REPORT

QUARTERLY GROUNDWATER MONITORING RESULTS, JANUARY-FEBRUARY 1998

at the:

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EXECUTIVE SUMMARY

Presented in this report are the results of the sixth long-term groundwater monitoring event (January-February 1998) of the Comprehensive Environmental Response, Compensation and Liability Act Remedial Investigation/Feasibility Study at the NASA-Jet Propulsion Laboratory (JPL). This event is part of the long-term quarterly groundwater monitoring program that was initiated in response to requests from the United States Environmental Protection Agency.

From January 14 to February 11, 1998, groundwater samples were collected from JPL monitoring wells (both on- and off-site) and analyzed for volatile organic compounds (VOCs), metals (arsenic, lead, total chromium, and hexavalent chromium), perchlorate, and major anions/cations.

Results indicated that only three VOCs (carbon tetrachloride, trichloroethene, and 1,2-dichloroethane) were detected in concentrations above state or federal Maximum Contaminant Levels (MCLs) for drinking water. Perchlorate was detected in 6 wells above its interim action level of 18 μg/l. Hexavalent chromium was found in one well. To date, an MCL has not been established for hexavalent chromium. Arsenic, total chromium and lead were not detected at concentrations above their MCLs. A summary of the sampling procedure is included in Section 2.0 and a summary of the analytical results is included in Section 3.0.

Results from major anion/cation analyses (water chemistry) were used to identify the general water types beneath JPL during this sampling event. These results are presented in Section 4.0. Water-level measurements, recorded before and after sampling activities, are presented in Section 5.0.

1.0 INTRODUCTION

This report summarizes the results from the sixth sampling event of the long-term quarterly groundwater monitoring program currently being conducted at the NASA-Jet Propulsion Laboratory (JPL). The purpose of the program is to monitor the elevation, flow direction, and quality of the groundwater beneath and adjacent to the JPL site and to generate data for the JPL Comprehensive Environmental Response, Compensation and Liability Act Remedial Investigation/Feasibility Study. From January 14 to February 11, 1998, Foster Wheeler Environmental Corporation (Foster Wheeler) personnel sampled the JPL monitoring wells (both on- and off-site). In addition, water level measurements at each well were taken prior to (January 12, 1998), and after sampling (February 12, 1998).

The locations of the JPL groundwater monitoring wells are shown in Figure 1-1. Monitoring wells MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-24 are deep, multi-port (MP) 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 located just below the water table. Monitoring well MW-2 has been replaced with well MW-14 (Figure 1-1) as a JPL sampling point. A summary of the well construction details for the JPL groundwater monitoring wells is included in Table 1-1. During this event, screen 1 of deep, multi-port well MW-18 could not be sampled due to depressed water levels.

All of the groundwater samples collected at JPL were taken to Montgomery Watson Laboratories in Pasadena, California, for chemical analysis. Montgomery Watson Laboratories is certified by the California Department of Health Services. The following analyses were performed.

Analysis	EPA Method
Volatile Organic Compounds	524.2
Total Chromium	200.8
Hexavalent Chromium	7196
Total Lead	200.8
Total Arsenic	200.9
Major Cations and Major Anions	Various
Perchlorate	300.0, modified

In addition to groundwater samples, field quality assurance/quality control (QA/QC) samples, including trip blanks, equipment blanks, duplicate samples, and a field blank were collected for laboratory analysis. Sampling records for each shallow well are included in Appendix A, and sampling records and piezometric pressure profiling records for each deep multi-port well are included in Appendix B. Field instrument calibration forms are included in Appendix C, and laboratory analytical reports and associated chain-of-custody forms are included in Appendix D.

2.0 SAMPLING AND FIELD QUALITY ASSURANCE/ QUALITY CONTROL PROCEDURES

Two different procedures were used in 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 outlined below.

2.1 SHALLOW MONITORING WELLS

The sampling procedure described below was applied to all the JPL shallow monitoring wells, which includes wells MW-1, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-13, MW-15, and MW-16.

The primary equipment used to sample the shallow wells included a dedicated 2-inch Grundfos Redi-Flo2® pump, a pump controller, and a 220-volt generator. All of the dedicated 2-inch Grundfos Redi-Flo2® pump systems were decontaminated prior to their installation before the beginning of the long-term quarterly monitoring program. Details of decontamination procedures for the Grundfos Redi-Flo2® pump systems are outlined in a previous document (Ebasco, 1993a).

Prior to 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 is not representative of undisturbed aquifer conditions. This purged groundwater was discharged into 500- or 1,000-gallon polyethylene storage tanks for disposal by JPL personnel pursuant to Environmental Protection Agency (EPA) guidance on the management of investigation-derived wastes (EPA, 1991 and 1992).

