	74	19-69	1120.66	1051.66-1101.66	-	60	0.010	4" stainless steel
MW-16	Shallow Standpipe	1994	Air Percussion	285	230-280	1236.27	956.27-1006.27	-	62	0.010	4.5" PVC
MW-17	Deep Multi-Port	1995	Mud Rotary	774	246-256	1190.99	934.99-944.99	1	24	0.010	4" low-carbon steel
					366-376		814.99-824.99	2	24	0.010	4" low-carbon steel
					466-476		714.99-724.99	3	27	0.010	4" low-carbon steel
					578-588		602.99-612.99	4	25	0.010	4" low-carbon steel
					723-733		457.99-467.99	5	22	0.010	4" low-carbon steel
MW-18	Deep Multi-Port	1995	Mud Rotary	732	266-276	1225.34	949.34-959.34	1	22	0.010	4" low-carbon steel
					326-336		889.34-899.34	2	24	0.010	4" low-carbon steel
					421-431		794.34-804.34	3	20	0.010	4" low-carbon steel
					561-571		654.34-664.34	4	22	0.010	4" low-carbon steel
					681-691		534.34-544.34	5	23	0.010	4" low-carbon steel
MW-19	Deep Multi-Port	1995	Mud Rotary	543	240-250	1143.2	893.20-903.20	1	20	0.010	4" low-carbon steel
					310-320		823.20-833.20	2	20	0.010	4" low-carbon steel
					390-400		743.20-753.20	3	17	0.010	4" low-carbon steel
					442-452		691.20-701.20	4	20	0.010	4" low-carbon steel
					492-502		641.20-651.20	5	22	0.010	4" low-carbon steel

TABLE 1-1
SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-20	Deep Multi-Port	1995	Mud Rotary	948	228-238	1164.89	926.89-936.89	1	24	0.010	4" low-carbon steel
					388-398		766.89-776.89	2	23	0.010	4" low-carbon steel
					558-568		596.89-606.89	3	19	0.010	4" low-carbon steel
					698-708		456.89-466.89	4	23	0.010	4" low-carbon steel
					898-908		256.89-266.89	5	27	0.010	4" low-carbon steel
MW-21	Deep Multi-Port	1995	Mud Rotary	416	86-96	1058.99	962.99-972.99	1	26	0.010	4" low-carbon steel
					156-166		892.99-902.99	2	25	0.010	4" low-carbon steel
					236-246		812.99-822.99	3	21	0.010	4" low-carbon steel
					306-316		742.99-752.99	4	22	0.010	4" low-carbon steel
					366-376		682.99-692.99	5	22	0.010	4" low-carbon steel

TABLE 3-1
SUMMARY OF ANALYSES DURING THE FIRST
YEAR OF QUARTERLY MONITORING
JET PROPULSION LABORATORY

Analysis	Well(s)-Screen(s)	Event	EPA Method
<i>Constituents of Concern</i>			
Volatile Organic Compounds	All	All	524.2
Semi-volatile Organic Compounds	MW-12-2	1	8270
Total Aluminum	All	1	200.8
Total Arsenic	All	All	200.9
Total Chromium	All	All	200.8
Hexavalent Chromium	All	All	7196
Total Lead	All	All	200.8
Perchlorate	All	4	300.0, modified
Tributyltin	MW-4-1, -2	4	GC/FPD
	MW-12-1	1, 3, 4	
	MW-12-2	All	
	MW-13	All	
<i>Water Chemistry Parameters</i>			
Major Cations and Anions [Na, K, Ca, Mg, Fe, SO ₄ , NO ₃ , Cl, (CO ₃ +HCO ₃)]	All	All	Various
Total Phosphorous	All	1, 2, 3	365.3
Total Dissolved Solids (TDS)	All	All	2540-C
pH	All	All	4500-H

TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
<i>MW-1</i>	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
<i>MW-3</i>											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	1.2	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	8.3	0.7(B) Naphthalene	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	2.6 Carbon disulfide	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	5.5	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	4.8	1.9(B) Naphthalene	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	4.4	8.0 Carbon disulfide	NA
	Jun/Jul 1997	--	--	--	--	--	--	1.0	1.2	--	--
Screen 3	Aug/Sep 1996	0.6	0.8	--	--	--	--	--	1.6	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	0.7	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	0.8	--	NA
	Jun/Jul 1997	1.2	0.8	0.6	--	--	--	2.8	1.8	--	21
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.2 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.0 Hexane	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.1 Methylene chloride	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.1 Acetone	NA
										1.2 Carbon disulfide	
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.5 Carbon disulfide	NA
										2.7 Sulfur dioxide	
Jun/Jul 1997	--	--	--	--	--	--	--	--	1.3 Unknown (RT=2.51)		
										4.5 Carbon disulfide	--

B: Compound detected in the laboratory method blank

--: Not detected

TB: Compound detected in associated trip blank

NA: Not analyzed

*: Not sampled, no water over screen

1: California Department of Health Services Interim Action Level

a: Only VOCs for which MCLs have been established are listed

NE: Not established

E: Estimated concentration; result exceeded calibration range

TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
<i>MW-4</i>											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.9(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	5.5	19	--	--	0.9	0.7	--	6.7	3.2(B) Acetone	NA
	Oct/Nov 1996	5.3	15	--	--	0.6	0.8	--	5.4	1.8 Acetone	NA
	Feb/Mar 1997	7.9	19	--	--	0.8	0.8	--	7.8	--	NA
	Jun/Jul 1997	4.0	5.7	--	--	--	0.5	--	3.4	--	51
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.0(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.5 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.9(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 5	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
<i>MW-5</i>											
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
<i>MW-6</i>											
Screen 6	Aug/Sep 1996	--	--	--	--	--	--	--	1.3(TB)	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	0.8	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	5.5

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NA: Not analyzed

*: Not sampled, no water over screen

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TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
<i>MW-7</i>	Aug/Sep 1996	90	39	0.8	--	1.2	1.1	7.2	13(TB)	--	NA
	Oct/Nov 1996	170	27	1.3	--	0.8	2.3	7.7	14	4.3(B) 1,1-Difluoroethane 2.8(B) Acetone	NA
	Feb/Mar 1997	45	27	0.6	--	0.8	0.9	5.1	9.9	--	NA
	Jun/Jul 1997	39	23	0.7	--	0.8	1.0	4.1	11	10 Unknown	285
<i>MW-8</i>	Aug/Sep 1996	40	4.6	--	--	--	--	--	1.3	--	NA
	Oct/Nov 1996	2.8	2.2	--	--	--	--	0.6	0.6	1.7 Acetone	NA
	Feb/Mar 1997	1.5	4.5	--	--	--	--	--	1.3	1.1 Freon 11 1.9 Carbon disulfide	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	6.4
<i>MW-9</i>	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
<i>MW-10</i>	Aug/Sep 1996	0.7	18	0.5	--	--	--	1.2	1.4(TB)	--	NA
	Oct/Nov 1996	0.6	6.6	1.0	1.9	--	--	0.8	1.1	3.0(B) Acetone 1.1 Unknown scan #350	NA
	Feb/Mar 1997	--	5.2	--	--	--	--	--	0.6	--	NA
	Jun/Jul 1997	--	2.2	--	--	--	--	--	--	--	11
<i>MW-11</i>											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.6(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	7.1 MTBE 1.8 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	1.4	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	2.4	--	--	--	--	--	--	1.0	--	NA
	Oct/Nov 1996	1.1	--	--	--	--	--	--	1.2	--	NA
	Feb/Mar 1997	1.7	--	--	--	--	--	--	1.0	--	NA
	Jun/Jul 1997	1.2	--	--	--	--	--	--	1.0	--	--

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TB: Compound detected in associated trip blank

NA: Not analyzed

*: Not sampled, no water over screen

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TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)
 Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
Screen 3	Aug/Sep 1996	0.9	--	--	--	--	--	--	1.3	2.9(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	1.4	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	1.1	--	NA
	Jun/Jul 1997	0.7	--	--	--	--	--	--	1.4	--	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	0.5	2.4(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.5 2-Methyl-1-Propene	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.4(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.1 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
MW-12											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	4.1	--	NA
	Not Sampled*										
	Feb/Mar 1997	--	--	--	--	--	--	--	5.8	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.5	--	--
Screen 2	Aug/Sep 1996	0.9	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	1.5	0.6	--	--	--	--	0.5	--	--	NA
	Feb/Mar 1997	1.1	0.5	--	--	--	--	--	--	1.1(B) Acetone	NA
	Jun/Jul 1997	1.0	--	--	--	--	--	--	0.8	--	6.9
Screen 3	Aug/Sep 1996	4.5	--	--	--	--	--	--	1.3	--	NA
	Oct/Nov 1996	3.8	--	--	--	--	--	--	1.3	1.6 Acetone	NA
	Feb/Mar 1997	6.4	--	--	--	--	--	--	1.4	1.3(B) Acetone	NA
	Jun/Jul 1997	2.0	--	--	--	--	--	--	1.6	--	5.7
Screen 4	Aug/Sep 1996	6.3	--	--	--	--	--	--	1.4	--	NA
	Oct/Nov 1996	5.1	--	--	--	--	--	--	1.4	2.5 Acetone	NA
	Feb/Mar 1997	4.9	--	--	--	--	--	--	1.3	--	NA
	Jun/Jul 1997	4.9	--	--	--	--	--	--	1.3	--	7.3

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**TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in µg/l)

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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
Screen 5	Aug/Sep 1996	3.4	--	--	--	--	--	--	0.7	--	NA
	Oct/Nov 1996	1.3	--	--	--	--	--	--	--	1.5 Acetone	NA
	Feb/Mar 1997	1.7	--	--	--	--	--	--	0.5	--	NA
	Jun/Jul 1997	1.9	--	--	--	--	--	--	0.5	--	4.1
MW-13	Aug/Sep 1996	2.1	4.7	0.6	--	2.5	1.5	0.7	21(TB)	--	NA
	Oct/Nov 1996	2.7	2.7	--	--	1.9	1.5	0.6	14	--	NA
	Feb/Mar 1997	18	28	--	--	0.9	1.1	0.6	9.2	--	NA
	Jun/Jul 1997	6.4	24E	--	--	0.9	0.5	--	11	--	130
MW-14											
Screen 1	Aug/Sep 1996	--	--	--	2.4	--	--	--	0.6	--	NA
	Oct/Nov 1996	--	--	--	2.9	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	0.7	1.5	--	--	--	0.7	--	NA
	Jun/Jul 1997	--	--	--	2.0	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	--	2.8	1.6	1.4	--	--	--	1.5	--	NA
	Oct/Nov 1996	--	1.5	1.6	1.0	--	--	--	0.9	0.6 1,2,3-Trichlorobenzene 1.1 Acetone	NA
	Feb/Mar 1997	--	0.9	1.9	1.3	--	--	--	0.8	0.8 1,2,3-Trichlorobenzene 1.1 Acetone	NA
	Jun/Jul 1997	--	1.1	1.7	1.5	--	--	--	0.9	0.5 1,2,3-Trichlorobenzene	--
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	4.3
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--

B: Compound detected in the laboratory method blank
 --: Not detected
 TB: Compound detected in associated trip blank
 NA: Not analyzed

*: Not sampled, no water over screen
 1: California Department of Health Services Interim Action Level
 a: Only VOCs for which MCLs have been established are listed
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RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.1(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6(TB) Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.3 Carbon disulfide	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	NA
MW-15	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.6 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	NA
MW-16	Aug/Sep 1996	125	33	1.3	--	2.4	2.2	2.0	40(TB)	--	NA
	Not Sampled*										
	Feb/Mar 1997	91	23	1.3	--	1.7	2.6	1.6	29	--	NA
	Jun/Jul 1997	68	25	1.1	--	2.1	1.7	0.6	43	--	615
MW-17											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	4.3(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.4 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	NA
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	3.8	4.5(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	6.0	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	5.2	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	4.1	--	NA
Screen 3	Aug/Sep 1996	2.0	7.9	--	--	--	--	--	7.5	--	NA
	Oct/Nov 1996	3.3	18	0.8	--	--	--	--	8.7	--	NA
	Feb/Mar 1997	5.1	23	1.1	--	--	--	--	6.2	--	NA
	Jun/Jul 1997	1.3	5.9	--	--	--	--	--	7.3	0.9 Bromodichloromethane	12

B: Compound detected in the laboratory method blank
 --: Not detected
 TB: Compound detected in associated trip blank
 NA: Not analyzed

*: Not sampled, no water over screen
 1: California Department of Health Services Interim Action Level
 a: Only VOCs for which MCLs have been established are listed
 NE: Not established
 E: Estimated concentration; result exceeded calibration range

TABLE 3-2

**SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
Screen 4	Aug/Sep 1996	--	9.5	0.5	--	--	--	--	1.1	--	NA
	Oct/Nov 1996	--	8.9	--	--	--	--	--	1.5	--	NA
	Feb/Mar 1997	--	5.8	--	--	--	--	--	0.7	--	NA
	Jun/Jul 1997	--	4.5	--	--	--	--	--	0.6	--	13
Screen 5	Aug/Sep 1996	--	13	0.6	--	--	--	--	1.7	3.4(B) Acetone	NA
	Oct/Nov 1996	--	16	0.7	--	--	--	--	1.7	--	NA
	Feb/Mar 1997	--	14	0.7	--	--	--	--	1.3	--	NA
	Jun/Jul 1997	--	10	0.7	--	--	--	--	1.3	--	12
MW-18											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	1.6	--	NA
	Not Sampled*										
	Feb/Mar 1997	--	--	--	--	--	--	--	3.0	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	--
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	7.3	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	8.2	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	1.9	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	4.5	--	--
Screen 3	Aug/Sep 1996	0.7	4.7	2.8	--	--	--	--	5.1	--	NA
	Oct/Nov 1996	0.7	6.4	3.2	--	--	--	--	5.6	--	NA
	Feb/Mar 1997	0.8	6.6	2.9	--	--	--	--	5.1	--	NA
	Jun/Jul 1997	0.6	2.4	1.8	--	--	--	--	4.4	--	--
Screen 4	Aug/Sep 1996	2.2	--	0.7	--	--	--	--	0.5	--	NA
	Oct/Nov 1996	2.2	--	0.7	--	--	--	--	0.5	1.4(TB) Acetone	NA
	Feb/Mar 1997	2.2	--	1.5	--	--	--	--	0.6	--	NA
	Jun/Jul 1997	1.9	--	0.7	--	--	--	--	--	--	11
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	1.1 Carbon disulfide	--

B: Compound detected in the laboratory method blank

--: Not detected

TB: Compound detected in associated trip blank

NA: Not analyzed

*: Not sampled, no water over screen

I: California Department of Health Services Interim Action Level

a: Only VOCs for which MCLs have been established are listed

NE: Not established

E: Estimated concentration; result exceeded calibration range

TABLE 3-2
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in µg/l)
 Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-19											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	0.9	3.7(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	0.6	2.9 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	0.8	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	2.5	--	--
Screen 2	Aug/Sep 1996	--	--	0.8	--	--	--	--	--	3.0(B) Acetone	NA
	Oct/Nov 1996	--	--	1.1	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	0.6	--	--	--	--	--	--	--
Screen 3	Aug/Sep 1996	--	--	3.1	--	--	--	--	--	2.6(B) Acetone	NA
	Oct/Nov 1996	--	--	2.5	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	2.1	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	2.0	--	--	--	--	--	--	4.1
Screen 4	Aug/Sep 1996	0.5	1.5	--	--	--	--	--	2.1	--	NA
	Oct/Nov 1996	--	1.5	--	--	--	--	--	1.9	--	NA
	Feb/Mar 1997	--	1.1	0.6	--	--	--	--	1.5	--	NA
	Jun/Jul 1997	--	0.7	--	--	--	--	--	1.3	--	--
Screen 5	Aug/Sep 1996	--	--	3.0	--	--	--	--	0.6	1.6(B) Unknown scan #940	NA
	Oct/Nov 1996	--	--	2.4	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	1.7	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	1.5	--	--	--	--	--	--	--

B: Compound detected in the laboratory method blank
 --: Not detected
 TB: Compound detected in associated trip blank
 NA: Not analyzed

*: Not sampled, no water over screen
 1: California Department of Health Services Interim Action Level
 a: Only VOCs for which MCLs have been established are listed
 NE: Not established
 E: Estimated concentration; result exceeded calibration range

TABLE 3-2

**SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
<i>MW-20</i>											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	0.7	3.4(B) Acetone	NA
	Not Sampled*										
	Feb/Mar 1997	--	--	--	--	--	--	--	1.4	2.4(EB) Acetone	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	5.7
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	7.7	4.0(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	4.4	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	3.2	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	3.3	--	--
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.7(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	0.6	2.3 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.8(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	4.8(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--

B: Compound detected in the laboratory method blank

--: Not detected

TB: Compound detected in associated trip blank

NA: Not analyzed

*: Not sampled, no water over screen

1: California Department of Health Services Interim Action Level

a: Only VOCs for which MCLs have been established are listed

NE: Not established

E: Estimated concentration; result exceeded calibration range

TABLE 3-2

**SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS, AND PERCHLORATE
RESULTS FOR THE FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in µg/l)

Values above state and/or federal MCLs or action levels are in bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-21											
Screen 1	Aug/Sep 1996	--	33	0.7	--	--	--	--	1.8	2.3(B) Acetone	NA
	Not Sampled*										
	Feb/Mar 1997	--	29	--	--	--	--	--	2.2	--	NA
	Jun/Jul 1997	--	20	--	--	--	--	--	1.6	--	19
Screen 2	Aug/Sep 1996	--	--	0.9	--	--	--	--	0.5	--	NA
	Oct/Nov 1996	--	0.6	2.3	--	--	--	--	0.6	1.4(TB) Acetone	NA
	Feb/Mar 1997	--	--	1.1	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	0.7	--	--	--	--	--	--	--
Screen 3	Aug/Sep 1996	--	0.7	1.5	--	--	--	--	0.5	--	NA
	Oct/Nov 1996	--	0.9	1.6	--	--	--	--	--	1.2 Acetone	NA
	Feb/Mar 1997	--	0.8	1.6	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	1.2	--	--	--	--	--	--	--
Screen 4	Aug/Sep 1996	--	0.8	4.2	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	2.5	--	--	--	--	--	1.6 Acetone	NA
	Feb/Mar 1997	--	--	1.8	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	2.8	--	--	--	--	--	--	4.6
Screen 5	Aug/Sep 1996	--	--	4.5	--	--	--	--	0.6	--	NA
	Oct/Nov 1996	--	--	3.1	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	3.0	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	3.0	--	--	--	--	--	--	--
Practical Quantitation Limit		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.0
California Maximum Contaminant Level		0.5	5.0	5.0	5.0	0.5	6.0	1,200	100	150 Freon 11 ^(a)	18 ⁽¹⁾
EPA Region IX Maximum Contaminant Level		5.0	5.0	5.0	NE	5.0	7.0	NE	100	5.0 Methylene chloride ^(a) 100 Bromodichloromethane	NE

B: Compound detected in the laboratory method blank

--: Not detected

TB: Compound detected in associated trip blank

NA: Not analyzed

*: Not sampled, no water over screen

1: California Department of Health Services Interim Action Level

a: Only VOCs for which MCLs have been established are listed

NE: Not established

E: Estimated concentration; result exceeded calibration range

TABLE 3-3

**SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
<i>MW-1</i>	Aug/Sep 1996	--	--	--	--	--	NA	0.8
	Oct/Nov 1996	NA	--	--	--	--	NA	0.5
	Feb/Mar 1997	NA	--	--	--	--	NA	2.5
	Jun/Jul 1997	NA	--	--	--	--	NA	1.92
<i>MW-3</i>								
Screen 1	Aug/Sep 1996	--	--	--	--	--	NA	7.2
	Oct/Nov 1996	NA	--	--	--	--	NA	3.1
	Feb/Mar 1997	NA	--	--	--	--	NA	6.1
	Jun/Jul 1997	NA	--	--	--	--	NA	2.61
Screen 2	Aug/Sep 1996	--	--	--	--	--	NA	1.7
	Oct/Nov 1996	NA	--	--	--	--	NA	2.7
	Feb/Mar 1997	NA	--	--	--	--	NA	3.8
	Jun/Jul 1997	NA	--	--	--	--	NA	1.13
Screen 3	Aug/Sep 1996	--	--	--	--	--	NA	5.2
	Oct/Nov 1996	NA	--	--	--	--	NA	2.7
	Feb/Mar 1997	NA	--	--	--	--	NA	1.7
	Jun/Jul 1997	NA	--	--	--	--	NA	3.41
Screen 4	Aug/Sep 1996	--	--	--	--	--	NA	4.3
	Oct/Nov 1996	NA	--	--	--	--	NA	2.6
	Feb/Mar 1997	NA	--	--	--	--	NA	4.5
	Jun/Jul 1997	NA	--	--	--	--	NA	2.71
Screen 5	Aug/Sep 1996	0.055	0.011	--	--	--	NA	1.5
	Oct/Nov 1996	NA	0.007	--	--	--	NA	1.9
	Feb/Mar 1997	NA	--	--	--	--	NA	2.5
	Jun/Jul 1997	NA	0.007	--	--	--	NA	0.83
<i>MW-4</i>								
Screen 1	Aug/Sep 1996	--	--	--	--	--	NA	2.6
	Oct/Nov 1996	NA	--	--	--	--	NA	1.7
	Feb/Mar 1997	NA	--	--	--	--	NA	4.6
	Jun/Jul 1997	NA	--	--	--	--	--	2.79