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 10 percent of each other) and the turbidity was less than 5 Nephelometric Turbidity Units, the groundwater samples were collected with the dedicated pump. During sampling for volatile organic compounds (VOCs), the pump rate was reduced to approximately 0.02 gallons per minute to minimize sample agitation. All information concerning sampling was noted on the Well Development/Well Sampling Log Forms included in Appendix A.

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

Calibration, or standardization, of the field instruments used to measure temperature, pH, conductivity, and turbidity, was performed to the manufacturer's specifications at the beginning and end of each sampling day. Field instrument calibration forms are included in Appendix C.

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. Field personnel using this equipment were trained by Westbay personnel to ensure proper use. Copies of the detailed operations manuals for the Westbay pressure profiling/sampling probe are included in the OU-1 and OU-3 Field Sampling and Analysis Plans (Ebasco, 1993a; 1994).

The Westbay sampling probe and sample bottles were decontaminated prior to sampling each screened interval in the deep MP wells according to the following procedures:

- Wash each 250-ml stainless steel sample bottle in a solution of non-phosphate detergent (Liquinox®) and distilled water followed by washing each bottle in a solution of an acidic detergent (Citranox®) and distilled water.
- Rinse each bottle twice with deionized water.
- The interior surfaces of the Westbay sampling probe, and the hoses and valves associated with the Westbay sample bottles, were decontaminated by forcing several volumes of a solution of Liquinox® and distilled water through them followed by forcing several volumes of a Citranox® and distilled water solution through them. A final rinse with deionized water was carried out. Each of these decontamination procedures was completed using a clean plastic squeeze bottle used only for this purpose.

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 (final paragraph in Section 2.1). A final sample was collected and analyzed for pH, conductivity, temperature, and turbidity to ensure continuity of aquifer conditions during sampling. Results of the field analyses were recorded on well development logs, which are included in Appendix B. Calibration and maintenance of field instruments were carried out according to procedures described previously (Ebasco, 1993a; 1994).

2.3 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

To verify the quality of the groundwater samples collected from the JPL monitoring wells, field QA/QC samples were collected. The field QA/QC program included the collection of duplicate

samples, equipment blanks and trip blanks. In addition, laboratory QA/QC samples were used by the laboratory according to analytical method requirements.

Duplicate samples for VOCs, metals and perchlorate (ClO_4) analyses were collected from shallow groundwater monitoring wells MW-10 and MW-13, and deep MP wells MW-4 (screen 2) and MW-12 (screen 2). In addition, after every 10 samples that were collected for VOC analyses, a matrix spike (MS) sample and a matrix spike duplicate (MSD) sample were collected and submitted to the laboratory for the laboratory's use in verifying the accuracy of the analytical method. Similarly, after every 10 samples that were collected for metals analyses, a MS/MSD sample was collected and submitted to the laboratory for their use.

One equipment blank sample was collected from the Westbay sample bottles during each day of sampling the deep MP wells. Equipment blanks were collected by passing American Society of Testing Materials (ASTM) Type II organic free water (provided by the laboratory) through the sampling equipment as a final rinse after the equipment had been decontaminated. Equipment blanks were analyzed for the same constituents as the groundwater samples to identify potential cross contamination due to inadequate decontamination procedures. Equipment blanks were not collected during sampling of the shallow wells as dedicated sampling equipment was used.

A trip blank, consisting of ASTM Type II water placed in two 40-ml glass vials by the laboratory, was transported with the empty sample bottles to the field and back to the laboratory with the groundwater samples. One trip blank was submitted for VOC analysis with each shipment of groundwater samples. Trip blanks were used to identify potential cross contamination of groundwater samples during transport.

During this sampling event, one field blank was collected at well MW-7. The field blank is used to determine whether ambient conditions or sample containers may effect analytical results. The field blank consisted of sample bottles, filled with ASTM Type II organic free water supplied by the laboratory, left open at the well head during the sampling of the well. After sampling, the field-blank bottles were capped and analyzed for the same constituents as the groundwater samples.

3.0 ANALYTICAL RESULTS

JPL groundwater monitoring wells MW-1, and MW-3 through MW-24 were sampled from January 14 to February 11, 1998 with the exception of screen 1 of MW-18, which was above the water table. MW-2 was not sampled as it was replaced as a JPL monitoring point by deep multi-port well MW-14.

The groundwater samples were analyzed for VOCs, total chromium (Cr), hexavalent chromium (Cr^{6+}), total lead (Pb), total arsenic (As), and ClO_4. All samples were also analyzed for general water chemistry parameters that included major cations and anions [sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), iron (Fe), alkalinity (CO_3 + HCO_3), chloride (Cl), sulfate (SO_4), nitrate (NO_3-N)], total dissolved solids (TDS), specific conductivity and pH. A summary of the samples collected, sample numbers used, and the analyses performed on each sample are presented in Table 3-1. Analytical laboratory reports and associated chain-of-custody forms are included in Appendix D.

3.1 VOLATILE ORGANIC COMPOUNDS RESULTS

Groundwater samples collected during the January-February 1998 sampling event were analyzed for over 60 different VOCs in accordance with EPA Method 524.2. To present the results from the multiport wells with concentration contour maps, the JPL aquifer was divided into four (4) aquifer layers based on correlations interpreted from lithologic cross sections. Listed in Table 3-2 are the JPL monitoring well screens and their corresponding aquifer layers. Results of the analyses for VOCs in the January-February 1998 samples are summarized in Table 3-3 along with the Maximum Contaminant Levels (MCLs) for drinking water as listed in Title 22 of the California Code of Regulations and in the EPA Health Advisory Guidelines. A small number of compounds were detected in these samples, and only three VOCs [carbon tetrachloride (CCl_4), trichloroethene (TCE), and 1,2-dichloroethane (1,2-DCA)] were found in concentrations exceeding state and/or federal MCLs (Table 3-3). The concentrations of CCl_4, TCE, and 1,2-DCA detected in each aquifer layer are contoured on maps to better present the spatial distribution of each constituent. In addition, contour maps of tetrachloroethene (PCE) concentrations are also included. Where a constituent was not detected in a particular aquifer layer, a contour map was not prepared for that layer. Carbon tetrachloride detected in aquifer layers 1, 2 and 3 are contoured in Figures 3-1, 3-2 and 3-3, respectively. Figures 3-4, 3-5 and 3-6 include contours of TCE concentrations detected in layers 1, 2 and 3, respectively, and Figure 3-7 contains contours of 1,2-DCA concentrations detected in aquifer layer 1. Figures 3-8, 3-9 and 3-10 include contours of PCE detected in aquifer layers 1, 2 and 3. Only concentrations exceeding MCLs are contoured with the exception of PCE, which was not detected above its MCLs and is therefore

contoured to its detection limit (0.5 µg/l). A summary of VOC results collected during all six of the long-term quarterly sampling events completed to date are provided in Table 3-4.

CCl_4 in excess of the state MCL (0.5 µg/l) was found in nine of the on-site wells, and two of the off-site wells (Table 3-3, Figures 3-1, 3-2 and 3-3). The federal MCL (5.0 µg/l) was exceeded in five on-site wells. The highest concentrations of CCl_4 were found in on-site wells MW-7, MW-12 (screen 3), MW-16 and MW-24 (screen 1).

TCE in excess of the state and federal MCL (5.0 µg/l) was detected in three on-site wells, and two off-site wells (Table 3-3, Figures 3-4, 3-5, and 3-6). The highest levels of TCE were found in on-site wells MW-7 and MW-24 (screen 1), and off-site well MW-21 (screen 1).

1,2-DCA concentrations above the state MCL (0.5 µg/l) were found in two on-site wells (Table 3-3 and Figure 3-7). 1,2-DCA was not detected above the state MCL in any of the off-site wells, and the federal MCL (5.0 µg/l) was not exceeded in any of the wells.

PCE was detected in ten on-site wells and four off-site wells, although not at concentrations exceeding the state and federal MCL (5.0 µg/l) (Figures 3-8, 3-9 and 3-10).

3.2 PERCHLORATE RESULTS

Perchlorate analyses were conducted on groundwater samples from the January-February 1998 event by ion chromatography (EPA 300.0, modified). Results are included in Table 3-3. No MCLs for ClO_4 have been established to date. Perchlorate was detected in a total of 16 wells (Table 3-3), of which 6 exceeded the interim action level (18 µg/l). Perchlorate concentrations exceeding the interim action level are contoured in Figures 3-11 and 3-12 for aquifer layers 1 and 2, respectively. ClO_4 was not detected above the interim action level in aquifer layers 3 and 4. The highest ClO_4 levels were observed on-site in wells MW-7, MW-13, MW-16, and MW-24 (screens 1 and 2).

3.3 METALS RESULTS

Groundwater samples from the January-February 1998 sampling event were analyzed for the following suite of metals: total As, total Pb, total Cr, and Cr^{6+}. The results of these analyses are summarized in Table 3-5.

Total As was detected in two wells (MW-3 screen 5 and MW-24 screen 3) at concentrations below the state and federal MCL (0.05 mg/l). Total Pb was detected in wells MW-3 (screen 5), MW-13, MW-14 (screens 1-4) and MW-21 (screen 3). Concentrations of Pb ranged from 0.002 to 0.008 mg/L, which are well below the state MCL (0.050 mg/L), and the federal action level (0.15 mg/L). Total Cr was detected in three wells (MW-7, MW-13 and MW-14 screen 3) at

concentrations below state and federal MCLs (0.05 and 0.10 mg/l, respectively). Hexavalent chromium was detected only in on-site shallow well MW-13. At this time, state or federal agencies have not established an MCL for Cr^{6+}.

Table 3-6 contains a summary of metals data from all six long-term quarterly sampling events completed to date.