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3
SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin ($\mu\text{g/l}$)	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	--	0.023	--	NA	3.8
	Oct/Nov 1996	NA	--	--	0.014	--	NA	4.2
	Feb/Mar 1997	NA	--	--	0.011	--	NA	4.5
	Jun/Jul 1997	NA	--	--	0.013	--	0.002	2.69
Screen 3	Aug/Sep 1996	--	--	--	--	--	NA	0.6
	Oct/Nov 1996	NA	--	--	--	--	NA	1.5
	Feb/Mar 1997	NA	--	--	--	--	NA	2.8
	Jun/Jul 1997	NA	--	--	--	--	NA	1.98
Screen 4	Aug/Sep 1996	--	--	--	--	--	NA	3.0
	Oct/Nov 1996	NA	--	--	--	--	NA	1.4
	Feb/Mar 1997	NA	--	--	--	--	NA	2.5
	Jun/Jul 1997	NA	--	--	--	--	NA	4.62
Screen 5	Aug/Sep 1996	--	--	--	--	--	NA	4.5
	Oct/Nov 1996	NA	--	--	--	--	NA	4.1
	Feb/Mar 1997	NA	--	--	--	--	NA	4.4
	Jun/Jul 1997	NA	--	--	--	--	NA	3.98
<i>MW-5</i>	Aug/Sep 1996	--	--	--	--	--	NA	2.7
	Oct/Nov 1996	NA	--	0.003	--	--	NA	2.7
	Feb/Mar 1997	NA	--	--	--	--	NA	1.5
	Jun/Jul 1997	NA	--	--	--	--	NA	4.50
<i>MW-6</i>	Aug/Sep 1996	--	--	--	0.050	--	NA	4.5
	Oct/Nov 1996	NA	--	--	0.011	--	NA	1.1
	Feb/Mar 1997	NA	--	--	0.014	--	NA	4.3
	Jun/Jul 1997	NA	--	--	0.019	--	NA	2.50
<i>MW-7</i>	Aug/Sep 1996	--	--	--	0.013	0.007	NA	4.8
	Oct/Nov 1996	NA	--	--	0.019	0.019	NA	3.5
	Feb/Mar 1997	NA	--	--	--	0.010	NA	2.2
	Jun/Jul 1997	NA	--	--	--	--	NA	0.98

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3
SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
MW-8	Aug/Sep 1996	0.160	--	--	--	--	NA	4.0
	Oct/Nov 1996	NA	--	0.003	--	--	NA	4.7
	Feb/Mar 1997	NA	--	--	--	--	NA	3.1
	Jun/Jul 1997	NA	--	0.002	--	--	NA	4.61
MW-9	Aug/Sep 1996	0.110	--	--	--	--	NA	2.1
	Oct/Nov 1996	NA	--	--	--	--	NA	2.5
	Feb/Mar 1997	NA	--	--	--	--	NA	4.2
	Jun/Jul 1997	NA	--	--	--	--	NA	3.22
MW-10	Aug/Sep 1996	0.190	--	--	0.011	0.010	NA	4.5
	Oct/Nov 1996	NA	--	0.003	0.011	--	NA	4.9
	Feb/Mar 1997	NA	--	--	--	--	NA	2.2
	Jun/Jul 1997	NA	--	--	0.014	--	NA	2.92
MW-11								
Screen 1	Aug/Sep 1996	0.052	--	--	--	--	NA	4.0
	Oct/Nov 1996	NA	--	--	--	--	NA	2.5
	Feb/Mar 1997	NA	--	--	--	--	NA	2.5
	Jun/Jul 1997	NA	--	--	--	--	NA	1.53
Screen 2	Aug/Sep 1996	0.050	--	--	--	--	NA	4.5
	Oct/Nov 1996	NA	--	--	--	--	NA	4.7
	Feb/Mar 1997	NA	--	--	--	--	NA	3.1
	Jun/Jul 1997	NA	--	--	--	--	NA	4.67
Screen 3	Aug/Sep 1996	0.077	--	--	--	--	NA	0.5
	Oct/Nov 1996	NA	--	--	--	--	NA	2.3
	Feb/Mar 1997	NA	--	--	--	--	NA	1.7
	Jun/Jul 1997	NA	--	--	--	--	NA	1.88
Screen 4	Aug/Sep 1996	--	--	--	--	--	NA	3.9
	Oct/Nov 1996	NA	--	--	--	--	NA	3.3
	Feb/Mar 1997	NA	--	0.009	--	--	NA	5.2
	Jun/Jul 1997	NA	--	--	--	--	NA	4.80

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3

**SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
Screen 5	Aug/Sep 1996	0.055	0.007	--	--	--	NA	0.6
	Oct/Nov 1996	NA	0.005	--	--	--	NA	1.9
	Feb/Mar 1997	NA	--	0.002	--	--	NA	1.6
	Jun/Jul 1997	NA	--	--	--	--	NA	0.69
MW-12								
Screen 1	Aug/Sep 1996	1.10	--	0.004	--	--	0.005	50.4
	Not Sampled*							
	Feb/Mar 1997	NA	--	0.003	--	--	--	3.8
	Jun/Jul 1997	NA	--	--	--	--	0.002	4.80
Screen 2	Aug/Sep 1996	--	--	0.024	--	--	--	4.0
	Oct/Nov 1996	NA	--	--	--	--	--	4.0
	Feb/Mar 1997	NA	--	--	--	--	--	2.5
	Jun/Jul 1997	NA	--	--	--	--	--	3.16
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	2.5
	Oct/Nov 1996	NA	--	--	--	--	--	3.1
	Feb/Mar 1997	NA	--	--	--	--	--	5.0
	Jun/Jul 1997	NA	--	--	--	--	--	4.79
Screen 4	Aug/Sep 1996	0.086	--	0.005	--	--	--	1.8
	Oct/Nov 1996	NA	--	--	--	--	--	0.7
	Feb/Mar 1997	NA	--	--	--	--	--	2.4
	Jun/Jul 1997	NA	--	--	--	--	--	2.49
Screen 5	Aug/Sep 1996	0.060	--	--	--	--	--	2.0
	Oct/Nov 1996	NA	--	--	--	--	--	2.0
	Feb/Mar 1997	NA	--	--	--	--	--	1.5
	Jun/Jul 1997	NA	--	--	--	--	--	4.97
MW-13								
Screen 5	Aug/Sep 1996	0.092	--	--	0.046	0.047	--	4.1
	Oct/Nov 1996	NA	--	0.005	0.031	0.028	--	3.0
	Feb/Mar 1997	NA	--	--	0.032	0.035	--	0.5
	Jun/Jul 1997	NA	--	--	0.038	0.037	--	1.21

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3
SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
MW-14								
Screen 1	Aug/Sep 1996	--	--	--	--	--	NA	3.3
	Oct/Nov 1996	NA	--	--	--	--	NA	4.5
	Feb/Mar 1997	NA	--	--	--	--	NA	4.3
	Jun/Jul 1997	NA	--	--	--	--	NA	2.21
Screen 2	Aug/Sep 1996	--	--	--	--	--	NA	4.4
	Oct/Nov 1996	NA	--	--	--	--	NA	3.8
	Feb/Mar 1997	NA	--	--	--	--	NA	4.8
	Jun/Jul 1997	NA	--	--	--	--	NA	4.97
Screen 3	Aug/Sep 1996	--	--	--	--	--	NA	1.7
	Oct/Nov 1996	NA	--	--	--	--	NA	2.0
	Feb/Mar 1997	NA	--	--	--	--	NA	2.5
	Jun/Jul 1997	NA	--	--	--	--	NA	0.70
Screen 4	Aug/Sep 1996	--	--	--	--	--	NA	3.1
	Oct/Nov 1996	NA	--	--	--	--	NA	2.5
	Feb/Mar 1997	NA	--	--	--	--	NA	4.1
	Jun/Jul 1997	NA	--	--	--	--	NA	2.31
Screen 5	Aug/Sep 1996	--	--	--	--	--	NA	1.5
	Oct/Nov 1996	NA	--	--	--	--	NA	4.1
	Feb/Mar 1997	NA	--	0.028	--	--	NA	2.3
	Jun/Jul 1997	NA	--	--	--	--	NA	1.90
MW-15								
	Aug/Sep 1996	--	--	--	--	--	NA	1.3
	Oct/Nov 1996	NA	--	--	NA	--	NA	0.5
	Feb/Mar 1997	NA	--	--	--	--	NA	2.6
	Jun/Jul 1997	NA	--	--	--	--	NA	0.21
MW-16								
	Aug/Sep 1996	0.110	--	--	0.018	--	NA	3.4
	Not Sampled*							
	Feb/Mar 1997	NA	--	--	--	0.007	NA	0.2
	Jun/Jul 1997	NA	--	--	--	--	NA	0.12

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3

**SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
MW-17								
Screen 1	Aug/Sep 1996	--	--	--	NA	NA	NA	1.0
	Oct/Nov 1996	NA	--	--	--	--	NA	2.9
	Feb/Mar 1997	NA	--	--	--	--	NA	2.0
	Jun/Jul 1997	NA	--	--	--	--	NA	2.23
Screen 2	Aug/Sep 1996	0.330	--	--	NA	NA	NA	4.5
	Oct/Nov 1996	NA	--	--	--	--	NA	2.5
	Feb/Mar 1997	NA	--	--	--	--	NA	2.7
	Jun/Jul 1997	NA	--	--	--	--	NA	4.49
Screen 3	Aug/Sep 1996	0.120	--	0.002	NA	NA	NA	4.9
	Oct/Nov 1996	NA	--	--	--	--	NA	4.8
	Feb/Mar 1997	NA	--	--	--	--	NA	6.0
	Jun/Jul 1997	NA	--	--	--	--	NA	4.83
Screen 4	Aug/Sep 1996	0.260	--	--	NA	NA	NA	2.8
	Oct/Nov 1996	NA	--	--	--	--	NA	2.6
	Feb/Mar 1997	NA	--	--	--	--	NA	5.6
	Jun/Jul 1997	NA	--	--	--	--	NA	4.09
Screen 5	Aug/Sep 1996	0.210	--	--	NA	NA	NA	5.0
	Oct/Nov 1996	NA	--	0.005	--	--	NA	5.2
	Feb/Mar 1997	NA	--	0.003	--	--	NA	24.5
	Jun/Jul 1997	NA	--	--	--	--	NA	34.0
MW-18								
Screen 1	Aug/Sep 1996	--	--	--	NA	NA	NA	0.9
	Not Sampled*							
	Feb/Mar 1997	NA	--	--	--	--	NA	1.9
	Jun/Jul 1997	NA	--	--	--	--	NA	0.42
Screen 2	Aug/Sep 1996	--	--	--	NA	NA	NA	3.5
	Oct/Nov 1996	NA	--	0.003	--	--	NA	3.4
	Feb/Mar 1997	NA	--	--	--	--	NA	2.8
	Jun/Jul 1997	NA	--	--	--	--	NA	1.53

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3

**SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
Screen 3	Aug/Sep 1996	--	--	--	NA	NA	NA	4.2
	Oct/Nov 1996	NA	--	0.002	NA	--	NA	4.0
	Feb/Mar 1997	NA	--	--	0.015	0.007	NA	3.3
	Jun/Jul 1997	NA	--	--	--	--	NA	3.88
Screen 4	Aug/Sep 1996	--	--	--	NA	NA	NA	2.0
	Oct/Nov 1996	NA	--	0.003	--	--	NA	1.9
	Feb/Mar 1997	NA	--	--	--	--	NA	2.8
	Jun/Jul 1997	NA	0.005	--	--	--	NA	3.58
Screen 5	Aug/Sep 1996	--	--	--	NA	NA	NA	2.8
	Oct/Nov 1996	NA	--	0.002	--	--	NA	3.6
	Feb/Mar 1997	NA	--	--	--	--	NA	2.9
	Jun/Jul 1997	NA	--	--	--	--	NA	3.97
MW-19								
Screen 1	Aug/Sep 1996	--	--	--	NA	NA	NA	5.0
	Oct/Nov 1996	NA	--	--	--	--	NA	3.4
	Feb/Mar 1997	NA	--	--	--	--	NA	6.6
	Jun/Jul 1997	NA	--	--	--	--	NA	0.78
Screen 2	Aug/Sep 1996	--	--	--	NA	NA	NA	4.5
	Oct/Nov 1996	NA	--	--	--	--	NA	3.6
	Feb/Mar 1997	NA	--	--	--	--	NA	21.9
	Jun/Jul 1997	NA	--	--	--	--	NA	2.80
Screen 3	Aug/Sep 1996	--	--	--	NA	NA	NA	3.0
	Oct/Nov 1996	NA	--	--	--	--	NA	5.0
	Feb/Mar 1997	NA	--	--	--	--	NA	4.9
	Jun/Jul 1997	NA	--	--	--	--	NA	4.88
Screen 4	Aug/Sep 1996	--	--	--	NA	NA	NA	4.2
	Oct/Nov 1996	NA	--	--	--	--	NA	8.0
	Feb/Mar 1997	NA	--	0.003	--	--	NA	15.8
	Jun/Jul 1997	NA	--	--	--	--	NA	4.88

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3
SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
Screen 5	Aug/Sep 1996	--	--	--	NA	NA	NA	4.9
	Oct/Nov 1996	NA	--	--	NA	--	NA	4.6
	Feb/Mar 1997	NA	--	--	--	--	NA	3.8
	Jun/Jul 1997	NA	--	--	--	--	NA	2.15
MW-20								
Screen 1	Aug/Sep 1996	--	--	--	--	NA	NA	3.5
	Not Sampled*							
	Feb/Mar 1997	NA	--	--	--	--	NA	2.3
	Jun/Jul 1997	NA	--	--	--	--	NA	0.16
Screen 2	Aug/Sep 1996	--	--	--	NA	NA	NA	3.9
	Oct/Nov 1996	NA	--	--	--	--	NA	1.1
	Feb/Mar 1997	NA	--	--	--	--	NA	2.1
	Jun/Jul 1997	NA	--	--	--	--	NA	2.54
Screen 3	Aug/Sep 1996	--	--	--	NA	NA	NA	1.7
	Oct/Nov 1996	NA	--	--	--	--	NA	1.6
	Feb/Mar 1997	NA	--	--	--	--	NA	1.9
	Jun/Jul 1997	NA	--	--	--	--	NA	2.14
Screen 4	Aug/Sep 1996	--	--	--	NA	NA	NA	1.0
	Oct/Nov 1996	NA	--	--	--	--	NA	1.3
	Feb/Mar 1997	NA	--	--	--	--	NA	3.3
	Jun/Jul 1997	NA	--	--	--	--	NA	1.29
Screen 5	Aug/Sep 1996	--	--	--	NA	NA	NA	1.8
	Oct/Nov 1996	NA	--	--	NA	--	NA	1.3
	Feb/Mar 1997	NA	--	0.004	--	--	NA	1.6
	Jun/Jul 1997	NA	0.006	--	--	--	NA	1.94
MW-21								
Screen 1	Aug/Sep 1996	--	--	--	NA	NA	NA	0.9
	Not Sampled*							
	Feb/Mar 1997	NA	--	--	--	--	NA	1.1
	Jun/Jul 1997	NA	--	--	--	--	NA	2.76

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 3-3

**SUMMARY OF METALS AND TRIBUTYLTIN RESULTS FOR THE
FIRST YEAR OF THE QUARTERLY MONITORING PROGRAM
JET PROPULSION LABORATORY**

(concentrations in mg/l, except where noted)

Sample Location	Sampling Date	Aluminum	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Tributyltin (µg/l)	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	--	NA	NA	NA	2.1
	Oct/Nov 1996	NA	--	--	--	--	NA	1.2
	Feb/Mar 1997	NA	--	--	--	--	NA	3.9
	Jun/Jul 1997	NA	--	--	--	--	NA	1.68
Screen 3	Aug/Sep 1996	--	--	--	NA	NA	NA	4.6
	Oct/Nov 1996	NA	--	--	--	--	NA	4.9
	Feb/Mar 1997	NA	--	0.003	--	--	NA	4.6
	Jun/Jul 1997	NA	--	--	--	--	NA	1.40
Screen 4	Aug/Sep 1996	--	--	--	NA	NA	NA	2.5
	Oct/Nov 1996	NA	--	--	--	--	NA	3.3
	Feb/Mar 1997	NA	--	0.004	--	--	NA	4.4
	Jun/Jul 1997	NA	--	--	--	--	NA	2.46
Screen 5	Aug/Sep 1996	0.012	--	--	NA	NA	NA	4.9
	Oct/Nov 1996	NA	--	--	--	--	NA	5.0
	Feb/Mar 1997	NA	--	--	--	--	NA	28.0
	Jun/Jul 1997	NA	--	--	--	--	NA	26.4
Practical Quantitation Limit		0.050	0.005	0.002	0.01	0.005	0.002	
Calif. Maximum Contaminant Level		1.0	0.05	0.05	0.05	NE	NE	
EPA Maximum Contaminant Level		0.05-0.2	0.05	(a)	0.10	NE	NE	

NA: Not analyzed

--: Not detected

NE: Not established

a: Treatment technique and public notification triggered at 0.015 mg/l

*: Not sampled, no water over screen

TABLE 4-1
GENERAL WATER TYPES OBSERVED BENEATH
JPL AS INTERPRETED WITH STIFF DIAGRAMS

[Shaded areas represent wells for which variation was observed over time (see text for details)]

Well/Screen Number	Water Type ¹			
	Aug/Sep 1996	Oct/Nov 1996	Feb/Mar 1997	Jun/Jul 1997
MW-1	Type 1	Type 1	Type 1	Type 1
MW-3				
Screen 1	Type 1	Type 1	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1	Type 1
Screen 3	Type 2	Type 2	Type 2	Type 2
Screen 4	Type 2	Type 2	Type 2	Type 2
Screen 5	Type 2	Type 2	Type 2	Type 2
MW-4				
Screen 1	Type 1	Type 1	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1 and 3 mix	Type 3
Screen 3	Type 1	Type 1	Type 1	Type ½
Screen 4	Type 2	Type 2	Type ½	Type 2
Screen 5	Type 2	Type 2	Type ½	Type ½
MW-5	Type 1	Type 1	Type 1	Type 1
MW-6	Type 3	Type 1	Type 1 and 3 mix	Type 3
MW-7	Type 1	Type 1	Type 1	Type 1
MW-8	Type 1	Type 1	Type 1	Type 1
MW-9	Type 1	Type 1	Type 1	Type 1
MW-10	Type 3	Type 3	Type 1 and 3 mix	Type 3
MW-11				
Screen 1	Type 1	Type 1	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1	Type 1
Screen 3	Type 1	Type 1	Type 1	Type 1
Screen 4	Type 1	Type 1	Type 1	Type 1
Screen 5	Type 2	Type 2	Type 2	Type 2
MW-12				
Screen 1	Type 1	Not Sampled ²	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1	Type 1
Screen 3	Type 1	Type 1	Type 1	Type 1
Screen 4	Type 1	Type 1	Type 1	Type 1
Screen 5	Type 2	Type 1	Type 1 and 2 mix	Type 1 and 2 mix

- 1: General Water Types: Type 1: Calcium-bicarbonate groundwater
 Type 2: Sodium-bicarbonate groundwater
 Type 3: Calcium-bicarbonate/chloride/sulfate groundwater

- 2: No water over screen

TABLE 4-1
GENERAL WATER TYPES OBSERVED BENEATH
JPL AS INTERPRETED WITH STIFF DIAGRAMS

[Shaded areas represent wells for which variation was observed over time (see text for details)]