3.4 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

Review of the QA/QC data provided with the laboratory analytical results (Appendix D) indicates that results obtained from January-February 1998 samples are acceptable for their intended use of characterizing aquifer quality. Surrogate compound, matrix and blank spike, and method blank results were used by the laboratory to determine the accuracy and precision of the analytical techniques and to identify anomalous results due to laboratory contamination or instrument malfunction.

In addition to laboratory QA/QC samples, Foster Wheeler personnel collected QA/QC samples in the field. These samples included duplicate samples, equipment blanks, trip blanks and a field blank.

Duplicate samples were used as an independent means of evaluating the precision of the laboratory analyses. Duplicate groundwater samples for VOCs, ClO_4 and metals analyses were collected from MW-4 (screen 2), MW-12 (screen 2), MW-10, and MW-13. All of the analytical results for the duplicate samples were similar to the results of the original groundwater samples (Table 3-3 and Table 3-5).

Nineteen equipment blanks were submitted for analysis during the January-February 1998 sampling event. Only four contained measurable amounts of the analyzed constituents. One equipment blank contained carbon disulfide and Pb. The carbon disulfide was determined by the laboratory to have resulted as carry over from analysis of samples from another site. However, the low level of lead detected in the equipment blank was also detected at similar levels in four of the five associated groundwater samples (MW-21, screens 1-4), suggesting possible cross contamination. Another equipment blank contained Freon 113. The associated groundwater sample (MW-22 screen 1) also contained Freon 113, also suggesting possible cross contamination. A third equipment blank contained an unidentifiable VOC (RT=3.41), which was not detected in associated groundwater samples. A fourth equipment blank contained from 0.7 to 20 µg/l of a variety of VOCs including: 1,2,4-trimethylbenzene, two alkyl benzenes, benzene, ethyl benzene, m,p-xylenes, o-xylene, toluene, and four unidentified VOC peaks (RTs=3.40, 4.04, 5.81, and 6.98). None of these compounds were detected in associated groundwater samples, and therefore, cross contamination is not indicated. The origin of these compounds in that equipment blank is not known.

A total of 20 trip blanks were also submitted along with the January-February 1998 groundwater samples. Four trip blanks contained carbon disulfide, but this was also determined by the laboratory to have resulted from carry over from samples from another site during analysis. One other trip blank contained two unidentified VOCs, neither of which was detected in associated groundwater samples.

There were no VOCs or metals detected in the field blank, indicating no influence of ambient conditions on groundwater analytical results.

4.0 GENERAL WATER CHEMISTRY

As part of this groundwater monitoring event, groundwater samples were submitted for analysis of major cations and anions in an effort to further understand the natural water chemistry of the groundwater beneath JPL. Samples from each of the JPL shallow monitoring wells, and each of the deep MP wells, were analyzed for major cations (Ca, Fe, Mg, Na, and K), major anions (Cl, SO_4, NO_3, CO_3 + HCO_3), pH, and TDS. The water chemistry results for this quarterly sampling event are summarized in Table 4-1.

4.1 ANALYTICAL RESULTS

To illustrate the relative proportions of the major cations and anions in each groundwater sample, the water chemistry results from the January-February 1998 event have been compiled as Stiff diagrams (Figures 4-1, 4-2 and 4-3). Review of the water chemistry data from this investigation indicates that the majority of groundwater sampled at JPL can be classified as one of four general types, based on the predominant cation and anion, and the occurrence of other ions. These general water types include:

Type 1. Calcium-bicarbonate groundwater. Groundwater with Ca as the dominant cation and HCO_3 as the dominant anion.

Type 2. Sodium-bicarbonate groundwater. Groundwater with Na as the dominant cation and HCO_3 as the dominant anion.

Type 3. Calcium-bicarbonate/chloride/sulfate groundwater. Groundwater with Ca as the dominant cation and HCO_3 as the dominant anion, but with relatively elevated Cl and SO_4 concentrations.

Type 4. Calcium/sodium-bicarbonate groundwater. Groundwater with Ca as the dominant cation, but with relatively elevated Na concentrations and HCO_3 as the dominant anion. This water type likely represents a blend of Types 1 and 2.

Based on this scheme, waters classified as Type 1 and Type 3 are very similar in that both types contain calcium as the predominant cation and bicarbonate as the predominant anion. Type 3 and Type 4 groundwaters, however, contain slightly higher concentrations of chloride and sulfate, or sodium ions, respectively, relative to those of Type 1. Other potential mixtures of the first three water types include a mixture of Types 1 and 3 (Type 5) and a mixture of Types 2 and 3 (Type 6).

All of the shallow wells contained calcium-bicarbonate or calcium-bicarbonate/chloride sulfate waters during the January-February 1998 sampling event (Figure 4-1). Calcium-bicarbonate and calcium-bicarbonate/chloride/sulfate waters were also the predominant compositional types found in the two uppermost screened intervals of all the deep multi-port wells except MW-20 and MW-24

(Figures 4-2 and 4-3). Calcium-bicarbonate waters were also seen in various lower screens including MW-11 (screens 3 and 4), MW-12 (screens 3 and 4), MW-14 (screen 4), MW-17 (screens 3-5), MW-18 (screen 3), MW-19 (screen 4), and MW-21 (screen 4). Lower intervals containing elevated concentrations of chloride and sulfate (Type 3 waters) included MW-14 (screen 3), MW-19 (screens 3 and 5), and MW-21 (screens 3 and 5).

Sodium-bicarbonate waters (Type 2) were found in the lower intervals of deep multi-port wells MW-3 (screens 3-5), MW-4 (screens 4 and 5), MW-11 (screen 5), MW-14 (screen 5), MW-18 (screen 5), MW-20 (screens 2-5), MW-22 (screen 5), MW-23 (screen 5) and MW-24 (screens 2-5). Apparent blending of Type 2 water with Type 1 (Type 4 water) was noted in MW-4 (screen 3), MW-12 (screen 5), MW-18 (screen 4), MW-22 (screens 3 and 4), MW-23 (screens 3 and 4), and MW-24 (screen 1).

4.2 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

To evaluate the general quality of the water chemistry data, two independent geochemical quality control checks of the analytical results from the January-February 1998 samples were performed. These checks included calculation of total ion-charge balances, and comparison of measured TDS to calculated TDS. The results of these checks for the January-February 1998 water-chemistry results are presented in Table 4-2. Charge balances are expressed as the percent difference between the sum of the equivalent weights of all of the anions and all of the cations analyzed (Freeze and Cherry, 1979). The ideal range for charge balances is $\pm$5 percent, although charge balance errors up to $\pm$10 percent are considered acceptable.

The charge balances for samples analyzed for major anions and cations during the January-February 1998 sampling event are within the ideal range ($\pm$5 percent) for 60 of the 74 sets of water chemistry results. The charge balance for the remaining sets of water chemistry analyses were slightly above 5 percent (Table 4-2), and only two exceeded the range of $\pm$10%. This indicates that the results are acceptable for their intended use.

TDS results can be used to verify that all of the important water-chemistry constituents have been analyzed. This is done by comparing the measured laboratory TDS value to a calculated TDS value (calculated as the sum of the concentrations of all the major anions and cations) for each sample. Under ideal conditions, the ratio should range from 1.0 to 1.2 (Oppenheimer and Eaton, 1986).

The ratio of measured to calculated TDS values for the January-February 1998 water-chemistry results fell within the ideal range (1.0 to 1.2) for 65 of the 74 sets of water chemistry analyses performed (Table 4-2). The ratio for the remaining nine sets of water chemistry data fell slightly outside this ideal range suggesting sample inhomogeneity errors in the measured TDS values. However, these data are suitable for their intended use of identifying differences in water chemistry across the site.

5.0 WATER-LEVEL MEASUREMENTS

Water-level measurements were recorded before sampling, on January 12, 1998, and after sampling on February 12, 1998. Water-level data in the shallow wells were collected using a Solinst® water-level meter that utilized a water-sensor probe attached to a measuring tape. As the probe was lowered into a well, contact with the groundwater completed a circuit between two electrodes in the probe, thus activating a sounding device attached to a reel at the surface. Depth to groundwater was then read directly from the measuring tape at the top of the well casing.

In the deep MP wells, the potentiometric head at each sampling port in each screened interval was measured with a pressure-transducer probe manufactured by Westbay specifically for the unique casing used in these wells.

Water table elevation measurements taken before sampling are provided in Table 5-1 and have been contoured in Figure 5-1. Water table elevation measurements taken after sampling provided in Table 5-2 and are contoured in Figure 5-2. The potentiometric heads measured at each deep MP well screen before and after sampling are presented graphically in Figures 5-3 and 5-4, respectively. The potentiometric pressure profile records for the deep MP wells are included in Appendix B.

As indicated by Figures 5-1 and 5-2, groundwater flow was primarily to the south and east both before and after sampling. The "trough" of depression observed in Figure 5-1 suggests active pumping by three of the city of Pasadena municipal production wells immediately before this sampling event. This is supported by data shown in Figure 5-3. The effects of the pumps are reflected by relatively large variations in the potentiometric heads measured at the different screens within each MP well, notably those closest to the production wells (MW-3, -4, -11, -12 and -19).

Conversely, data presented in Figures 5-2 and 5-4 suggest that the pumps were not operating when the water level measurements were taken at the conclusion of this sampling event (February 12, 1998). However, it is evident in Figure 5-2 that a mounding effect was observed near MW-4 and MW-5. This is likely due to the storm drain outflow resulting from concurrent heavy rains.