Well/Screen Number	Water Type ¹			
	Aug/Sep 1996	Oct/Nov 1996	Feb/Mar 1997	Jun/Jul 1997
MW-13	Type 1	Type 1	Type 1 and 3 mix	Type 1
MW-14				
Screen 1	Type 3	Type 3	Type 3	Type 3
Screen 2	Type 3	Type 3	Type 3	Type 3
Screen 3	Type 3	Type 3	Type 3	Type 3
Screen 4	Type 1	Type 1	Type 1	Type 1
Screen 5	Type 2	Type 2	Type 2	Type 2
MW-15	Type 1	Type 1	Type 1	Type 1
MW-16	Type 1	Not Sampled ²	Type 1 and 3 mix	Type 1
MW-17				
Screen 1	Type 1	Type 1	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1	Type 1
Screen 3	Type 1	Type 1	Type 1	Type 1
Screen 4	Type 1	Type 1	Type 1	Type 1 and 2 mix
Screen 5	Type 1	Type 1	Type 1 and 2 mix	Type 1 and 2 mix
MW-18				
Screen 1	Type 1	Not Sampled ²	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1	Type 1
Screen 3	Type 1	Type 1	Type 1	Type 1
Screen 4	Type 1	Type 1	Type 1 and 2 mix	Type 1 and 2 mix
Screen 5	Type 2	Type 2	Type 2	Type 2
MW-19				
Screen 1	Type 1	Type 1	Type 1	Type 1
Screen 2	Type 1	Type 1	Type 1 and 3	Type 3
Screen 3	Type 1	Type 1	Type 3	Type 3
Screen 4	Type 1	Type 1	Type 2 and 3 mix	Type 3
Screen 5	Type 1	Type 1	Type 2 and 3 mix	Type 3
MW-20				
Screen 1	Type 3	Not Sampled ²	Type 3	Type 3
Screen 2	Type 2	Type 1	Type 1	Type 2
Screen 3	Type 2	Type 2	Type 2	Type 2
Screen 4	Type 2	Type 2	Type 2	Type 2
Screen 5	Type 2	Type 2	Type 2	Type 2

- 1: General Water Types: Type 1: Calcium-bicarbonate groundwater
Type 2: Sodium-bicarbonate groundwater
Type 3: Calcium-bicarbonate/chloride/sulfate groundwater

- 2: No water over screen

TABLE 4-1
GENERAL WATER TYPES OBSERVED BENEATH
JPL AS INTERPRETED WITH STIFF DIAGRAMS

[Shaded areas represent wells for which variation was observed over time (see text for details)]

Well/Screen Number	Water Type ¹			
	Aug/Sep 1996	Oct/Nov 1996	Feb/Mar 1997	Jun/Jul 1997
<i>MW-21</i>				
Screen 1	Type 3	Not Sampled ²	Type 3	Type 3
Screen 2	Type 3	Type 3	Type 3	Type 3
Screen 3	Type 3	Type 3	Type 3	Type 3
Screen 4	Type 1	Type 1	Type 1 and 3 mix	Type 3
Screen 5	Type 1	Type 1	Type 1 and 3 mix	Type 3

- 1: General Water Types: Type 1: Calcium-bicarbonate groundwater
Type 2: Sodium-bicarbonate groundwater
Type 3: Calcium-bicarbonate/chloride/sulfate groundwater

- 2: No water over screen

TABLE 5-1

**MONTHLY WATER LEVEL ELEVATIONS FOR JPL GROUNDWATER MONITORING WELLS
AUGUST 1996-JULY 1997
(feet above mean sea level)**

Well #	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97
MW-1	1,091.44	1,084.31	1,085.84	1,091.58	1,094.58	1,091.76	1,095.31	1,097.77	1,096.89	1,093.99	1,093.95	1,089.58
MW-3												
Screen 1	960.38	950.76	946.93	947.09	961.03	997.57	993.74	990.62	978.69	968.69	965.76	961.34
Screen 2	947.51	938.12	938.10	938.07	944.14	983.96	972.52	970.35	1,042.55	953.19	950.73	951.12
Screen 3	942.31	932.03	934.99	934.45	941.72	982.67	967.43	965.44	1,021.83	948.35	946.07	947.16
Screen 4	863.42	844.14	880.47	869.26	882.50	976.06	899.42	895.12	884.43	864.55	864.10	874.89
Screen 5	833.22	815.53	869.19	843.43	873.00	973.80	881.86	874.14	855.05	836.63	837.10	849.76
MW-4												
Screen 1	969.80	958.58	952.38	953.05	965.41	1,002.97	1,009.54	1,005.11	990.25	979.02	974.64	967.35
Screen 2	954.18	943.76	944.04	944.57	949.25	985.15	979.38	977.14	982.04	959.54	957.00	954.40
Screen 3	951.13	940.45	942.79	943.77	948.20	984.65	973.96	973.28	967.97	956.62	954.30	952.39
Screen 4	940.27	929.83	936.48	935.92	927.51	983.36	966.24	964.59	957.46	946.64	945.31	943.72
Screen 5	862.01	843.37	882.32	871.26	881.02	976.71	897.48	893.28	881.60	863.73	863.55	869.01
MW-5	969.00	958.22	952.40	953.28	962.18	999.06	1,006.80	1,002.34	989.61	977.72	1,023.43	966.11
MW-6	981.52	ND ¹	970.18	973.52	975.46	989.52	1,000.99	1,000.90	998.71	987.50	984.17	977.38
MW-7	971.26	961.43	953.76	953.72	956.54	986.58	1,001.86	1,002.45	990.10	979.67	975.53	967.90
MW-8	972.41	961.25	954.90	954.85	961.87	992.88	1,007.62	1,002.88	991.45	981.41	976.84	969.29
MW-9	1,085.06	1,080.15	1,081.80	1,087.64	1,089.18	1,093.72	1,089.05	1,091.36	1,090.69	1,087.83	1,088.07	1,083.74
MW-10	970.26	960.04	955.28	957.06	961.21	987.71	1,001.90	998.19	988.72	977.96	974.12	967.15
MW-11												
Screen 1	1,021.14	1,015.33	1,012.58	1,012.68	1,016.11	1,026.22	1,032.98	1,032.08	1,027.02	1,023.34	1,021.71	1,018.95
Screen 2	969.35	959.88	957.99	958.87	964.50	993.59	995.36	993.06	1,011.38	975.78	972.26	969.11
Screen 3	952.48	941.45	945.45	946.84	952.22	986.99	978.62	975.83	968.22	958.49	954.95	953.78
Screen 4	946.35	934.84	942.14	947.14	950.66	989.22	979.10	971.18	961.30	950.98	947.76	948.62
Screen 5	881.18	863.97	894.21	885.49	896.38	977.15	915.53	910.26	897.20	885.05	879.67	889.41

1: ND: No data due to datalogger malfunction

2: No water over screen interval

TABLE 5-1
MONTHLY WATER LEVEL ELEVATIONS FOR JPL GROUNDWATER MONITORING WELLS
AUGUST 1996-JULY 1997
(feet above mean sea level)

Well #	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97
MW-12												
Screen 1	974.88	963.57	NW ²	NW ²	975.61	1,011.83	1,017.85	1,012.57	995.31	985.34	981.36	973.00
Screen 2	956.46	945.80	944.65	945.53	951.20	986.74	982.56	981.31	973.36	962.64	959.96	957.75
Screen 3	952.04	941.34	942.14	942.15	948.26	985.11	976.52	975.46	968.64	957.83	955.44	953.89
Screen 4	936.55	925.61	933.32	932.11	937.91	983.37	962.11	960.71	953.09	943.58	939.46	940.36
Screen 5	873.35	855.05	888.26	878.20	889.25	977.05	907.55	904.00	891.96	874.85	873.12	882.22
MW-13	972.51	962.09	956.81	958.28	961.91	985.88	1,002.17	999.84	990.63	980.22	976.35	969.26
MW-14												
Screen 1	983.16	974.64	972.61	976.94	978.21	991.61	1,002.64	1,002.62	1,000.57	989.59	986.10	979.41
Screen 2	981.86	972.39	971.25	975.94	977.84	992.32	1,001.94	1,001.72	999.53	986.84	984.41	978.38
Screen 3	981.45	972.11	971.56	976.73	978.18	993.57	1,002.09	1,001.78	999.76	987.15	984.07	978.02
Screen 4	981.49	972.06	971.65	977.78	978.66	993.82	1,002.04	1,001.83	999.94	986.74	983.79	978.02
Screen 5	980.36	970.92	971.67	976.56	978.30	994.26	1,001.79	1,001.40	999.33	985.89	982.79	976.94
MW-15	1,088.00	1,082.75	1,084.53	1,090.64	1,093.00	1,098.73	1,093.38	1,096.34	1,095.78	1,092.50	1,092.57	1,088.02
MW-16	972.09	961.65	NW ²	NW ²	960.81	985.07	1,002.27	1,000.61	990.33	980.24	976.08	968.85
MW-17												
Screen 1	963.45	952.54	946.05	NW ²	NW ²	983.54	1,003.22	998.76	984.35	972.13	968.40	960.28
Screen 2	939.73	933.53	932.42	931.71	936.50	974.70	968.39	967.28	961.05	948.19	944.92	944.17
Screen 3	927.58	918.17	919.02	918.55	923.60	965.15	958.03	957.52	952.64	935.01	932.03	930.79
Screen 4	866.07	851.59	878.51	873.27	883.09	968.94	906.01	901.39	886.91	873.50	868.39	883.16
Screen 5	853.41	837.64	871.21	871.50	877.66	964.68	912.07	893.59	876.17	862.53	857.99	873.22
MW-18												
Screen 1	960.23	NW ²	NW ²	NW ²	NW ²	961.22	982.33	982.86	973.85	965.76	962.64	956.71
Screen 2	956.45	947.36	942.65	939.65	942.15	964.20	977.32	977.58	999.03	961.96	958.87	954.34
Screen 3	943.29	934.02	932.97	931.64	937.83	972.11	966.40	965.54	959.52	949.56	946.60	946.98
Screen 4	910.19	898.98	908.55	907.95	914.56	965.26	939.67	937.32	928.61	916.87	913.54	920.48
Screen 5	893.12	882.37	893.96	904.38	907.39	958.46	939.26	927.67	914.11	909.02	899.16	905.89

1: ND: No data due to datalogger malfunction

2: No water over screen interval

TABLE 5-1

**MONTHLY WATER LEVEL ELEVATIONS FOR JPL GROUNDWATER MONITORING WELLS
AUGUST 1996-JULY 1997
(feet above mean sea level)**

Well #	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97
MW-19												
Screen 1	955.61	946.45	942.53	942.28	946.66	972.87	977.63	975.72	971.07	962.49	959.05	953.17
Screen 2	939.97	931.64	933.53	935.53	936.67	971.63	959.84	959.25	955.00	947.18	944.64	940.80
Screen 3	935.15	925.77	930.23	932.55	932.95	972.67	955.81	955.11	950.39	942.24	939.49	935.83
Screen 4	835.74	816.41	851.45	851.73	846.14	972.77	869.32	865.96	850.71	840.29	840.48	834.56
Screen 5	832.07	812.71	850.01	848.06	842.31	972.83	865.86	862.41	846.96	836.80	837.34	831.05
MW-20												
Screen 1	946.38	938.03	NW ²	NW ²	939.27	944.60	953.83	956.99	958.46	950.79	948.02	942.71
Screen 2	944.21	936.98	932.01	936.49	939.50	948.06	955.28	957.38	958.10	949.88	946.86	942.06
Screen 3	920.84	918.59	914.77	928.41	931.22	952.50	948.86	948.89	942.55	933.78	922.12	919.41
Screen 4	901.95	890.01	893.64	919.07	918.20	949.57	957.00	939.03	921.75	910.29	908.74	908.60
Screen 5	946.38	938.13	935.40	939.05	941.39	952.94	960.24	958.49	956.95	951.45	949.48	945.77
MW-21												
Screen 1	977.80	NW ²	NW ²	NW ²	NW ²	982.71	995.40	995.67	992.93	983.66	980.44	973.13
Screen 2	975.38	966.12	963.72	966.36	969.06	985.49	995.33	994.83	991.86	982.16	978.50	971.95
Screen 3	974.85	965.57	963.74	966.46	969.04	985.89	994.84	994.20	991.40	981.61	977.84	971.53
Screen 4	974.60	965.27	963.86	966.56	969.00	986.35	994.63	993.95	991.24	981.25	977.59	971.25
Screen 5	974.50	965.25	963.77	966.64	969.10	986.37	994.63	993.95	991.39	981.18	977.55	971.28

1: ND: No data due to datalogger malfunction

2: No water over screen interval

TABLE 6-1

PRELIMINARY WELL/SCREEN CLASSIFICATIONS FOR GROUNDWATER MONITORING WELLS

Well and Screen Number	CONSTITUENTS OF CONCERN																								
	Arsenic					Total and Hexavalent Chrome					Lead					VOCs					Perchlorate				
	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U
MW-1					X					X					X					X					X
MW-3																									
Screen 1					X					X					X					X					X
Screen 2					X			X							X	X						X			
Screen 3					X			X							X	X					X				
Screen 4					X			X							X				X						
Screen 5					X					X					X				X			X			X
MW-4																									
Screen 1					X			X							X				X						X
Screen 2					X	X									X	X					X				
Screen 3					X			X							X				X						X
Screen 4					X					X					X				X						X
Screen 5					X					X					X					X					X
MW-5					X			X			X									X		X			
MW-6					X	X						X				X						X			
MW-7					X	X						X				X						X			
MW-8					X			X				X				X						X			
MW-9					X					X					X					X					X
MW-10					X	X					X					X						X			
MW-11																									
Screen 1					X					X					X	X									X
Screen 2					X					X					X	X									X
Screen 3					X					X		X				X									X
Screen 4					X					X	X						X								X
Screen 5					X					X	X									X					X

P: Sampling screens which monitor within *plumes*
D: Sampling screens which monitor *downgradient* of plumes
G: Sampling screens which "guard" municipal groundwater wells

C: Sampling screens which monitor *cross-gradient* to plumes
U: Sampling screens which monitor *upgradient* of plumes providing background data

TABLE 6-1

PRELIMINARY WELL/SCREEN CLASSIFICATIONS FOR GROUNDWATER MONITORING WELLS

Well and Screen Number	CONSTITUENTS OF CONCERN																								
	Arsenic					Total and Hexavalent Chrome					Lead					VOCs					Perchlorate				
	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U
MW-12																									
Screen 1					X					X	X						X								X
Screen 2					X			X			X					X					X				
Screen 3					X			X				X				X					X				
Screen 4					X			X			X					X					X				
Screen 5					X					X		X				X					X				
MW-13					X	X					X					X					X				
MW-14																									
Screen 1					X			X							X	X									X
Screen 2					X			X							X	X						X			
Screen 3					X					X					X		X				X				
Screen 4					X					X	X									X		X			
Screen 5					X					X	X									X					X
MW-15					X					X					X					X					X
MW-16					X	X					X					X					X				
MW-17																									
Screen 1					X					X					X					X					X
Screen 2					X			X				X					X					X			
Screen 3					X			X			X					X					X				
Screen 4					X			X				X				X					X				
Screen 5					X					X	X					X					X				
MW-18																									
Screen 1					X					X	X									X					X
Screen 2					X		X				X						X								X
Screen 3					X	X					X					X						X			
Screen 4					X		X				X					X					X				
Screen 5					X					X	X						X					X			

P: Sampling screens which monitor within *plumes*
D: Sampling screens which monitor *downgradient* of plumes
G: Sampling screens which "*guard*" municipal groundwater wells

C: Sampling screens which monitor *cross-gradient* to plumes
U: Sampling screens which monitor *upgradient* of plumes providing background data

TABLE 6-1

PRELIMINARY WELL/SCREEN CLASSIFICATIONS FOR GROUNDWATER MONITORING WELLS

Well and Screen Number	CONSTITUENTS OF CONCERN																								
	Arsenic					Total and Hexavalent Chrome					Lead					VOCs					Perchlorate				
	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U	P	D	G	C	U
MW-19																									
Screen 1					X					X					X			X							X
Screen 2					X					X					X	X						X			
Screen 3					X					X		X				X					X				
Screen 4					X					X	X					X						X			
Screen 5					X					X		X				X									X
MW-20																									
Screen 1					X					X					X				X		X				
Screen 2					X					X					X	X						X			
Screen 3					X					X		X				X						X			
Screen 4					X					X		X				X						X			
Screen 5					X					X	X					X						X			
MW-21																									
Screen 1					X					X					X	X					X				
Screen 2					X		X					X				X						X			
Screen 3					X		X				X					X						X			
Screen 4					X		X				X					X					X				
Screen 5					X					X		X				X						X			

P: Sampling screens which monitor within *plumes*
D: Sampling screens which monitor *downgradient* of plumes
G: Sampling screens which “*guard*” municipal groundwater wells

C: Sampling screens which monitor *cross-gradient* to plumes
U: Sampling screens which monitor *upgradient* of plumes providing background data

FIGURES

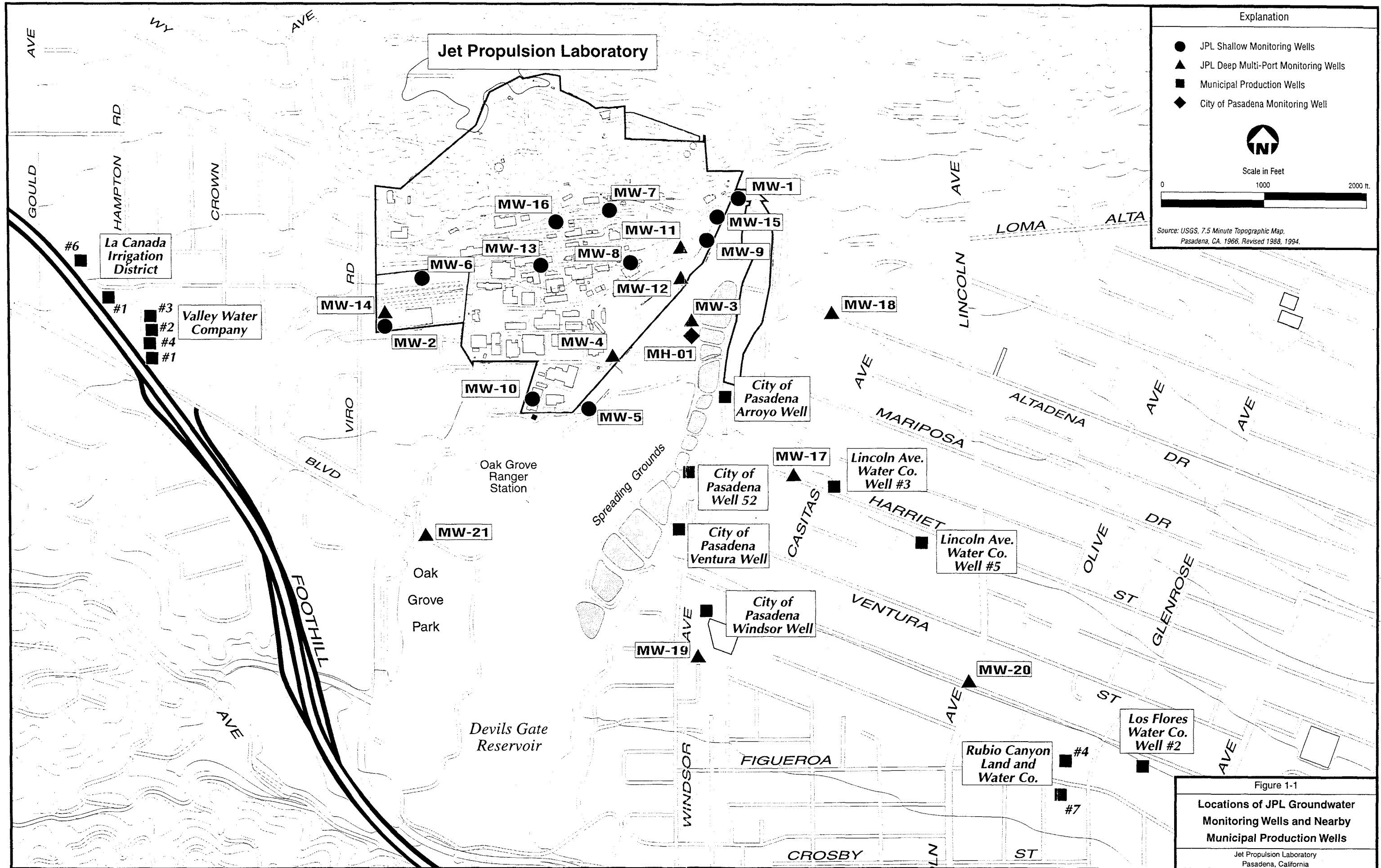


Figure 1-1
Locations of JPL Groundwater Monitoring Wells and Nearby Municipal Production Wells
 Jet Propulsion Laboratory
 Pasadena, California