6.0 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		839.82-849.82	2	47	0.010	4" low-carbon steel
					344-354		745.82-755.82	3	45	0.010	4" low-carbon steel
					555-565		534.82-544.82	4	39	0.010	4" low-carbon steel
					650-660		433.82-443.82	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		835.72-845.72	2	34	0.010	4" low-carbon steel
					318-328		754.72-764.72	3	42	0.010	4" low-carbon steel
					389-399		683.72-693.72	4	54	0.010	4" low-carbon steel
					509-519		563.72-573.72	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-Pornt	1992	Mud Rotary	680	140-150	1139.35	989.35-999.35	1	24	0.010	4" low-carbon steel
					250-260		879.35-889.35	2	22	0.010	4" low-carbon steel
					420-430		709.35-719.35	3	26	0.010	4" low-carbon steel
					515-525		614.35-624.35	4	26	0.010	4" low-carbon steel
					630-640		499.35-509.35	5	28	0.010	4" low-carbon steel
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

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-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
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

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-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
MW-22	Deep Multi-Port	1997	Mud Rotary	634	239-249	1176.81	927.81-937.81	1	24	0.010	4" low-carbon steel
					324-334		842.81-852.81	2	21	0.010	4" low-carbon steel
					384-394		782.81-792.81	3	22	0.010	4" low-carbon steel
					464-474		702.81-712.81	4	23	0.010	4" low-carbon steel
					584-594		582.81-592.81	5	22	0.010	4" low-carbon steel
MW-23	Deep Multi-Port	1997	Mud Rotary	590	170-180	1108.34	928.34-938.34	1	23	0.010	4" low-carbon steel
					250-260		843.34-858.34	2	20.5	0.010	4" low-carbon steel
					315-325		783.34-793.34	3	18	0.010	4" low-carbon steel
					440-450		658.34-668.34	4	25	0.010	4" low-carbon steel
					540-550		558.34-568.34	5	22.5	0.010	4" low-carbon steel
MW-24	Deep Multi-Port	1997	Mud Rotary	725	275-285	1200.91	915.91-925.91	1	25	0.010	4" low-carbon steel
					370-380		820.91-830.91	2	50	0.010	4" low-carbon steel
					430-440		760.91-770.91	3	25	0.010	4" low-carbon steel
					550-560		640.91-650.91	4	19	0.010	4" low-carbon steel
					675-685		515.91-525.91	5	16	0.010	4" low-carbon steel

TABLE 3-1

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

Sample Location	Sample Number	Sampling Date	Sample Type	VOCs EPA 524.2	Total Cr, As, Pb, Major Cations (various)	Hexavalent Cr EPA 7196	Major Anions and TDS EPA 300.0/310.1	Perchlorate EPA 300.0 Modified
MW-1	MW-981-079	2/10/98	GW	X	X	X	X	X
MW-3								
Screen 1	MW-981-078	1/27/98	GW	X	X	X	X	X
Screen 2	MW-981-077	1/27/98	GW	X	X	X	X	X
Screen 3	MW-981-076	1/27/98	GW	X	X	X	X	X
Screen 4	MW-981-075	1/26/98	GW	X	X	X	X	X
Screen 5	MW-981-074	1/26/98	GW	X	X	X	X	X
MW-4								
Screen 1	MW-981-073	1/28/98	GW	X	X	X	X	X
Screen 2	MW-981-072	1/28/98	GW	X	X	X	X	X
Screen 2	MW-981-071	1/28/98	DUP	X	X (no cations)	X		X
Screen 3	MW-981-070	1/28/98	GW	X	X	X	X	X
Screen 4	MW-981-069	1/27/98	GW	X	X	X	X	X
Screen 5	MW-981-068	1/27/98	GW	X	X	X	X	X
MW-5	MW-981-067	2/10/98	GW	X	X	X	X	X
MW-6	MW-981-066	2/10/98	GW	X	X	X	X	X
MW-7	MW-981-065	2/11/98	GW	X	X	X	X	X
MW-8	MW-981-064	2/11/98	GW	X	X	X	X	X
MW-9	MW-981-063	2/10/98	GW	X	X	X	X	X
MW-10	MW-981-062	2/10/98	GW	X	X	X	X	X
MW-10	MW-981-061	2/10/98	DUP	X	X (no cations)	X		X
MW-11								
Screen 1	MW-981-060	1/29/98	GW	X	X	X	X	X
Screen 2	MW-981-059	1/29/98	GW	X	X	X	X	X
Screen 3	MW-981-058	1/29/98	GW	X	X	X	X	X
Screen 4	MW-981-057	1/28/98	GW	X	X	X	X	X
Screen 5	MW-981-056	1/28/98	GW	X	X	X	X	X

GW: Groundwater Sample
DUP: Duplicate Sample
1: Not Sampled: no water over screen

TABLE 3-1

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

Sample Location	Sample Number	Sampling Date	Sample Type	VOCs EPA 524.2	Total Cr, As, Pb, Major Cations (various)	Hexavalent Cr EPA 7196	Major Anions and TDS EPA 300.0/310.1	Perchlorate EPA 300.0 Modified
MW-12								
Screen 1	MW-981-055	1/30/98	GW	X	X	X	X	X
Screen 2	MW-981-054	1/30/98	GW	X	X	X	X	X
Screen 2	MW-981-053	1/30/98	DUP	X	X (no cations)	X		X
Screen 3	MW-981-052	1/30/98	GW	X	X	X	X	X
Screen 4	MW-981-051	1/29/98	GW	X	X	X	X	X
Screen 5	MW-981-050	1/29/98	GW	X	X	X	X	X
MW-13	MW-981-049	1/26/98	GW	X	X	X	X	X
MW-13	MW-981-048	1/26/98	DUP	X	X (no cations)	X		X
MW-14								
Screen 1	MW-981-047	1/23/98	GW	X	X	X	X	X
Screen 2	MW-981-046	1/23/98	GW	X	X	X	X	X
Screen 3	MW-981-045	1/23/98	GW	X	X	X	X	X
Screen 4	MW-981-044	1/23/98	GW	X	X	X	X	X
Screen 5	MW-981-043	1/23/98	GW	X	X	X	X	X
MW-15	MW-981-042	2/10/98	GW	X	X	X	X	X
MW-16	MW-981-041	2/11/98	GW	X	X	X	X	X
MW-17								
Screen 1	MW-981-040	1/16/98	GW	X	X	X	X	X
Screen 2	MW-981-039	1/15/98	GW	X	X	X	X	X
Screen 3	MW-981-038	1/16/98	GW	X	X	X	X	X
Screen 4	MW-981-037	1/16/98	GW	X	X	X	X	X
Screen 5	MW-981-036	1/16/98	GW	X	X	X	X	X

GW: Groundwater Sample
DUP: Duplicate Sample
1: Not Sampled: no water over screen

TABLE 3-1

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

Sample Location	Sample Number	Sampling Date	Sample Type	VOCs EPA 524.2	Total Cr, As, Pb, Major Cations (various)	Hexavalent Cr EPA 7196	Major Anions and TDS EPA 300.0/310.1	Perchlorate EPA 300.0 Modified
MW-18								
Screen 1	Not Sampled [1]							
Screen 2	MW-981-034	1/15/98	GW	X	X	X	X	X
Screen 3	MW-981-033	1/14/98	GW	X	X	X	X	X
Screen 4	MW-981-032	1/14/98	GW	X	X	X	X	X
Screen 5	MW-981-031	1/14/98	GW	X	X	X	X	X
MW-19								
Screen 1	MW-981-030	1/21/98	GW	X	X	X	X	X
Screen 2	MW-981-029	1/21/98	GW	X	X	X	X	X
Screen 3	MW-981-028	1/21/98	GW	X	X	X	X	X
Screen 4	MW-981-027	1/21/98	GW	X	X	X	X	X
Screen 5	MW-981-026	1/21/98	GW	X	X	X	X	X
MW-20								
Screen 1	MW-981-025	1/20/98	GW	X	X	X	X	X
Screen 2	MW-981-024	1/20/98	GW	X	X	X	X	X
Screen 3	MW-981-023	1/20/98	GW	X	X	X	X	X
Screen 4	MW-981-022	1/20/98	GW	X	X	X	X	X
Screen 5	MW-981-021	1/20/98	GW	X	X	X	X	X
MW-21								
Screen 1	MW-981-020	2/11/98	GW	X	X	X	X	X
Screen 2	MW-981-019	1/22/98	GW	X	X	X	X	X
Screen 3	MW-981-018	1/22/98	GW	X	X	X	X	X
Screen 4	MW-981-017	1/22/98	GW	X	X	X	X	X
Screen 5	MW-981-016	1/22/98	GW	X	X	X	X	X

GW: Groundwater Sample
DUP: Duplicate Sample
1: Not Sampled: no water over screen

TABLE 3-1

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

Sample Location	Sample Number	Sampling Date	Sample Type	VOCs EPA 524.2	Total Cr, As, Pb, Major Cations (various)	Hexavalent Cr EPA 7196	Major Anions and TDS EPA 300.0/310.1	Perchlorate EPA 300.0 Modified
MW-22								
Screen 1	MW-981-015	2/6/98	GW	X	X	X	X	X
Screen 2	MW-981-014	2/4/98	GW	X	X	X	X	X
Screen 3	MW-981-013	2/4/98	GW	X	X	X	X	X
Screen 4	MW-981-012	2/4/98	GW	X	X	X	X	X
Screen 5	MW-981-011	2/4/98	GW	X	X	X	X	X
MW-23								
Screen 1	MW-981-010	2/9/98	GW	X	X	X	X	X
Screen 2	MW-981-009	2/9/98	GW	X	X	X	X	X
Screen 3	MW-981-008	2/9/98	GW	X	X	X	X	X
Screen 4	MW-981-007	2/9/98	GW	X	X	X	X	X
Screen 5	MW-981-006	2/9/98	GW	X	X	X	X	X
MW-24								
Screen 1	MW-981-005	2/2/98	GW	X	X	X	X	X
Screen 2	MW-981-004	2/3/98	GW	X	X	X	X	X
Screen 3	MW-981-003	2/5/98	GW	X	X	X	X	X
Screen 4	MW-981-002	2/2/98	GW	X	X	X	X	X
Screen 5	MW-981-001	1/30/98	GW	X	X	X	X	X