MW-3 HYDROGRAPH

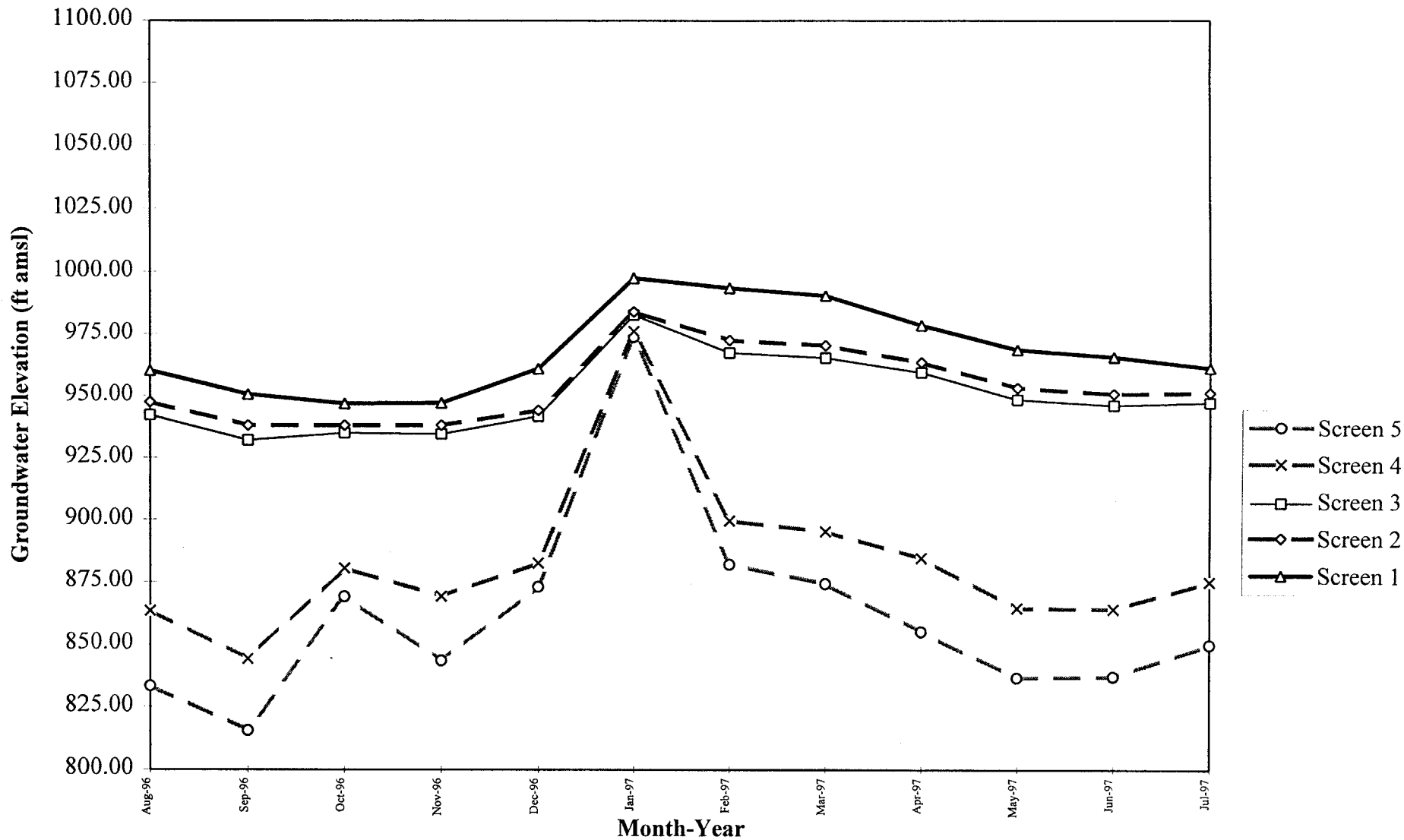


Figure 5-1
 Annual Hydrograph for
 Deep, Multi-Port Well
 MW-3
 Aug. 1996 - Jul. 1997

MW-4 HYDROGRAPH

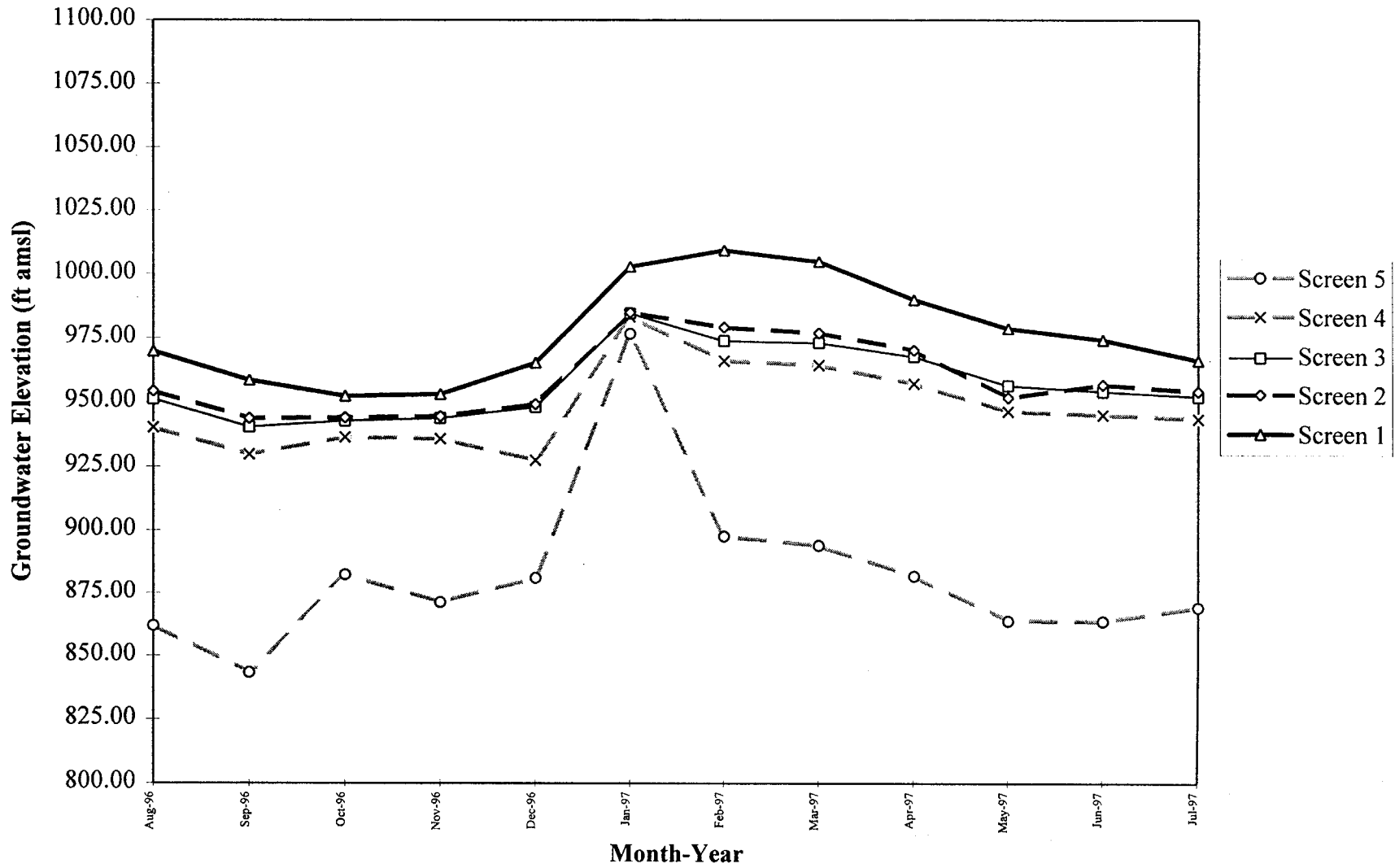


Figure 5-2
Annual Hydrograph for
Deep, Multi-Port Well
MW-4
Aug. 1996 - Jul. 1997

MW-11 HYDROGRAPH

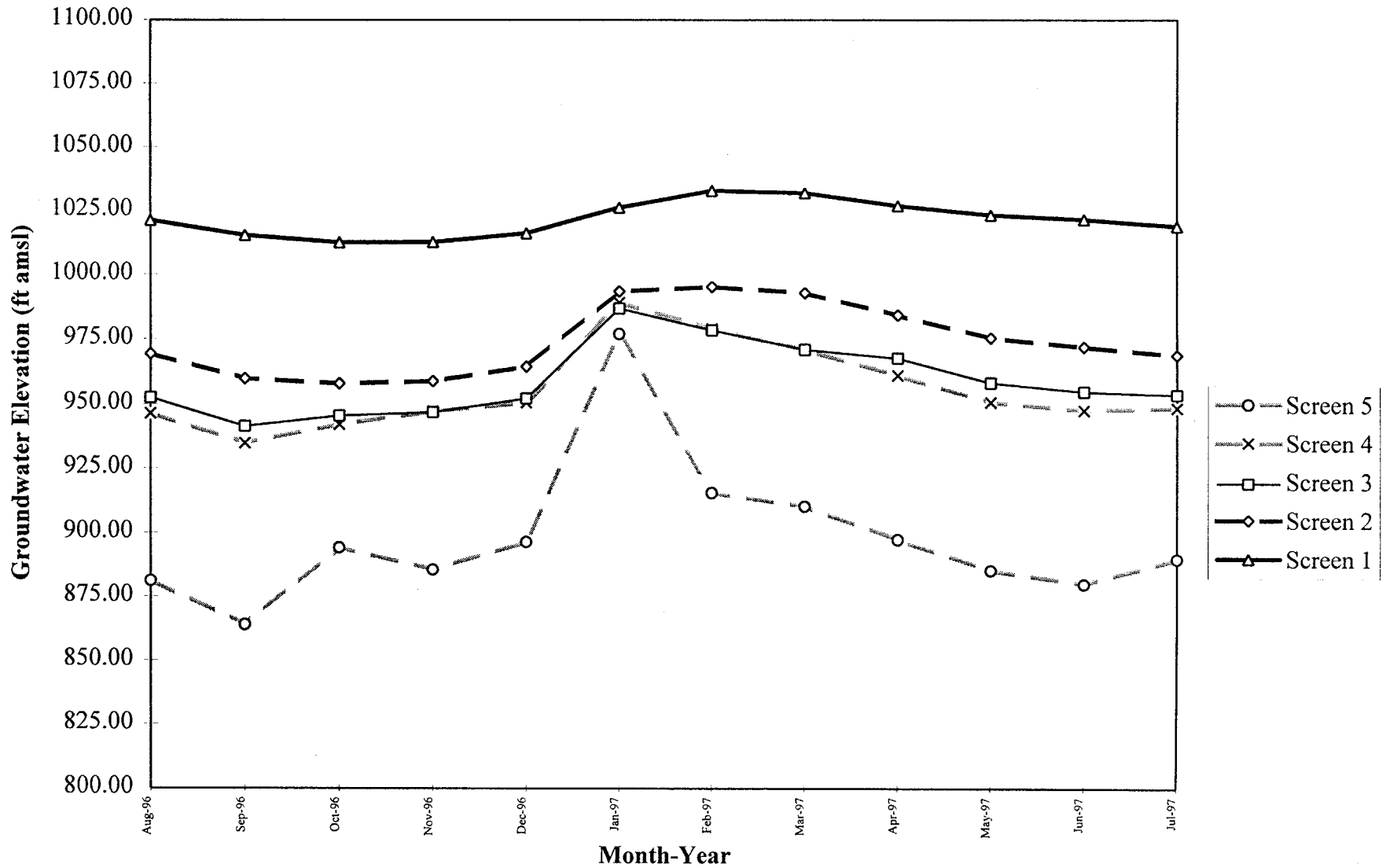
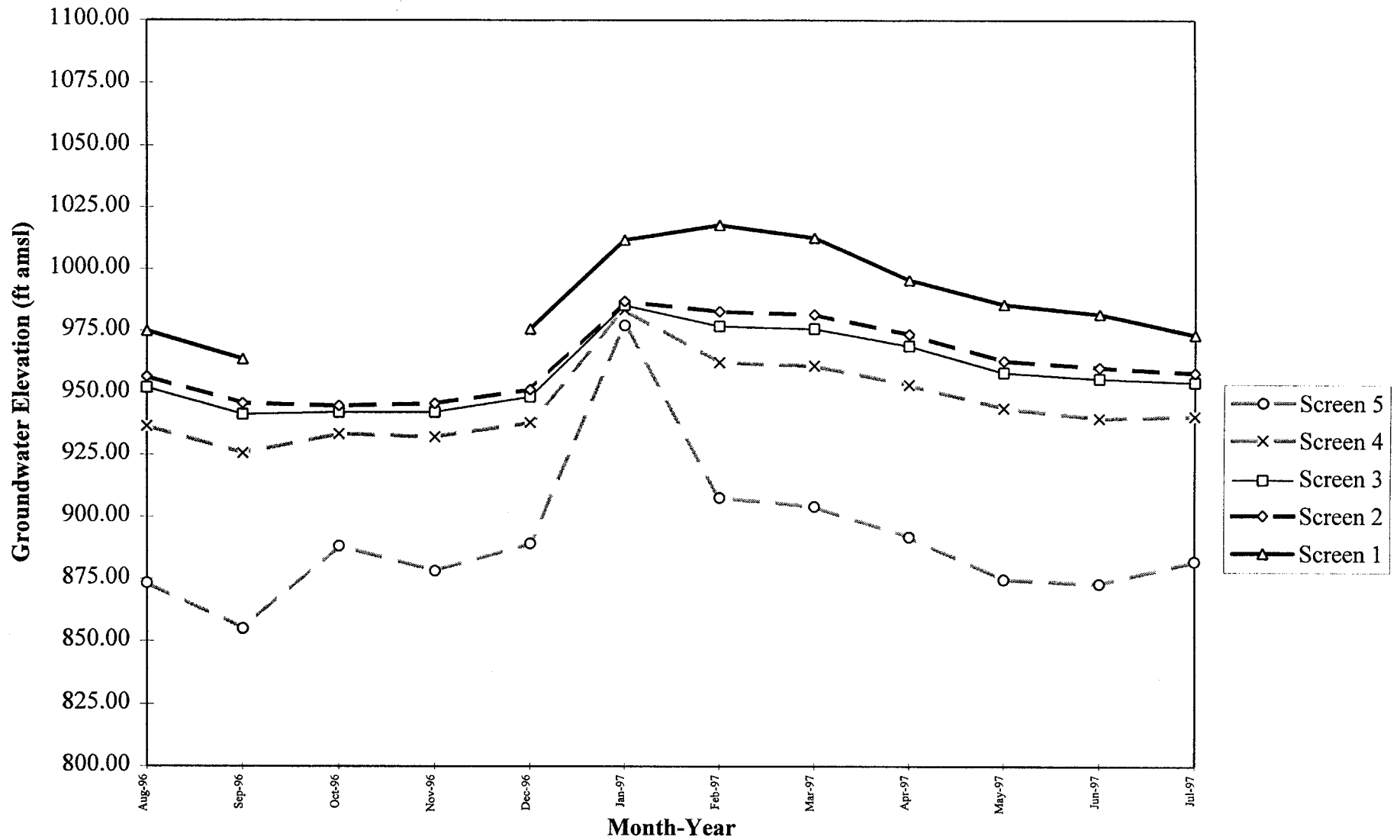


Figure 5-3
 Annual Hydrograph for
 Deep, Multi-Port Well
 MW-11
 Aug. 1996 - Jul. 1997

MW-12 HYDROGRAPH



Note: No water over screen 1 during Oct.-Nov., 1996

Figure 5-4
Annual Hydrograph for Deep, Multi-Port Well MW-12
Aug. 1996 - Jul. 1997

MW-14 HYDROGRAPH

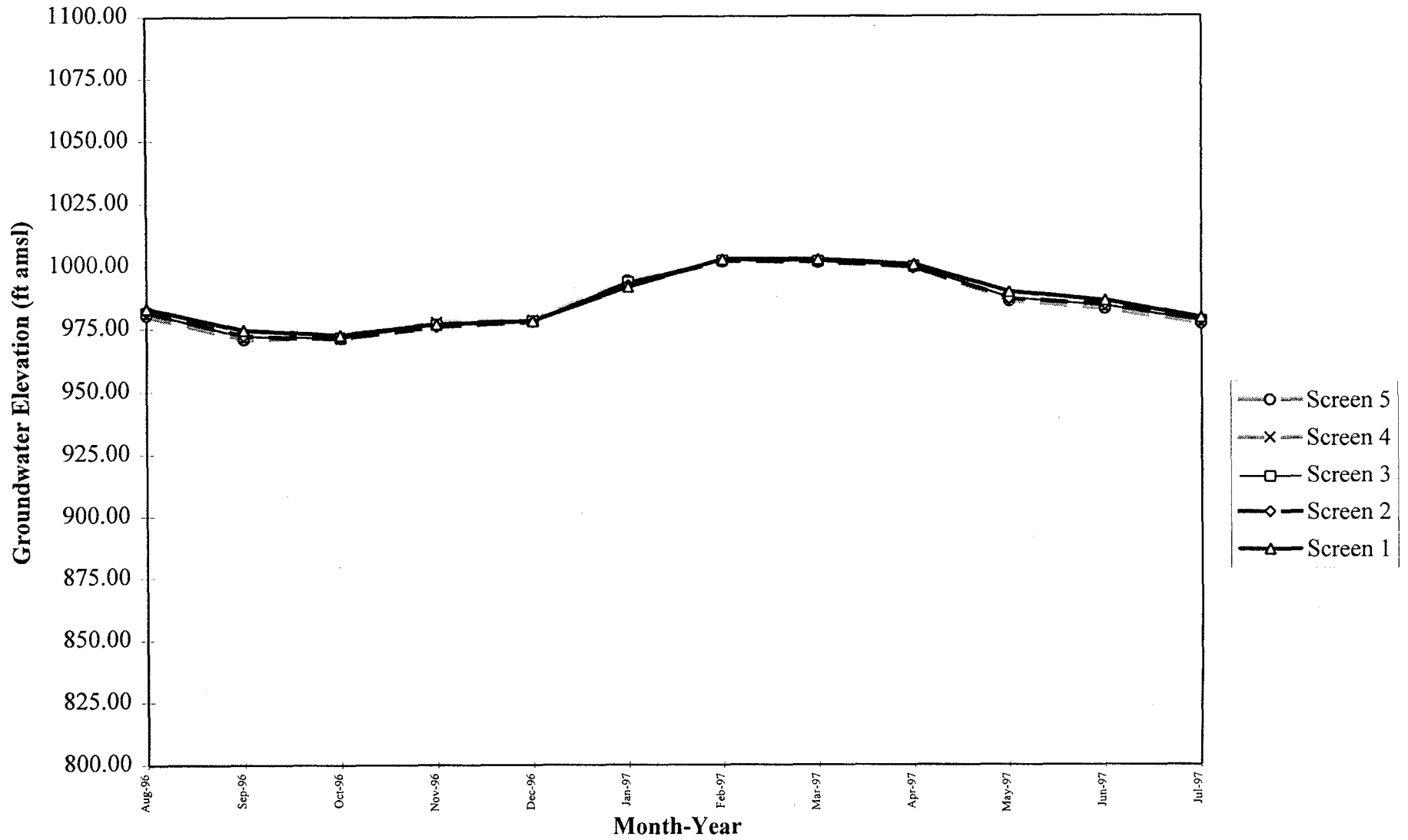
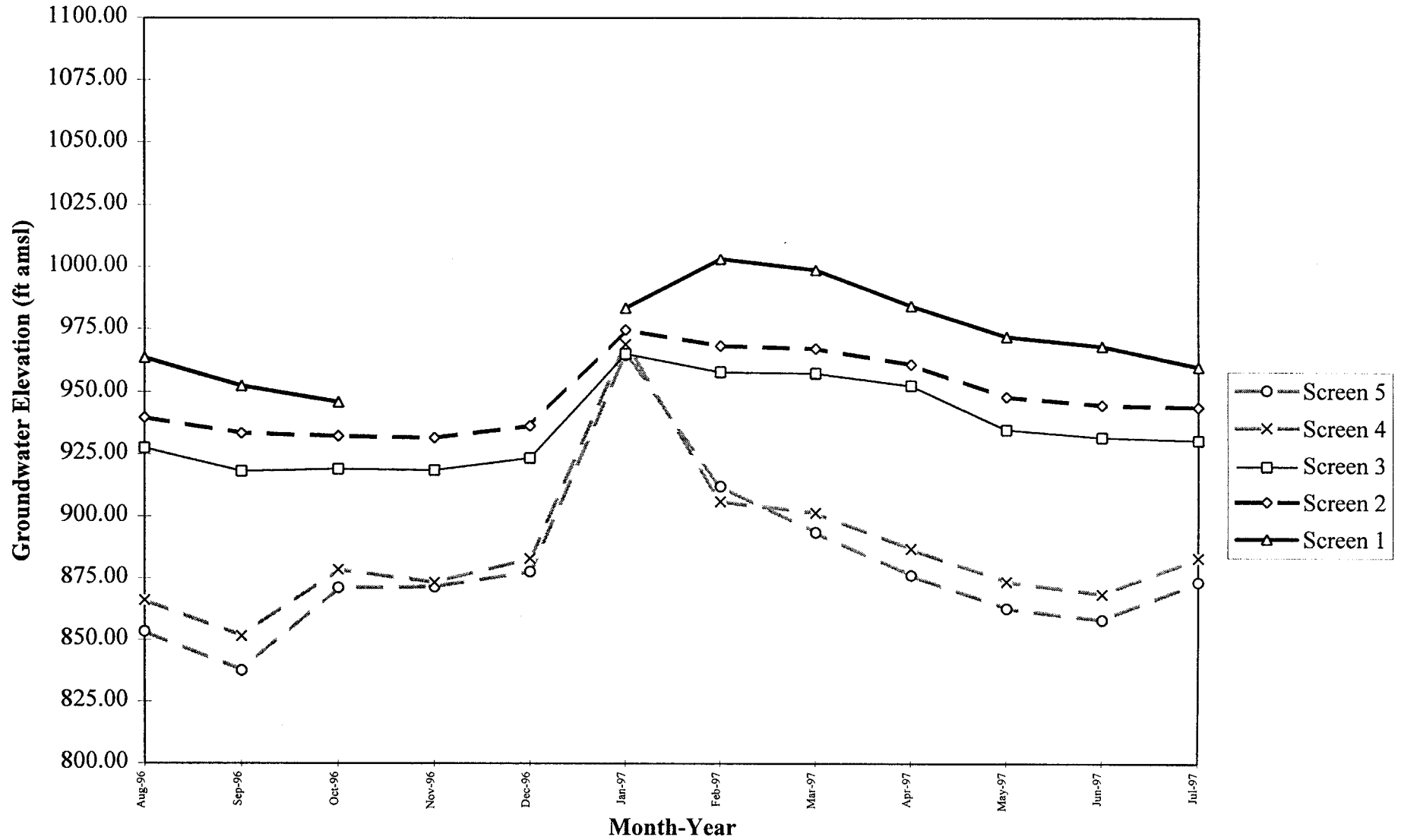


Figure 5-5
Annual Hydrograph for
Deep, Multi-Port Well
MW-14
Aug. 1996 - Jul. 1997

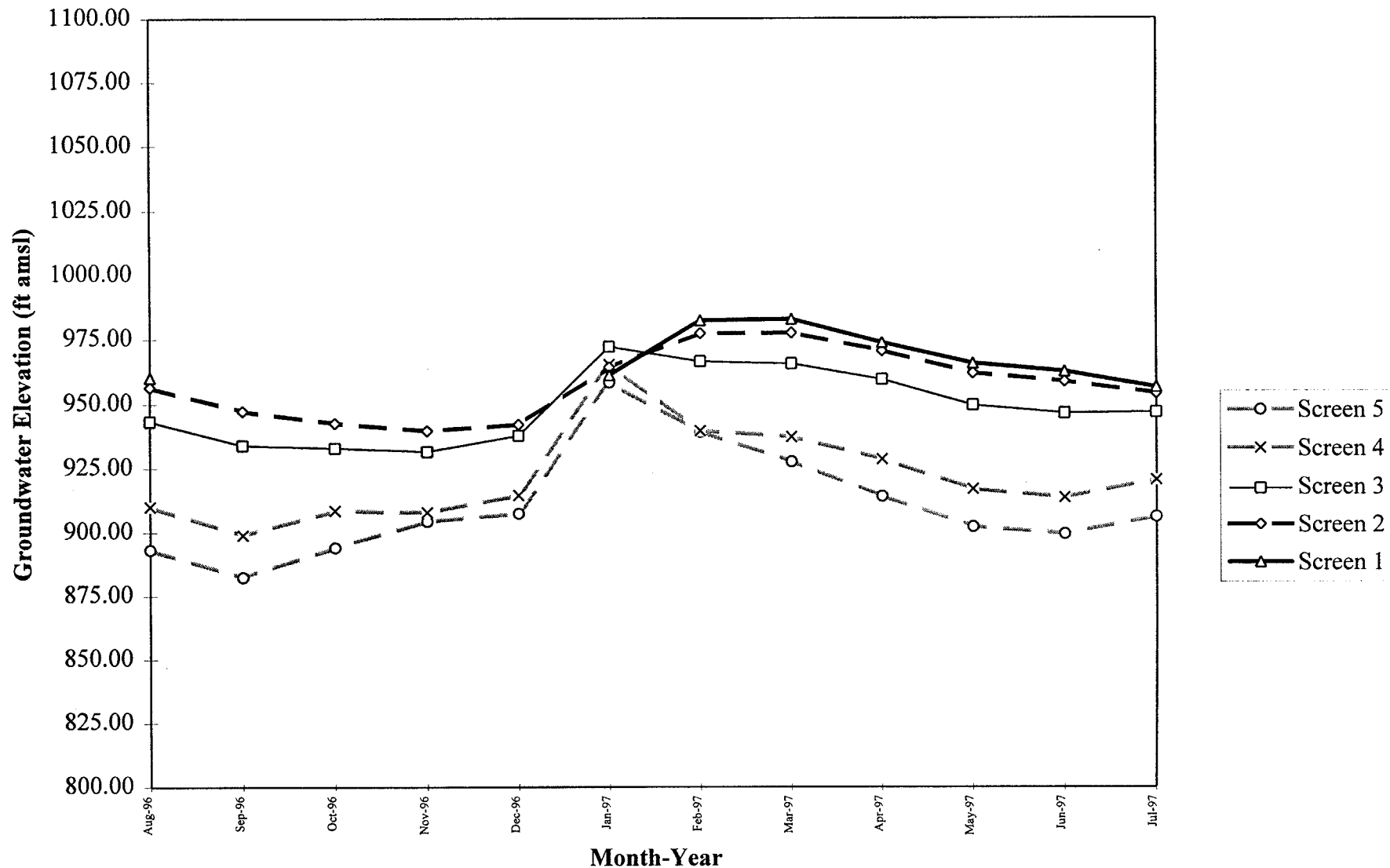
MW-17 HYDROGRAPH



Note: No water over screen 1 during Nov.-Dec., 1996

Figure 5-6
Annual Hydrograph for Deep, Multi-Port Well MW-17
Aug. 1996 - Jul. 1997

MW-18 HYDROGRAPH



Note: No water over screen 1 during Aug.-Dec., 1996

Figure 5-7
 Annual Hydrograph for
 Deep, Multi Port Well
 MW-18
 Aug. 1996 - Jul. 1997

MW-19 HYDROGRAPH

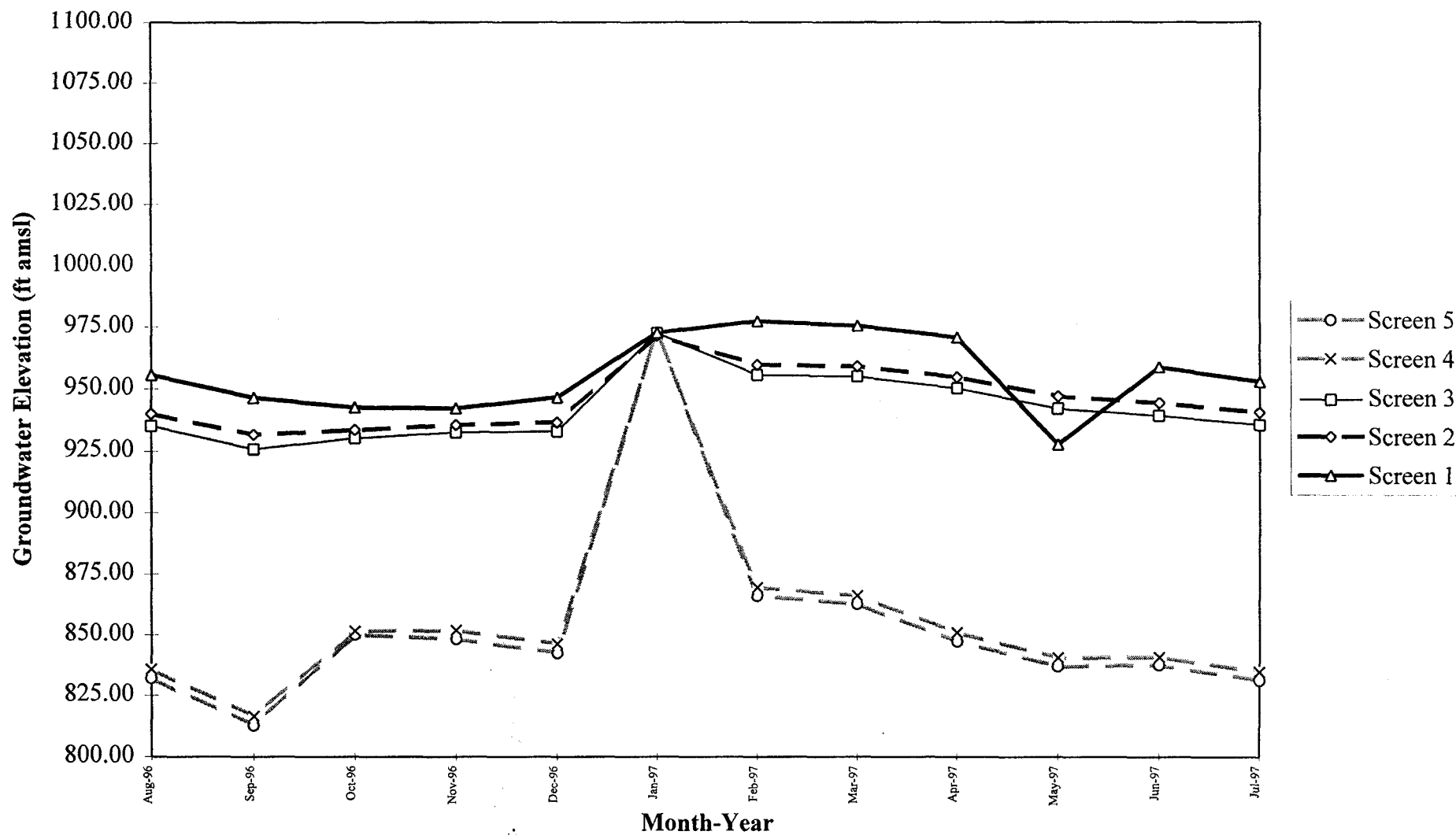
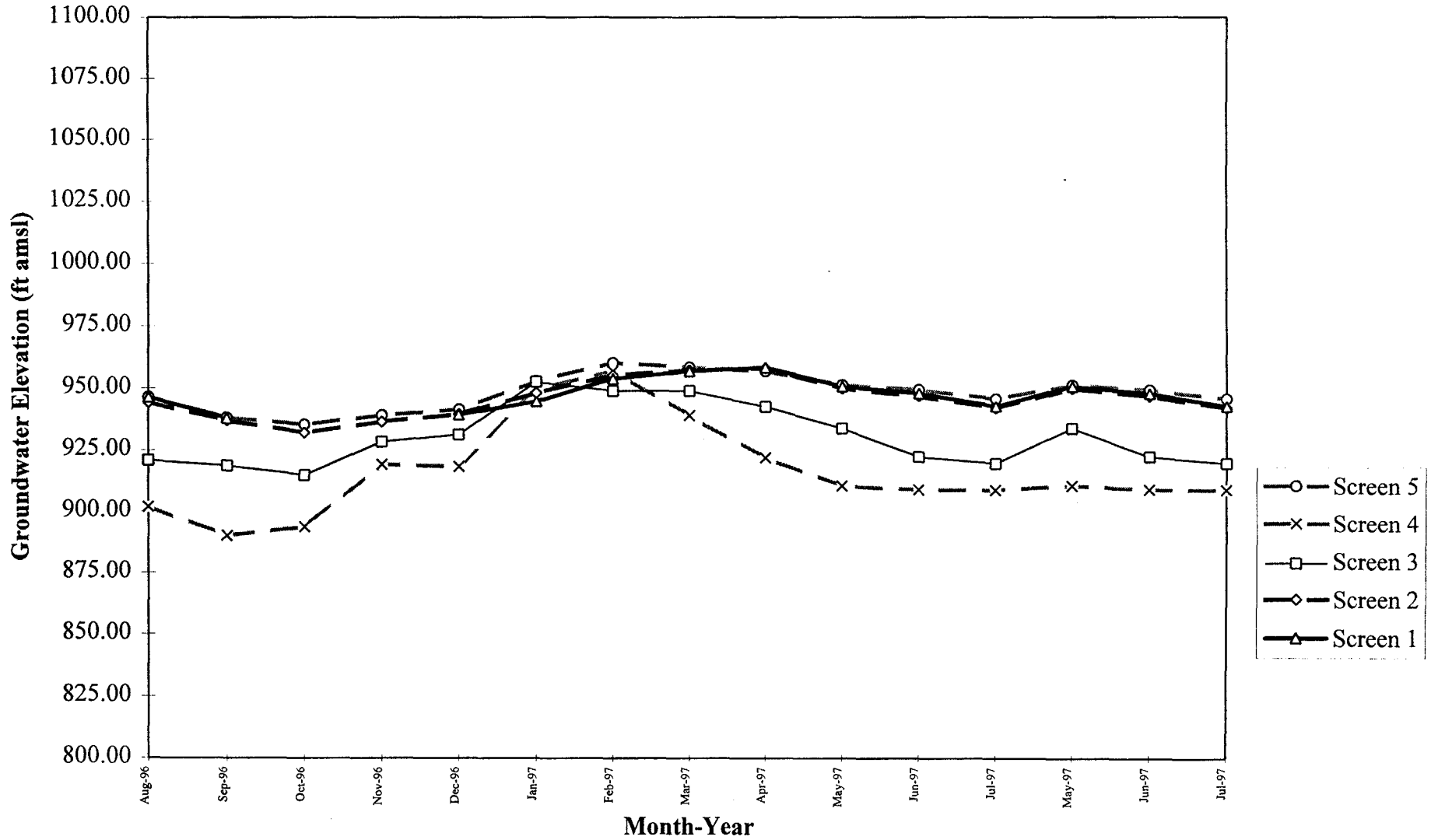


Figure 5-8
Annual Hydrograph for
Deep, Multi-Port Well
MW-19
Aug. 1996 - Jul. 1997

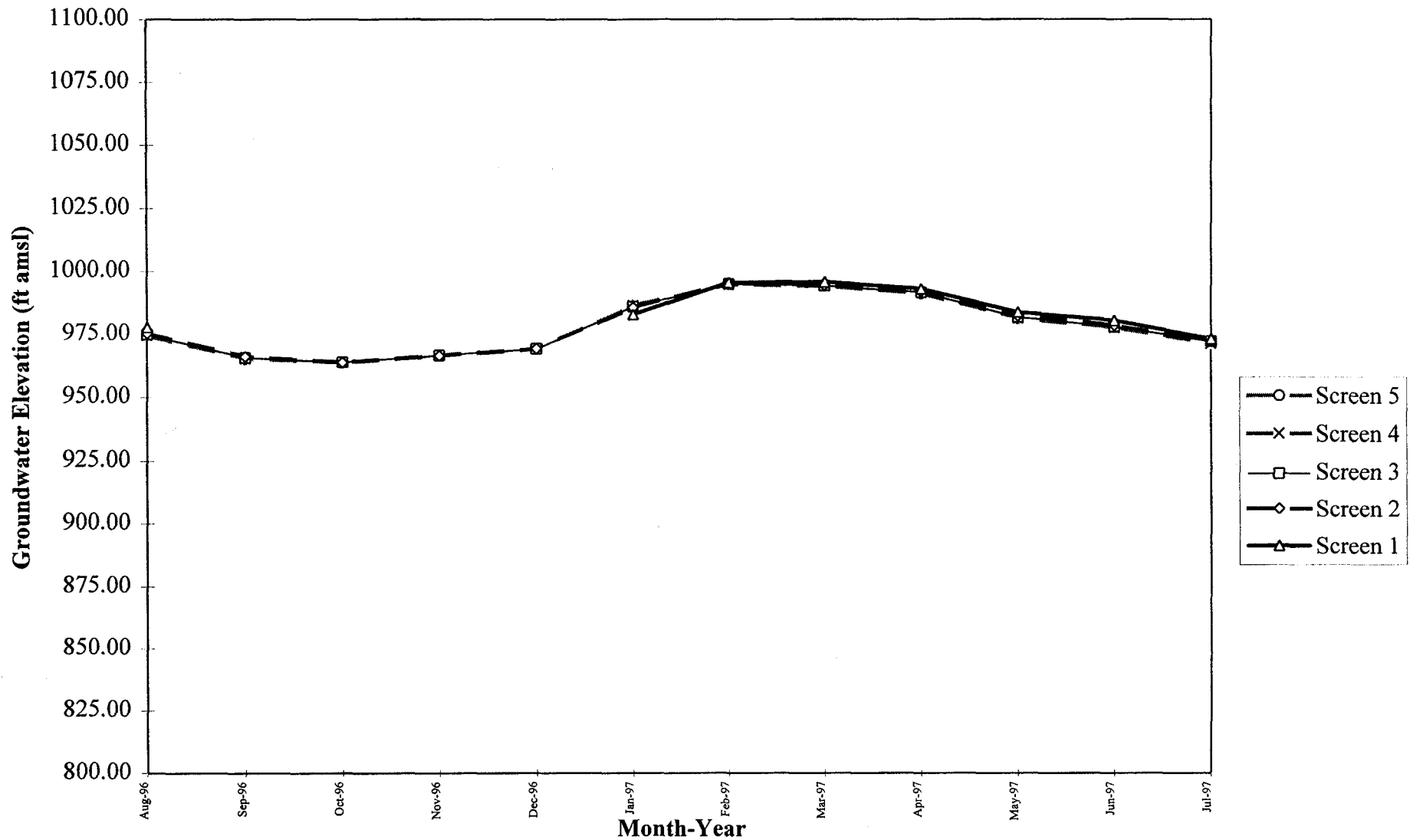
MW-20 HYDROGRAPH



Note: No water over screen 1 during Aug.-Nov., 1996

Figure 5-9
Annual Hydrograph for Deep, Multi-Port Well MW-20
Aug. 1996 - Jul. 1997

MW-21 HYDROGRAPH



Note: No water over screen 1 during Aug. -Dec., 1996

Figure 5-10
Annual Hydrograph for Deep, Multi-Port Well MW-21
Aug. 1996 - Jul. 1997

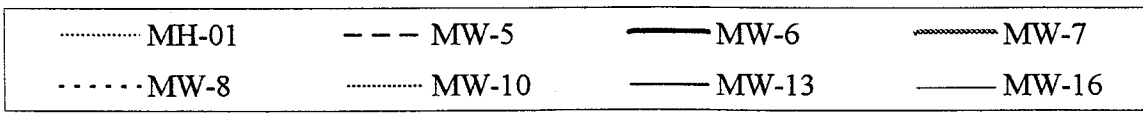
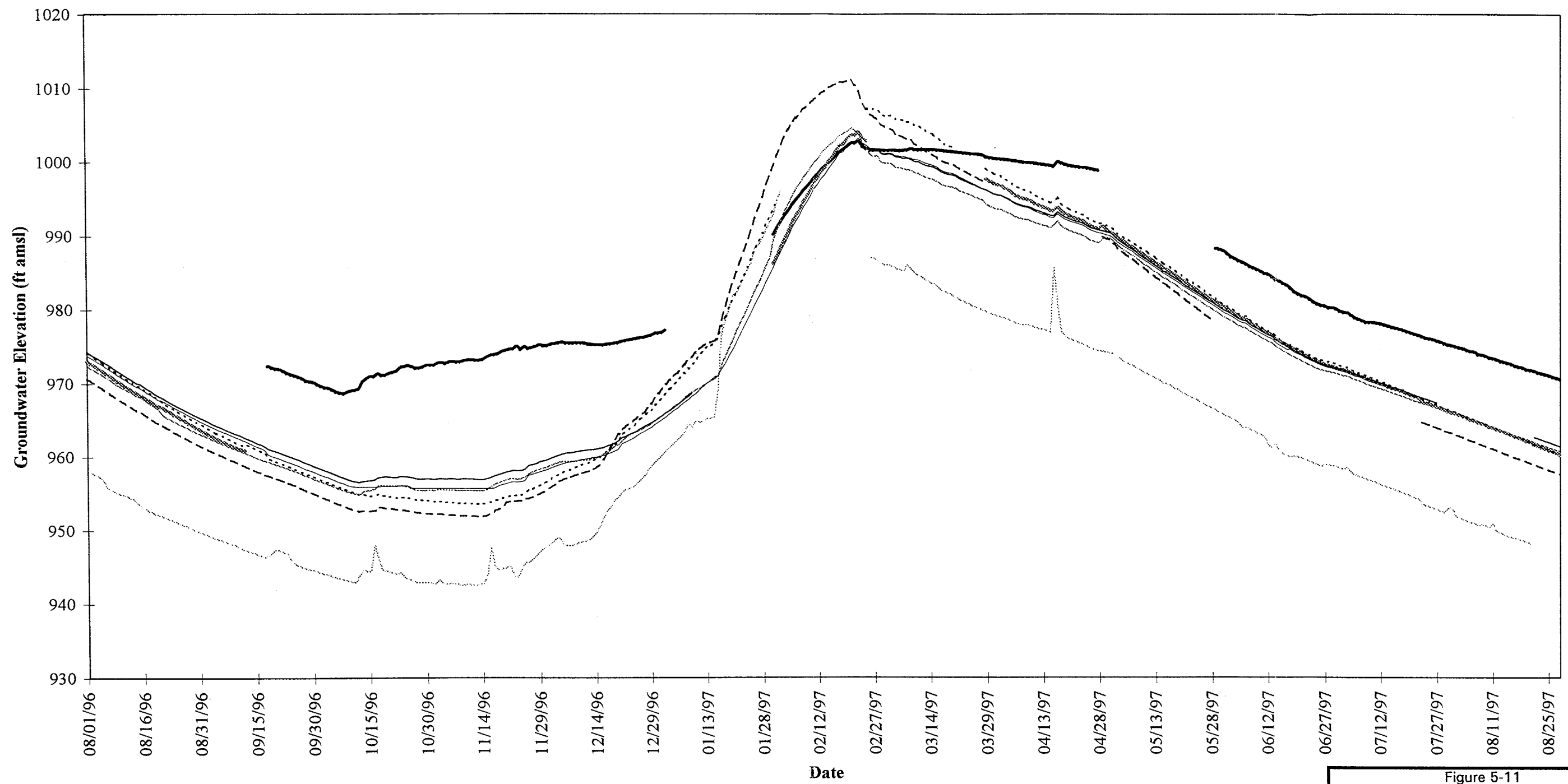
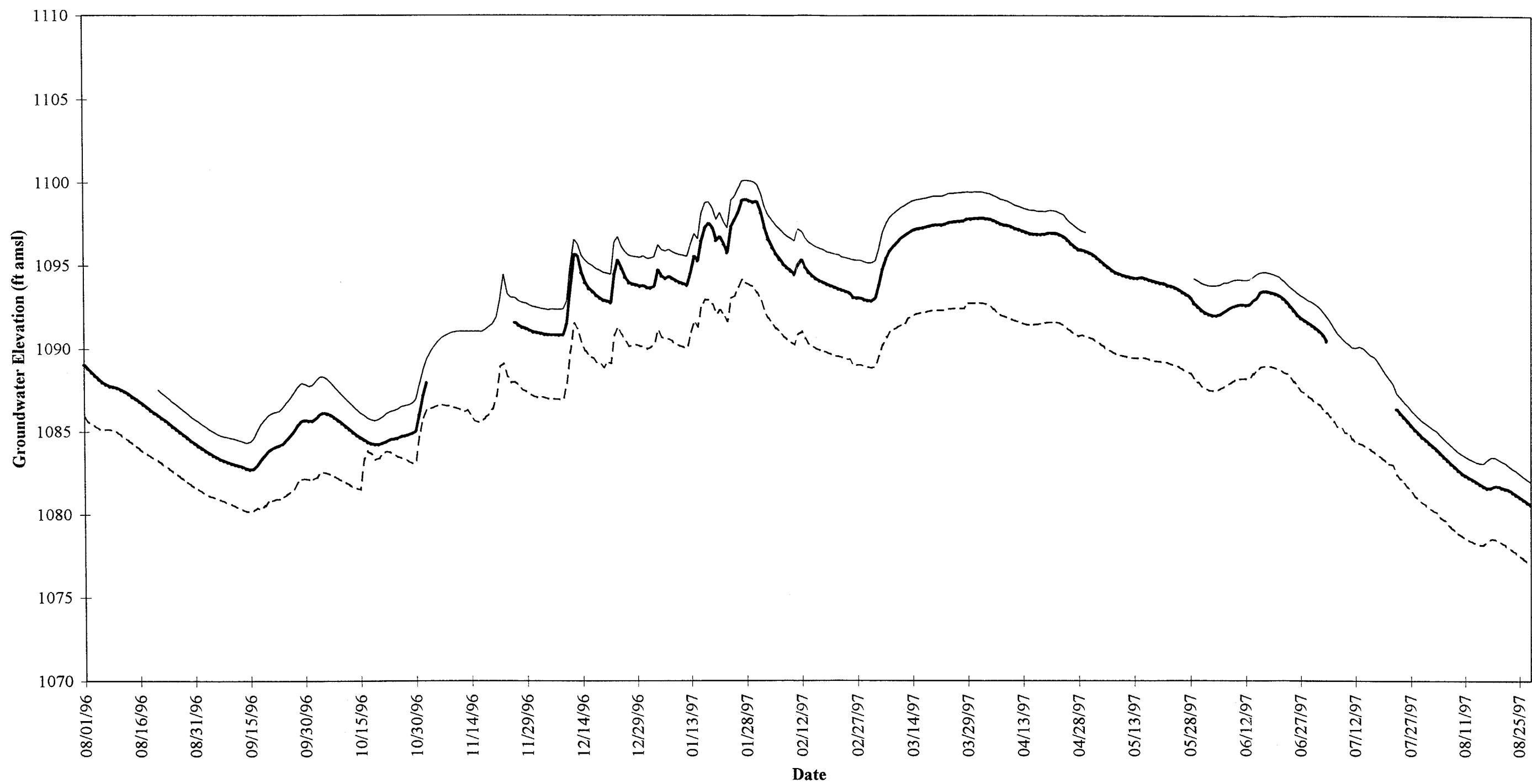


Figure 5-11
 Annual Hydrographs for Shallow
 Monitoring Wells MH-01, MW-5
 MW-6, MW-7, MW-8, MW-10
 MW-13, and MW-16
 (August, 1996-August, 1997)
 Jet Propulsion Laboratory



— MW-1 - - - MW-9 — MW-15

Figure 5-12
 Annual Hydrographs for
 Shallow Monitoring Wells
 MW-1, MW-9 and MW-15
 (August, 1996-August, 1997)
 Jet Propulsion Laboratory

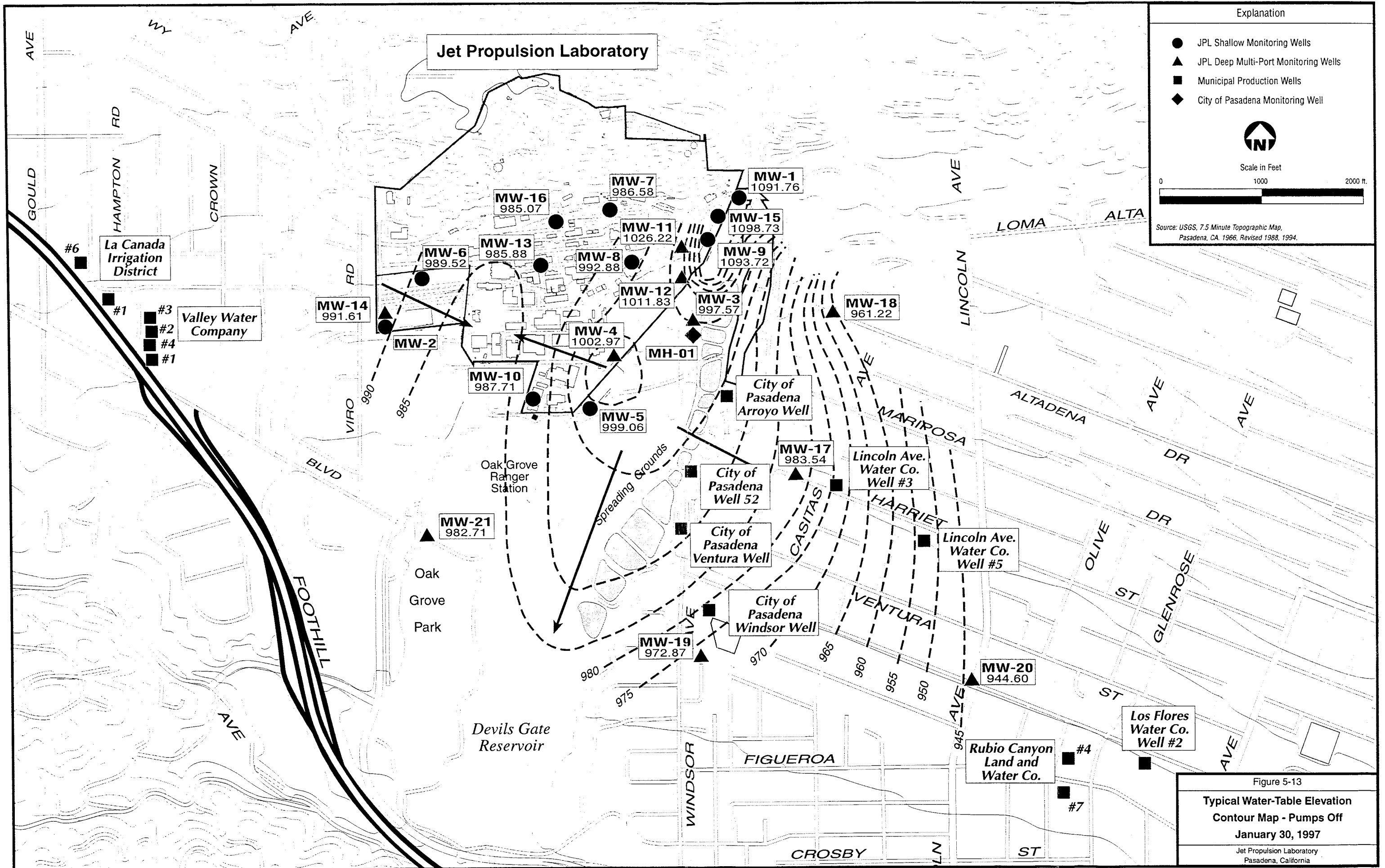


Figure 5-13
Typical Water-Table Elevation Contour Map - Pumps Off
 January 30, 1997
 Jet Propulsion Laboratory
 Pasadena, California

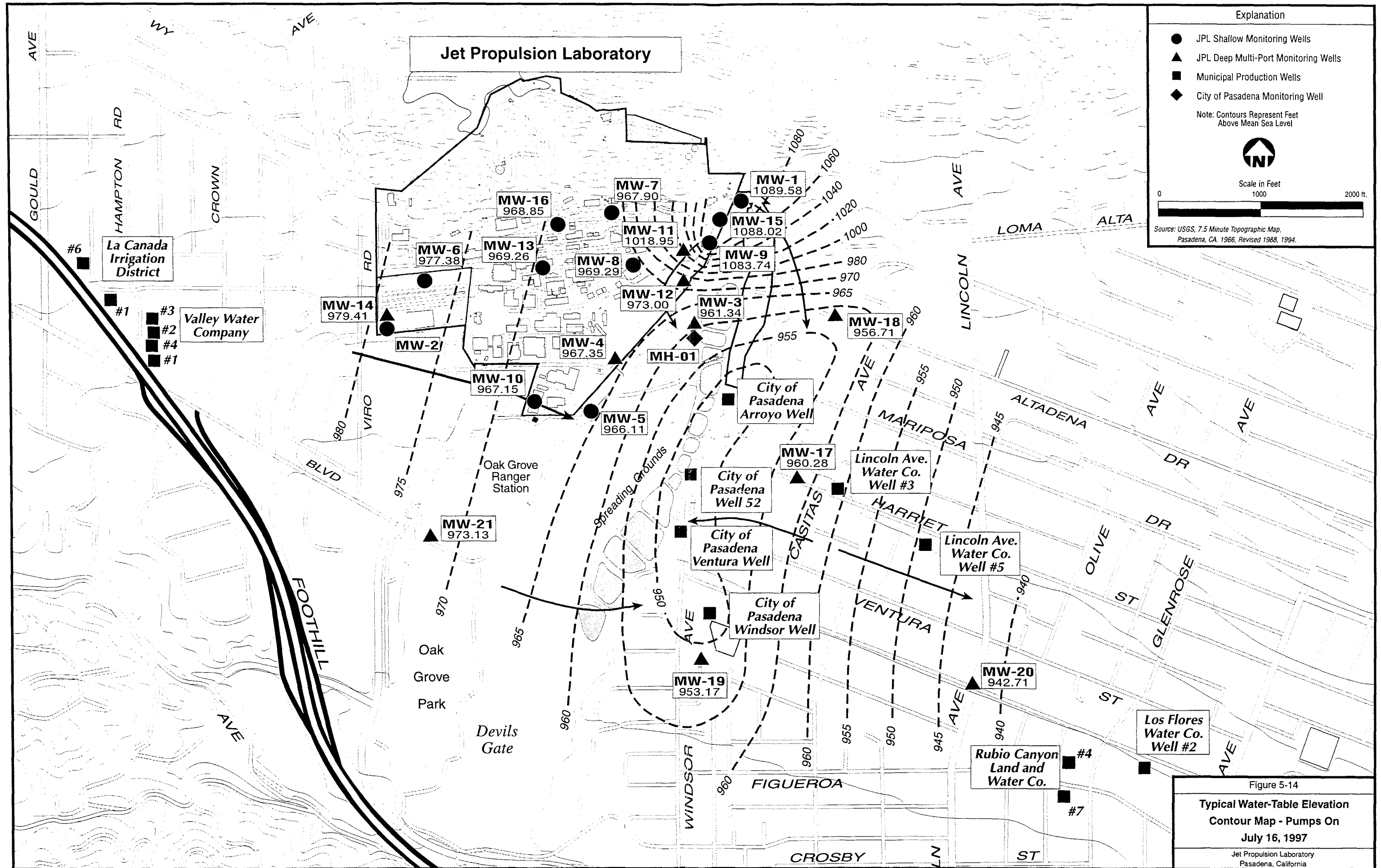


Figure 5-14
Typical Water-Table Elevation Contour Map - Pumps On
 July 16, 1997
 Jet Propulsion Laboratory
 Pasadena, California

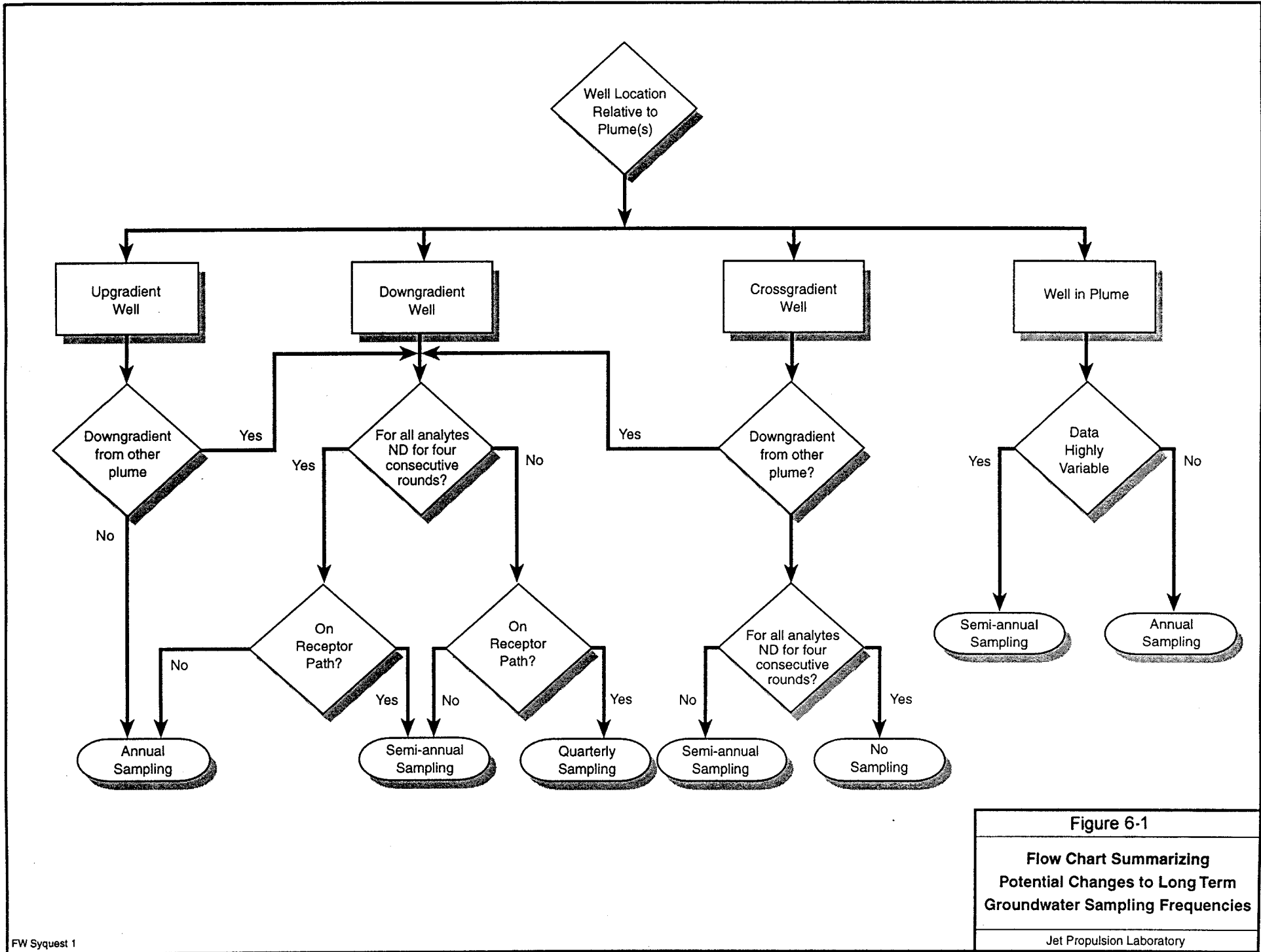


Figure 6-1
Flow Chart Summarizing Potential Changes to Long Term Groundwater Sampling Frequencies
 Jet Propulsion Laboratory

APPENDIX A

**DAILY WATER-LEVEL ELEVATION DATA
FROM SHALLOW JPL MONITORING WELLS**

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
08/01/96	958.10		970.63		973.08	974.26	1085.84	972.37	974.27	1089.05	973.83
08/02/96	957.82		970.30		972.70	973.87	1085.62	972.04	973.92	1088.81	973.50
08/03/96	957.54		969.98		972.36	973.51	1085.47	971.72	973.60	1088.57	973.18
08/04/96	957.30		969.66		972.05	973.20	1085.32	971.46	973.34	1088.36	972.87
08/05/96	956.97		969.31		971.69	972.81	1085.17	971.11	972.99	1088.16	972.55
08/06/96	955.94		968.96		971.37	972.47	1085.08	970.81	972.71	1087.97	972.22
08/07/96	955.61		968.62		971.04	972.14	1085.12	970.46	972.39	1087.84	971.92
08/08/96	955.31		968.25		970.68	971.77	1085.12	970.11	972.02	1087.73	971.55
08/09/96	955.05		967.92		970.34	971.40	1085.06	969.77	971.67	1087.68	971.21
08/10/96	954.83		967.58		969.99	971.06	1084.93	969.44	971.33	1087.62	970.88
08/11/96	954.72		967.27		969.67	970.75	1084.80	969.18	971.02	1087.51	970.56
08/12/96	954.46		966.97		969.33	970.43	1084.63	968.90	970.70	1087.40	970.23
08/13/96	954.25		966.67		969.02	970.11	1084.45	968.62	970.39	1087.27	969.91
08/14/96	953.66		966.32		968.66	969.72	1084.28	968.27	970.05	1087.10	969.58
08/15/96	953.47		966.17		968.46	969.56	1084.13	968.16	969.88	1086.97	969.39
08/16/96	953.01		965.84		968.12	969.20	1083.96	967.82	969.55	1086.80	969.06
08/17/96	952.69		965.50		967.81	968.89	1083.78	967.47	969.23	1086.62	968.74
08/18/96	952.47		965.17		967.50	968.59	1083.63	967.13	968.92	1086.47	968.46
08/19/96	952.23		964.83		967.16	968.22	1083.48	966.78	968.55	1086.28	968.11
08/20/96	952.02		964.52		966.84	967.92	1083.35	966.48	968.23	1086.12	967.76
08/21/96	951.89	1087.52	964.31		966.74	967.46	1083.25	965.67	968.02	1085.98	967.67
08/22/96	951.65	1087.33	963.98		966.42	967.14	1083.07	965.39	967.72	1085.80	967.37
08/23/96	951.43	1087.13	963.70		966.09	966.81	1082.90	965.10	967.39	1085.65	967.06
08/24/96	951.24	1086.96	963.38		965.79	966.51	1082.77	964.84	967.11	1085.48	966.78
08/25/96	951.00	1086.79	963.12		965.50	966.21	1082.60	964.58	966.85	1085.31	966.52
08/26/96	950.81	1086.61	962.84		965.19	965.92	1082.42	964.32	966.61	1085.13	966.26
08/27/96	950.63	1086.44	962.58		964.89	965.60	1082.27	964.06	966.31	1084.96	965.96
08/28/96	950.42	1086.25	962.29		964.58	965.30	1082.10	963.83	966.05	1084.79	965.68
08/29/96	950.07	1086.07	961.99		964.27	964.99	1081.95	963.57	965.77	1084.61	965.42
08/30/96	949.90	1085.90	961.75		963.98	964.73	1081.79	963.33	965.53	1084.44	965.14

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
08/31/96	949.70	1085.73	961.49		963.69	964.45	1081.62	963.09	965.29	1084.29	964.88
09/01/96	949.51	1085.60	961.25		963.42	964.17	1081.49	962.85	965.05	1084.12	964.64
09/02/96	949.31	1085.42	960.99		963.13	963.87	1081.36	962.61	964.79	1083.99	964.38
09/03/96	949.07	1085.27	960.76		962.86	963.58	1081.21	962.40	964.53	1083.81	964.12
09/04/96	948.90	1085.12	960.50		962.59	963.28	1081.10	962.16	964.29	1083.68	963.88
09/05/96	948.73	1084.99	960.30		962.36	963.07	1081.04	961.94	964.08	1083.55	963.64
09/06/96	948.55	1084.86	960.06		962.11	962.81	1080.95	961.73	963.86	1083.44	963.40
09/07/96	948.32	1084.75	959.80		961.84	962.52	1080.86	961.51	963.60	1083.31	963.25
09/08/96	948.14	1084.69	959.59		961.60	962.31	1080.78	961.29	963.41	1083.23	963.01
09/09/96	947.99	1084.64	959.37		961.38	962.07	1080.67	961.08	963.17	1083.14	962.80
09/10/96	947.71	1084.58	959.13		961.13	961.81	1080.58	960.90	963.00	1083.05	962.58
09/11/96	947.41	1084.53	958.89		960.97	961.57	1080.47	960.69	962.76	1082.99	962.34
09/12/96	947.21	1084.45	958.66		960.88	961.72	1080.39	960.49	962.54	1082.92	962.13
09/13/96	947.06	1084.38	958.44			961.48	1080.28	960.27	962.32	1082.86	961.89
09/14/96	946.93	1084.30	958.24			961.27	1080.19	960.06	962.11	1082.77	961.67
09/15/96	946.65	1084.36	957.96			960.94	1080.17	959.84	961.85	1082.71	961.43
09/16/96	946.56	1084.58	957.77			960.73	1080.23	959.65	961.65	1082.75	961.22
09/17/96	946.30	1085.03	957.53			960.47	1080.39	959.43	961.41	1082.95	961.00
09/18/96	946.62	1085.44	957.44	972.41		959.78	1080.29	959.32	961.10	1083.29	960.36
09/19/96	947.06	1085.70	957.20	972.15		959.54	1080.53	959.10	960.90	1083.55	960.10
09/20/96	947.36	1085.96	957.05	972.04		959.37	1080.73	958.93	960.73	1083.79	959.97
09/21/96	947.23	1086.09	956.87	971.96		959.19	1080.81	958.78	960.56	1083.97	959.78
09/22/96	946.99	1086.16	956.68	971.72		958.98	1080.90	958.60	960.36	1084.07	959.58
09/23/96	946.80	1086.22	956.48	971.46		958.76	1080.92	958.41	960.17	1084.16	959.37
09/24/96	945.74	1086.46	956.29	971.24		958.54	1081.03	958.21	959.97	1084.27	959.19
09/25/96	945.39	1086.74	956.07	971.09		958.33	1081.18	958.04	959.78	1084.49	959.00
09/26/96	945.17	1087.00	955.86	970.92		958.13	1081.40	957.82	959.56	1084.75	958.80
09/27/96	944.98	1087.33	955.62	970.70		957.89	1081.57	957.61	959.35	1085.01	958.59
09/28/96	944.78	1087.70	955.36	970.40		957.65	1081.92	957.39	959.13	1085.37	958.33
09/29/96	944.68	1087.89	955.16	970.29		957.48	1082.11	957.20	958.93	1085.61	958.17

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
09/30/96	944.59	1087.85	954.97	970.16		957.29	1082.16	956.98	958.72	1085.68	958.00
10/01/96	944.35	1087.74	954.73	969.90		957.05	1082.09	956.78	958.50	1085.63	957.76
10/02/96	944.13	1087.78	954.51	969.66		956.83	1082.09	956.57	958.31	1085.63	957.55
10/03/96	944.00	1088.06	954.32	969.47		956.64	1082.24	956.37	958.11	1085.81	957.35
10/04/96	943.94	1088.30	954.10	969.40		956.46	1082.46	956.18	957.92	1086.04	957.20
10/05/96	943.72	1088.30	953.89	969.16		956.25	1082.53	955.98	957.72	1086.13	956.96
10/06/96	943.51	1088.15	953.65	968.86		956.01	1082.46	955.77	957.48	1086.07	956.72
10/07/96	943.40	1087.93	953.47	968.71		955.81	1082.37	955.57	957.29	1085.98	956.55
10/08/96	943.25	1087.70	953.26	968.62		955.64	1082.29	955.40	957.11	1085.83	956.38
10/09/96	943.12	1087.44	953.06	968.88		955.42	1082.14	955.23	956.92	1085.66	956.16
10/10/96	942.99	1087.18	952.87	969.01		955.23	1082.03	955.07	956.75	1085.48	955.99
10/11/96	942.92	1086.96	952.69	969.14		955.06	1081.90	954.97	956.64	1085.31	955.97
10/12/96	943.85	1086.76	952.56	969.25		954.90	1081.79	954.86	956.51	1085.14	955.94
10/13/96	944.61	1086.53	952.67	970.29		954.88	1081.64	955.27	956.68	1084.94	955.94
10/14/96	944.42	1086.31	952.63	970.68		954.80	1081.55	955.36	956.72	1084.77	955.94
10/15/96	944.37	1086.12	952.63	970.98		954.71	1081.49	955.44	956.79	1084.62	955.94
10/16/96	947.95	1085.99	952.69	970.94		954.71	1083.35	955.59	956.88	1084.49	955.94
10/17/96	946.17	1085.81	953.17	971.37		954.93	1083.83	956.07	957.18	1084.36	955.94
10/18/96	944.65	1085.70	953.11	971.11		954.73	1083.65	956.09	957.24	1084.27	956.01
10/19/96	944.48	1085.66	953.02	971.16		954.71	1083.28	956.07	957.29	1084.23	956.05
10/20/96	944.35	1085.75	952.95	971.37		954.60	1083.39	956.07	957.27	1084.23	956.05
10/21/96	944.16	1085.90	952.89	971.55		954.51	1083.67	956.03	957.22	1084.31	956.05
10/22/96	944.09	1086.07	952.82	971.68		954.43	1083.80	956.01	957.22	1084.40	956.05
10/23/96	944.26	1086.20	952.82	972.22		954.54	1083.76	956.11	957.33	1084.51	956.07
10/24/96	943.48	1086.27	952.72	972.30		954.41	1083.63	956.01	957.31	1084.55	956.07
10/25/96	943.35	1086.35	952.63	972.46		954.38	1083.48	955.92	957.27	1084.59	956.07
10/26/96	943.18	1086.50	952.56	972.34		954.36	1083.41	955.62	957.15	1084.71	955.77
10/27/96	942.86	1086.56	952.43	972.05		954.12	1083.33	955.49	956.99	1084.76	955.75
10/28/96	942.88	1086.61	952.37	972.12		954.10	1083.20	955.47	956.97	1084.82	955.75
10/29/96	942.86	1086.71	952.33	972.27		954.08	1083.09	955.42	956.97	1084.89	955.75

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
10/30/96	942.92	1086.95	952.28	972.53		954.08	1083.15	955.45	957.02	1085.02	955.75
10/31/96	942.79	1087.82	952.24	972.53		953.97	1084.73	955.45	956.97	1086.03	955.75
11/01/96	942.73	1088.71	952.20	972.51		953.89	1085.84	955.40	956.93	1087.20	955.75
11/02/96	943.29	1089.36	952.24	972.79		953.93	1086.25	955.55	957.04	1087.98	955.75
11/03/96	942.86	1089.79	952.15	972.83		953.86	1086.40	955.51	957.02		955.75
11/04/96	942.71	1090.11	952.11	972.72		953.80	1086.47	955.45	956.97		955.73
11/05/96	942.79	1090.40	952.09	972.94		953.82	1086.58	955.47	957.02		955.75
11/06/96	942.79	1090.63	952.07	973.01		953.76	1086.62	955.47	956.99		955.75
11/07/96	942.68	1090.76	952.02	972.88		953.67	1086.58	955.42	956.93		955.73
11/08/96	942.53	1090.89	952.00	972.96		953.67	1086.58	955.42	956.95		955.73
11/09/96	942.58	1090.98	951.98	973.09		953.69	1086.49	955.42	956.99		955.73
11/10/96	942.62	1091.02	951.96	973.20		953.65	1086.42	955.42	956.97		955.73
11/11/96	942.60	1091.05	951.92	973.22		953.60	1086.34	955.40	956.95		955.73
11/12/96	942.55	1091.05	951.87	973.14		953.56	1086.19	955.38	956.91		955.71
11/13/96	942.62	1091.05	951.87	973.14		953.54	1086.27	955.36	956.89		955.71
11/14/96	942.73	1091.05	951.87	973.24		953.60	1085.99	955.38	956.89		955.71
11/15/96	943.90	1091.05	952.00	973.59		953.67	1085.67	955.58	956.99		955.73
11/16/96	947.66	1091.05	952.28	973.83		953.84	1085.56	955.88	957.17		955.71
11/17/96	944.85	1091.02	952.67	973.92		954.04	1085.67	956.27	957.38		955.75
11/18/96	944.59	1091.15	952.87	974.00		954.17	1085.84	956.44	957.56		956.03
11/19/96	944.81	1091.35	953.06	974.35		954.34	1086.06	956.68	957.75		956.23
11/20/96	944.94	1091.50	953.72	974.48		954.51	1086.36	956.81	957.90		956.36
11/21/96	945.15	1091.91	953.92	974.65		954.67	1087.12	957.00	958.03		956.51
11/22/96	943.85	1093.00	953.98	974.67		954.73	1088.91	957.03	958.12		956.62
11/23/96	943.53	1094.47	953.98	975.11		954.73	1089.11	956.94	958.10		956.62
11/24/96	944.74	1093.30	954.03	974.61		954.77	1088.31	957.00	958.12		956.62
11/25/96	945.54	1093.08	954.26	975.02		954.99	1087.96	957.26	958.29		956.79
11/26/96	945.70	1093.08	954.31	974.75		955.46	1088.00	957.63	958.81	1091.61	957.51
11/27/96	946.03	1092.89	954.48	974.90		955.63	1087.81	957.91	958.92	1091.41	957.64
11/28/96	946.55	1092.78	954.74	975.01		955.85	1087.53	958.11	959.07	1091.28	957.79

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
11/29/96	947.20	1092.73	955.00	975.25		956.15	1087.42	958.32	959.33	1091.22	957.99
11/30/96	947.46	1092.60	955.24	975.08		956.37	1087.27	958.45	959.42	1091.11	958.14
12/01/96	947.85	1092.52	955.56	975.10		956.65	1087.14	958.61	959.57	1091.00	958.29
12/02/96	948.37	1092.47	955.89	975.29		956.99	1087.05	958.84	959.81	1090.96	958.51
12/03/96	948.71	1092.43	956.26	975.40		957.32	1087.12	959.04	960.02	1090.91	958.70
12/04/96	949.04	1092.39	956.65	975.53		957.60	1087.03	959.23	960.22	1090.85	958.90
12/05/96	948.13	1092.34	956.88	975.60		957.86	1086.97	959.32	960.35	1090.83	959.07
12/06/96	947.91	1092.39	957.06	975.47		958.10	1086.97	959.32	960.48	1090.83	959.20
12/07/96	947.85	1092.37	957.21	975.44		958.23	1086.94	959.32	960.50	1090.83	959.29
12/08/96	948.02	1092.37	957.38	975.44		958.47	1086.94	959.34	960.59	1090.80	959.37
12/09/96	948.28	1092.39	957.60	975.51		958.68	1086.90	959.43	960.72	1090.83	959.50
12/10/96	948.39	1092.84	957.75	975.53		958.86	1087.90	959.52	960.78	1091.50	959.61
12/11/96	948.48	1094.86	957.90	975.47		959.01	1089.78	959.52	960.83	1093.53	959.70
12/12/96	948.69	1096.57	958.05	975.31		959.18	1091.51	959.54	960.91	1095.68	959.76
12/13/96	949.06	1096.31	958.23	975.27		959.40	1091.21	959.78	960.93	1095.61	959.85
12/14/96	949.69	1095.61	958.51	975.25		959.68	1090.39	959.84	961.04	1094.57	959.96
12/15/96	950.62	1095.31	958.94	975.25		959.92	1089.85	960.08	961.11	1093.99	960.07
12/16/96	951.72	1095.12	959.64	975.23		960.26	1089.56	960.34	961.24	1093.62	960.18
12/17/96	952.72	1094.99	960.57	975.34		960.80	1089.41	960.53	961.48	1093.42	960.39
12/18/96	953.30	1094.81	961.39	975.36		961.19	1089.20	961.05	961.61	1093.21	960.57
12/19/96	954.13	1094.70	962.32	975.47		961.71	1089.09	961.38	961.87	1093.03	960.80
12/20/96	954.43	1094.57	963.08	975.53		962.21	1088.87	961.68	962.13	1092.90	961.04
12/21/96	955.24	1094.53	963.65	975.72		962.99	1089.19	962.13	962.59	1092.86	961.74
12/22/96	955.52	1094.47	964.14	975.80		963.42	1089.11	962.58	962.75	1092.75	962.03
12/23/96	955.65	1096.39	964.49	975.89		963.74	1090.82	962.93	963.01	1094.49	962.26
12/24/96	955.89	1096.74	964.84	975.98		964.09	1091.27	963.30	963.20	1095.33	962.50
12/25/96	956.45	1096.13	965.25	976.08		964.63	1090.86	963.34	963.46	1094.83	962.83
12/26/96	956.84	1095.83	965.62	976.19		965.09	1090.41	963.60	963.81	1094.29	963.15
12/27/96	957.32	1095.61	966.01	976.26		965.45	1090.15	963.88	964.09	1093.97	963.39
12/28/96	958.08	1095.55	966.57	976.39		965.93	1090.17	964.12	964.30	1093.88	963.71

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
12/29/96	958.66	1095.53	967.18	976.52		966.41	1090.23	964.53	964.61	1093.84	964.00
12/30/96	959.25	1095.48	967.96	976.76		967.04	1090.15	964.92	964.87	1093.75	964.39
12/31/96	959.68	1095.57	968.58	976.82		967.53	1090.15	965.20	965.26	1093.79	964.71
01/01/97	960.24	1095.42	969.21	976.91		968.03	1089.97	965.59	965.60	1093.66	965.04
01/02/97	960.87	1095.44	969.86	977.27		968.64	1090.08	965.92	965.97	1093.64	965.40
01/03/97	961.35	1095.53	970.42			969.20	1090.23	966.29	966.25	1093.75	965.82
01/04/97	961.69	1096.24	970.90			969.68	1091.12	966.76	966.60	1094.75	966.21
01/05/97	962.19	1095.94	971.40			970.24	1090.69	967.13	967.06	1094.36	966.57
01/06/97	962.71	1095.87	971.94			970.85	1090.58	967.50	967.42	1094.23	966.98
01/07/97	963.38	1095.96	972.50			971.37	1090.58	968.00	967.81	1094.33	967.35
01/08/97	964.49	1095.83	973.17			971.97	1090.45	968.41	968.20	1094.23	967.76
01/09/97	963.97	1095.72	973.63			972.51	1090.26	968.76	968.61	1094.10	968.18
01/10/97	964.90	1095.66	974.17			973.10	1090.17	969.06		1093.99	968.59
01/11/97	964.60	1095.61	974.63			973.75	1090.10	969.30		1093.92	969.09
01/12/97	964.83	1095.55	975.04			974.27	1090.02	969.60		1093.81	969.52
01/13/97	965.16	1096.24	975.41			974.81	1090.88	969.97		1094.53	969.97
01/14/97	965.20	1096.91	975.51			975.07	1091.64	970.36		1095.57	970.30
01/15/97	965.44	1096.61	975.75			975.42	1091.32	970.79		1095.29	970.56
01/16/97	969.23	1098.15	976.45			976.09	1092.53	971.01		1096.50	970.99
01/17/97	976.46	1098.78	978.52			977.69	1092.92	972.46		1097.30	971.86
01/18/97	978.48	1098.82	980.30			978.95	1092.94	973.67		1097.56	972.72
01/19/97	980.04	1098.45	982.08			980.22	1092.68	974.78		1097.28	973.70
01/20/97	981.94	1097.76	983.72			981.31	1092.07	975.97		1096.52	974.65
01/21/97	982.25	1098.19	985.09			982.35	1092.31	977.14		1096.76	975.63
01/22/97	983.26	1097.63	986.52			983.43	1092.01	978.22		1096.30	976.67
01/23/97	984.35	1097.26	987.97			984.64	1091.64	979.26		1095.79	977.73
01/24/97	985.49	1098.95	989.33			985.75	1093.03	980.34		1097.37	978.70
01/25/97	986.47	1099.17	990.82			986.94	1093.18	981.53		1097.76	979.70
01/26/97	988.37	1099.60	992.45			988.28	1093.70	982.66		1098.19	980.74
01/27/97	988.66	1100.10	993.71			989.21	1094.13	983.57		1098.93	981.67

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
01/28/97	989.70	1100.12	995.20			990.32	1093.96	984.82		1098.97	982.69
01/29/97	990.87	1100.10	996.85			991.59	1093.83	985.97		1098.88	983.79
01/30/97	991.86	1100.03	998.23			992.63	1093.72	987.10		1098.80	984.81
01/31/97	992.93	1099.89	999.53	990.27	986.34	993.69	1093.37	989.49		1098.87	985.80
02/01/97	994.96	1099.28	1000.96	991.22	987.49	994.84	1092.95	990.86		1098.18	986.95
02/02/97	996.09	1098.52	1002.30	992.06	988.61		1092.28	992.11		1097.29	987.99
02/03/97		1098.05	1003.39	992.82	989.65		1091.83	993.35		1096.60	988.94
02/04/97		1097.70	1004.43	993.54	990.80		1091.48	994.43		1096.10	990.05
02/05/97		1097.44	1005.29	994.27	991.90		1091.22	995.43		1095.71	991.13
02/06/97		1097.20	1005.94	994.94	992.81		1090.98	996.32		1095.39	992.02
02/07/97		1096.96	1006.48	995.55	993.66		1090.77	997.12		1095.08	992.84
02/08/97		1096.79	1007.13	996.18	994.68		1090.57	997.88		1094.89	993.86
02/09/97		1096.62	1007.54	996.74	995.52		1090.40	998.59		1094.67	994.66
02/10/97		1096.49	1008.00	997.28	996.34		1090.25	999.24		1094.48	995.46
02/11/97		1097.20	1008.43	997.87	997.23		1090.85	999.87		1095.04	996.37
02/12/97		1097.05	1008.73	998.43	997.90		1091.03	1000.43		1095.37	997.02
02/13/97		1096.68	1009.32	998.99	998.75		1090.62	1001.12		1094.91	997.78
02/14/97		1096.42	1009.60	999.49	999.33		1090.31	1001.71		1094.59	998.32
02/15/97		1096.27	1010.01	999.97	1000.13		1090.16	1002.19		1094.39	999.10
02/16/97		1096.14	1010.32	1000.42	1000.85		1090.01	1002.62		1094.22	999.81
02/17/97		1096.03	1010.58	1000.92	1001.54		1089.90	1003.12		1094.07	1000.44
02/18/97		1095.97	1010.86	1001.46	1002.30		1089.88	1003.64		1094.00	1001.20
02/19/97		1095.82	1010.79	1001.83	1002.54		1089.75	1003.94		1093.87	1001.48
02/20/97		1095.77	1010.99	1002.20	1003.23		1089.66	1004.16		1093.79	1002.15
02/21/97		1095.69	1011.14	1002.67	1003.73		1089.60	1004.65		1093.70	1002.67
02/22/97		1095.66	1010.40	1002.63	1003.71		1089.55	1004.29		1093.61	1002.78
02/23/97		1095.53	1009.71	1002.91	1004.16		1089.49	1004.03		1093.55	1003.30
02/24/97		1095.49	1007.93	1002.20	1003.27		1089.40	1002.57		1093.46	1002.65
02/25/97		1095.43	1007.24	1001.92	1002.93	1007.33	1089.36	1002.10	1001.95	1093.37	1002.37
02/26/97	987.11	1095.36	1006.53	1001.64		1007.29	1089.03	1001.09	1001.88	1093.09	1001.94

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
02/27/97	986.98	1095.33	1006.21	1001.64		1007.22	1089.03	1000.78	1001.86	1093.05	1001.92
02/28/97	986.76	1095.33	1005.86	1001.68		1007.14	1089.05	1000.89	1001.80	1093.07	1001.90
03/01/97	986.20	1095.23	1005.08	1001.64		1006.44	1088.94	1000.07	1001.15	1092.96	1001.29
03/02/97	986.05	1095.16	1004.80	1001.60		1006.27	1088.90	999.87	1001.02	1092.92	1001.16
03/03/97	986.00	1095.16	1004.61	1001.62		1006.31	1088.85	999.85	1001.10	1092.89	1001.25
03/04/97	985.85	1095.29	1004.30	1001.64		1006.20	1088.92	999.70	1001.02	1093.05	1001.19
03/05/97	985.53	1096.03	1003.81	1001.60		1005.82	1089.57	999.29	1000.67	1093.85	1000.86
03/06/97	985.40	1096.98	1003.61	1001.57		1005.75	1090.24	999.25	1000.65	1094.80	1000.84
03/07/97	985.31	1097.56	1003.35	1001.62		1005.64	1090.70	999.09	1000.48	1095.49	1000.80
03/08/97	986.13	1097.91	1003.07	1001.66		1005.43	1090.98	998.94	1000.54	1095.90	1000.62
03/09/97	985.51	1098.13	1002.92	1001.85		1005.32	1091.15	998.88	1000.35	1096.19	1000.56
03/10/97	984.86	1098.32	1002.44	1001.68		1005.01	1091.30	998.55	1000.07	1096.42	1000.34
03/11/97	984.66	1098.47	1002.22	1001.66		1004.93	1091.43	998.47	1000.07	1096.64	1000.36
03/12/97	984.34	1098.60	1001.83	1001.68		1004.54	1091.56	998.16	999.78	1096.81	1000.08
03/13/97	984.01	1098.76	1001.47	1001.68		1004.21	1091.82	997.90	999.55	1096.97	999.86
03/14/97	983.67	1098.89	1001.18	1001.64		1003.97	1091.97	997.75	999.44	1097.12	999.73
03/15/97	983.49	1098.95	1000.93	1001.70		1003.71	1092.08	997.62	999.33	1097.20	999.58
03/16/97	983.08	1098.99	1000.58	1001.62		1003.28	1092.15	997.34	999.05	1097.25	999.32
03/17/97	982.67	1099.04	1000.19	1001.60		1002.78	1092.19	996.99	998.68	1097.29	998.96
03/18/97	982.39	1099.08	999.95	1001.49		1002.39	1092.23	996.78	998.46	1097.33	998.70
03/19/97	982.26	1099.15	999.82	1001.47		1002.18	1092.30	996.67	998.31	1097.40	998.54
03/20/97	981.93	1099.19	999.71	1001.40		1002.02	1092.32	996.60	998.27	1097.44	998.52
03/21/97	981.61	1099.19	999.43	1001.36			1092.34	996.41	998.07	1097.46	998.31
03/22/97	981.28	1099.19	999.06	1001.31			1092.32	996.08	997.73	1097.44	997.96
03/23/97	981.07	1099.25	998.80	1001.23			1092.36	995.89	997.51	1097.51	997.72
03/24/97	980.85	1099.34	998.56	1001.21			1092.43	995.72	997.29	1097.59	997.50
03/25/97	980.61	1099.34	998.26	1001.14			1092.43	995.50	997.08	1097.64	997.24
03/26/97	980.37	1099.36	998.00	1001.10			1092.45	995.28	996.84	1097.66	996.98
03/27/97	980.16	1099.38	997.72	1001.05			1092.45	995.07	996.60	1097.68	996.72
03/28/97	979.94	1099.41	997.46	1000.97			1092.45	994.87	996.38	1097.70	996.49

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
03/29/97	979.71	1099.44		1000.69	997.71	999.13	1092.76	994.26	996.21	1097.82	996.24
03/30/97	979.49	1099.42		1000.61	997.41	998.77	1092.74	994.00	995.93	1097.80	995.96
03/31/97	979.23	1099.44		1000.50	997.10	998.42	1092.76	993.76	995.67	1097.84	995.68
04/01/97	979.10	1099.44		1000.45	996.91	998.23	1092.76	993.63	995.56	1097.84	995.53
04/02/97	979.02	1099.44		1000.41	996.82	998.05	1092.76	993.55	995.48	1097.87	995.46
04/03/97	978.80	1099.37		1000.37	996.45	997.68	1092.69	993.29	995.20	1097.82	995.16
04/04/97	978.63	1099.33		1000.30	996.17	997.40	1092.58	993.09	994.98	1097.80	994.92
04/05/97	978.37	1099.22		1000.22	995.80	997.01	1092.37	992.79	994.65	1097.71	994.60
04/06/97	978.13	1099.11		1000.13	995.46	996.67	1092.15	992.53	994.37	1097.63	994.29
04/07/97	977.98	1098.98		1000.04	995.22	996.41	1092.02	992.35	994.18	1097.52	994.08
04/08/97	977.93	1098.94		999.98	995.07	996.25	1091.93	992.27	994.07	1097.45	993.97
04/09/97	977.87	1098.85		999.93	994.92	996.08	1091.85	992.16	993.96	1097.43	993.84
04/10/97	977.78	1098.77		999.91	994.72	995.86	1091.76	992.03	993.81	1097.35	993.69
04/11/97	977.55	1098.64		999.85	994.37	995.50	1091.67	991.77	993.51	1097.24	993.38
04/12/97	977.39	1098.57		999.78	994.16	995.28	1091.61	991.62	993.36	1097.17	993.19
04/13/97	977.29	1098.49		999.70	993.96	995.02	1091.52	991.49	993.18	1097.09	992.99
04/14/97	977.13	1098.40		999.63	993.75	994.78	1091.46	991.34	992.99	1097.00	992.82
04/15/97	976.90	1098.33		999.57	993.47	994.50	1091.41	991.12	992.77	1096.91	992.56
04/16/97	985.67	1098.33		999.44	993.42	994.70	1091.46	991.44	992.75	1096.89	992.52
04/17/97	980.40	1098.27		1000.09	993.94	995.17	1091.48	992.05	993.29	1096.87	993.01
04/18/97	976.94	1098.27		999.89	993.44	994.39	1091.50	991.38	992.88	1096.87	992.65
04/19/97	976.29	1098.25		999.72	993.08	993.96	1091.54	991.01	992.55	1096.89	992.32
04/20/97	976.03	1098.31		999.59	992.82	993.68	1091.59	990.77	992.36	1096.96	992.13
04/21/97	975.86	1098.31		999.48	992.60	993.42	1091.59	990.56	992.16	1096.96	991.93
04/22/97	975.66	1098.27		999.41	992.40	993.24	1091.59	990.38	991.99	1096.93	991.76
04/23/97	975.47	1098.16		999.35	992.21	993.03	1091.52	990.23	991.86	1096.85	991.61
04/24/97	975.23	1098.05		999.31	992.04	992.81	1091.41	990.02	991.69	1096.76	991.43
04/25/97	974.99	1097.77		999.22	991.67	992.44	1091.22	989.67	991.36	1096.57	991.09
04/26/97	974.73	1097.58		999.11	991.34	992.12	1091.07	989.41	991.08	1096.33	990.78
04/27/97	974.53	1097.38		999.00	991.17	991.94	1090.90	989.21	990.93	1096.13	990.61

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
04/28/97	974.40	1097.21		998.94	991.00	991.75	1090.74	989.06	990.80	1095.96	990.48
04/29/97	974.37	1097.08	989.93		991.41	991.65	1090.85	989.65	990.73	1095.95	990.38
04/30/97	974.22	1097.01	989.67		990.93	991.45	1090.74	989.73	990.56	1095.86	990.18
05/01/97	974.11		989.49		990.63	991.30	1090.67	989.71	990.47	1095.77	990.09
05/02/97	974.02		988.93		990.24	990.91	1090.59	989.28	990.08	1095.64	989.75
05/03/97	973.52		988.37		989.85	990.37	1090.43	988.72	989.54	1095.47	989.23
05/04/97	973.18		987.96		989.50	990.02	1090.28	988.33	989.17	1095.30	988.86
05/05/97	972.85		987.57		989.16	989.72	1090.11	987.98	988.80	1095.08	988.51
05/06/97	972.61		987.24		988.81	989.46	1089.96	987.66	988.50	1094.91	988.23
05/07/97	972.35		986.87		988.49	989.15	1089.83	987.35	988.17	1094.73	987.93
05/08/97	972.07		986.46		988.14	988.79	1089.70	986.94	987.78	1094.60	987.54
05/09/97	971.79		986.03		987.82	988.40	1089.63	986.55	987.37	1094.52	987.13
05/10/97	971.47		985.66		987.49	988.09	1089.57	986.18	987.05	1094.43	986.80
05/11/97	971.23		985.29		987.12	987.81	1089.52	985.88	986.74	1094.36	986.52
05/12/97	970.92		984.86		986.80	987.42	1089.46	985.49	986.35	1094.30	986.11
05/13/97	970.66		984.47		986.45	987.10	1089.44	985.14	986.01	1094.26	985.78
05/14/97	970.40		984.10		986.10	986.75	1089.44	984.77	985.66	1094.26	985.42
05/15/97	970.06		983.65		985.76	986.32	1089.48	984.39	985.25	1094.30	985.03
05/16/97	969.93		983.34		985.46	986.08	1089.44	984.10	984.99	1094.23	984.77
05/17/97	969.69		982.95		985.13	985.73	1089.35	983.80	984.66	1094.15	984.42
05/18/97	969.32		982.56		984.78	985.41	1089.29	983.48	984.36	1094.08	984.14
05/19/97	969.21		982.17		984.44	985.06	1089.24	983.15	984.01	1094.02	983.79
05/20/97	968.69		981.74		984.07	984.65	1089.22	982.74	983.65	1093.95	983.42
05/21/97	968.46		981.31		983.72	984.26	1089.20	982.39	983.28	1093.93	983.06
05/22/97	968.17		980.92		983.40	983.94	1089.16	982.05	982.95	1093.82	982.75
05/23/97	968.00		980.57		983.05	983.63	1089.07	981.74	982.65	1093.78	982.43
05/24/97	967.70		980.20		982.73	983.33	1089.03	981.44	982.35	1093.69	982.15
05/25/97	967.42		979.81		982.36	982.96	1088.92	981.09	982.02	1093.56	981.80
05/26/97	967.09		979.38		982.01	982.55	1088.77	980.73	981.63	1093.41	981.41
05/27/97	966.83		979.01		981.69	982.20	1088.66	980.42	981.33	1093.28	981.09

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
05/28/97	966.64		978.69		981.36	981.92	1088.51	980.14	981.07	1093.11	980.80
05/29/97	966.30	1094.24		988.39	981.14	981.53	1088.25	979.75	980.70	1092.76	980.44
05/30/97	966.06	1094.11		988.26	980.82	981.15	1087.99	979.45	980.37	1092.54	980.09
05/31/97	965.69	1093.96		988.06	980.49	980.76	1087.78	979.08	980.01	1092.35	979.74
06/01/97	965.50	1093.88		987.65	980.19	980.52	1087.62	978.82	979.77	1092.19	979.48
06/02/97	965.26	1093.81		987.24	979.82	980.24	1087.49	978.56	979.53	1092.09	979.25
06/03/97	964.96	1093.81		986.98	979.47	979.85	1087.47	978.22	979.16	1092.02	978.88
06/04/97	964.65	1093.81		986.68	979.17	979.48	1087.49	977.89	978.84	1092.02	978.55
06/05/97	963.87	1093.85		986.48	978.91	979.26	1087.58	977.70	978.62	1092.09	978.34
06/06/97	964.07	1093.98		986.24	978.78	979.13	1087.71	977.54	978.49	1092.24	978.21
06/07/97	963.76	1093.98		985.94	978.37	978.72	1087.86	977.18	978.06	1092.37	977.82
06/08/97	963.48	1094.09		985.72	978.00	978.35	1087.97	976.85	977.73	1092.50	977.47
06/09/97	963.22	1094.16		985.46	977.72	978.05	1088.12	976.59	977.47	1092.58	977.19
06/10/97	963.01	1094.18		985.23	977.39	977.72	1088.16	976.29	977.15	1092.65	976.86
06/11/97	962.68	1094.16		984.95	977.11	977.42	1088.21	976.01	976.87	1092.67	976.60
06/12/97	961.56	1094.14		984.86	976.85	977.14	1088.19	975.75	976.63	1092.63	976.34
06/13/97	961.30	1094.18		984.51	976.64	976.90	1088.23	975.49	976.41	1092.67	976.13
06/14/97	961.75	1094.32		984.08	976.10	976.42	1088.49	975.06	975.93	1092.90	975.60
06/15/97	960.65	1094.49		983.95	975.78	976.01	1088.72	974.75	975.61	1093.06	975.27
06/16/97	960.45	1094.60		983.60	975.50	975.68	1088.90	974.47	975.35	1093.42	975.01
06/17/97	960.17	1094.62		983.40	975.22	975.42	1088.96	974.17	975.06	1093.47	974.71
06/18/97	959.97	1094.60		982.97	974.93	975.27	1088.98	973.89	974.78	1093.45	974.67
06/19/97	960.06	1094.53		982.49	974.63	974.88	1088.94	973.56	974.46	1093.40	974.32
06/20/97	959.95	1094.45		982.21	974.39	974.67	1088.85	973.32	974.20	1093.34	974.08
06/21/97	959.82	1094.36		981.93	974.15	974.43	1088.79	973.11	973.98	1093.25	973.86
06/22/97	959.58	1094.14		981.84	973.81	974.10	1088.64	972.80	973.66	1093.08	973.54
06/23/97	959.37	1093.97		981.50	973.55	973.84	1088.51	972.54	973.42	1092.86	973.28
06/24/97	959.13	1093.75		981.13	973.29	973.58	1088.29	972.28	973.16	1092.60	973.02
06/25/97	958.96	1093.56		980.85	973.03	973.35	1088.03	972.02	972.92	1092.34	972.78
06/26/97	958.65	1093.36		980.63	972.81	973.19	1087.73	971.87	972.68	1092.06	972.54

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
06/27/97	958.96	1093.21		980.52	972.64	973.11	1087.49	971.74	972.53	1091.86	972.37
06/28/97	958.87	1093.08		980.31	972.46	972.93	1087.34	971.61	972.36	1091.71	972.20
06/29/97	958.83	1092.93		980.33	972.36	972.83	1087.17	971.50	972.27	1091.58	972.11
06/30/97	958.65	1092.82		980.16	972.18	972.63	1086.99	971.37	972.12	1091.43	971.94
07/01/97	958.46	1092.67		979.87	971.99	972.44	1086.80	971.20	971.95	1091.26	971.76
07/02/97	958.28	1092.50		979.66	971.86	972.28	1086.62	971.05	971.82	1091.08	971.63
07/03/97	958.61	1092.24		979.66	971.73	972.18	1086.39	970.98	971.71	1090.85	971.50
07/04/97	957.90	1091.96		979.35	971.51	971.92	1086.15	970.75	971.51	1090.48	971.31
07/05/97	957.55	1091.61		978.94	971.27	971.66	1085.89	970.53	971.25		971.07
07/06/97	957.35	1091.26		978.75	971.12	971.50	1085.61	970.36	971.12		970.94
07/07/97	957.18	1090.94		978.55	970.93	971.29	1085.32	970.16	970.93		970.75
07/08/97	956.94	1090.68		978.34	970.71	971.07	1085.30	969.94	970.73		970.53
07/09/97	956.77	1090.46		978.29	970.52	970.85	1084.96	969.77	970.52		970.33
07/10/97	956.66	1090.29		978.31	970.34	970.68	1084.93	969.62	970.39		970.20
07/11/97	956.42	1090.09		978.21	970.13	970.46	1084.57	969.45	970.19		969.99
07/12/97	956.21	1090.07		978.12	969.93	970.25	1084.33	969.27	970.00		969.81
07/13/97	956.01	1090.14		977.97	969.78	970.07	1084.31	969.10	969.87		969.66
07/14/97	955.79	1090.03		977.82	969.56	969.84	1084.20	968.90	969.65		969.47
07/15/97	955.64	1089.83		977.64	969.35	969.62	1084.07	968.73	969.48		969.27
07/16/97	955.47	1089.62		977.54	969.22	969.47	1083.92	968.56	969.35		969.14
07/17/97	955.23	1089.51		977.41	969.00	969.23	1083.77	968.36	969.15		968.95
07/18/97	955.10	1089.19		977.28	968.83	969.06	1083.61	968.21	969.00		968.80
07/19/97	954.86	1088.84		977.08	968.61	968.82	1083.44	968.02	968.78		968.58
07/20/97	954.63	1088.51		976.91	968.39	968.60	1083.25	967.82	968.59		968.39
07/21/97	954.39	1088.19		976.73	968.22	968.39	1083.05	967.63	968.42		968.19
07/22/97	954.24	1087.91		976.58	968.00	968.19	1082.99	967.48	968.22		968.02
07/23/97	953.52	1087.30	964.74	976.39	967.55	967.89	1082.37	967.23	968.04	1086.39	
07/24/97	953.32	1087.08	964.54	976.19	967.35	967.65	1082.16	967.16	967.84	1086.13	
07/25/97	953.19	1086.82	964.35	976.11	967.22	967.47	1081.90	967.01	967.71	1085.89	
07/26/97	953.02	1086.58	964.13	975.98	967.05	967.28	1081.66	966.84	967.54	1085.63	

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
MONITORING WELLS AT THE JET PROPULSION LABORATORY
(August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
07/27/97	952.78	1086.32	963.93	975.80	966.83	967.06	1081.40	966.66	967.34	1085.37	
07/28/97	952.59	1086.06	963.74	975.65	966.64	966.85	1081.14	966.47		1085.14	
07/29/97	952.37	1085.87	963.52	975.46	966.44	966.65	1080.94	966.27		1084.92	
07/30/97	953.00	1085.65	963.35	975.28	966.22	966.46	1080.73	966.10		1084.68	
07/31/97	953.08	1085.50	963.22	975.15	966.05	966.26	1080.58	965.97		1084.51	
08/01/97	951.94	1085.35	963.02	975.04	965.90	966.09	1080.43	965.80		1084.31	
08/02/97	951.65	1085.17	962.81	974.89	965.73	965.87	1080.25	965.62		1084.14	
08/03/97	951.48	1085.04	962.61	974.76	965.53	965.66	1080.12	965.45		1083.92	
08/04/97	951.22	1084.78	962.40	974.55	965.29	965.42	1079.86	965.23		1083.71	
08/05/97	951.07	1084.59	962.20	974.39	965.12	965.24	1079.67	965.08		1083.49	
08/06/97	950.92	1084.37	962.03	974.33	964.97	965.07	1079.45	964.91		1083.29	
08/07/97	950.62	1084.18	961.81	973.98	964.73	964.83	1079.26	964.71		1083.08	
08/08/97	950.77	1083.96	961.62	973.92	964.56	964.66	1079.04	964.54		1082.88	
08/09/97	950.64	1083.79	961.42	973.77	964.36	964.44	1078.87	964.37		1082.69	
08/10/97	950.44	1083.64	961.25	973.53	964.15	964.25	1078.71	964.17		1082.49	
08/11/97	950.90	1083.51	961.08	973.44	963.99	964.07	1078.58	964.02		1082.36	
08/12/97	949.86	1083.38	960.88	973.27	963.80	963.88	1078.45	963.85		1082.23	
08/13/97	949.62	1083.27	960.69	973.05	963.56	963.62	1078.35	963.65		1082.10	
08/14/97	949.38	1083.16	960.47	972.97	963.41	963.47	1078.24	963.48		1081.97	
08/15/97	949.23	1083.09	960.30	972.81	963.21	963.25	1078.17	963.28		1081.84	
08/16/97	949.03	1083.09	960.08	972.64	963.00	963.06	1078.17	963.11		1081.71	
08/17/97	948.88	1083.29	959.88	972.42	962.78	962.80	1078.37	962.92		1081.61	
08/18/97	948.73	1083.46	959.71	972.27	962.59	962.62	1078.54	962.76		1081.63	
08/19/97	948.58	1083.46	959.52	972.16	962.44	962.43	1078.54	962.59		1081.74	
08/20/97	948.38	1083.33	959.34	971.95	962.22	962.21	1078.41	962.42		1081.74	
08/21/97	948.15	1083.21	959.15	971.84	962.05	962.02	1078.29	962.27		1081.63	
08/22/97		1083.11	958.93	971.72	961.67	961.77	1078.19	961.99	962.68	1081.55	
08/23/97		1082.91	958.76	971.50	961.50	961.60	1077.99	961.79	962.52	1081.49	
08/23/97		1082.76	958.56	971.39	961.32	961.36	1077.84	961.62	962.33	1081.36	
08/24/97		1082.63	958.39	971.26	961.13	961.18	1077.71	961.45	962.16	1081.21	

GROUNDWATER ELEVATION DATA FOR THE SHALLOW
 MONITORING WELLS AT THE JET PROPULSION LABORATORY
 (August, 1996 - August, 1997)

Date	Well Number										
	MH-01	MW-1	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-13	MW-15	MW-16
08/25/97		1082.44	958.19	971.11	960.95	960.99	1077.51	961.29	962.00	1081.05	
08/26/97		1082.28	958.02	970.92	960.74	960.77	1077.36	961.10	961.79	1080.90	
08/27/97		1082.11	957.83	970.74	960.54	960.56	1077.19	960.95	961.61	1080.73	
08/28/97		1081.96	957.63	970.61	960.37	960.38	1077.04	960.77	961.44	1080.60	
08/29/97		1081.83	957.48	970.48	960.17	960.19	1076.91	960.62	961.25	1080.49	
08/30/97		1081.72	957.33	970.44	960.02	960.06	1076.80	960.49	961.14	1080.43	
08/31/97		1081.64	957.18	970.29	959.83	959.84	1076.71	960.36	960.96	1080.36	