GW: Groundwater Sample
DUP: Duplicate Sample
1: Not Sampled: no water over screen

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-1	X			
MW-3				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-4				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-5	X			
MW-6	X			
MW-7	X			
MW-8	X			
MW-9	X			
MW-10	X			
MW-11				
Screen 1	X			
Screen 2	X			
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-12				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-13	X			
MW-14				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-15	X			
MW-16	X			
MW-17				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-18				
Screen 1	X			
Screen 2	X			
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-19				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-20				
Screen 1	X			
Screen 2		X		
Screen 3			X	
Screen 4			X	
Screen 5				X
MW-21				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-22				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-23				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-24				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

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

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-1	MW-981-079	--	--	--	--	--	--	--	--	--	--
MW-3											
Screen 1	MW-981-078	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-981-077	--	--	--	--	--	--	--	--	--	--
Screen 3	MW-981-076	**1.2**	--	--	--	--	--	--	2.7	--	6.5
Screen 4	MW-981-075	--	--	--	--	--	--	--	--	4.7 Carbon disulfide[3]	--
Screen 5	MW-981-074	--	--	--	--	--	--	--	--	--	--
MW-4											
Screen 1	MW-981-073	--	--	--	--	--	--	--	--	--	9.6
Screen 2	MW-981-072	**1.9**	2.7	0.6	--	--	--	--	1.8	--	**30**
Screen 2 (DUP)	MW-981-071	**1.7**	2.4	--	--	--	--	--	1.7	--	**32**
Screen 3	MW-981-070	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-981-069	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-068	--	--	--	--	--	--	--	--	7.4 Hexane	--
MW-5	MW-981-067	--	--	--	--	--	--	--	--	--	4.2
MW-6	MW-981-066	--	--	2.0	1.0	--	--	--	--	--	--
MW-7	MW-981-065	**150**	**24**	3.7	--	**0.8**	2.1	6.4	13	--	**720**
MW-8	MW-981-064	**1.8**	1.3	--	--	--	--	--	0.8	0.8 Freon 11	11
MW-9	MW-981-063	--	--	--	--	--	--	--	--	3.9 Unknown RT=6.21	--
MW-10	MW-981-062	--	1.1	2.2	1.6	--	--	--	1.4	--	4.7
MW-10 (DUP)	MW-981-061	--	0.9	2.1	1.4	--	--	--	1.2	--	5.1

E: Estimated concentration; result exceeded calibration range
--: Not detected
a: Only VOCs for which MCLs have been established are listed
1: Not sampled, no water over screen
2: California Department of Health Services Interim Action Level
3: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)
DUP: Duplicate
NE: Not established

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

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

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-11											
Screen 1	MW-981-060	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-981-059	**0.7**	--	--	--	--	--	--	0.7	--	--
Screen 3	MW-981-058	--	--	--	--	--	--	--	1.4	--	--
Screen 4	MW-981-057	--	--	--	--	--	--	--	0.5	--	--
Screen 5	MW-981-056	--	--	--	--	--	--	--	--	44 Carbon disulfide[3]	--
MW-12											
Screen 1	MW-981-055	--	--	--	--	--	--	--	0.8	--	--
Screen 2	MW-981-054	**1.1**	--	--	--	--	--	--	0.6	--	6.3
Screen 2 (*DUP*)	MW-981-053	**1.7**	--	--	--	--	--	--	0.7	--	5.7
Screen 3	MW-981-052	**23E**	--	--	--	--	--	--	2.3	--	5.9
Screen 4	MW-981-051	**4.0**	--	--	--	--	--	--	1.1	--	8.0
Screen 5	MW-981-050	**1.3**	--	--	--	--	--	--	--	--	--
MW-13	MW-981-049	**12**	**5.2**	0.5	--	--	--	--	2.9	1.8 Freon 11	**99**
MW-13 (DUP)	MW-981-048	**11**	4.7	0.5	--	--	0.5	--	2.8	1.5 Freon 11	**97**
MW-14											
Screen 1	MW-981-047	--	--	--	2.1	--	--	--	0.5	--	--
Screen 2	MW-981-046	--	--	1.2	0.7	--	--	--	--	8.9 Carbon disulfide[3]	9.0
Screen 3	MW-981-045	--	--	--	--	--	--	--	--	--	5.6
Screen 4	MW-981-044	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-043	--	--	--	--	--	--	--	--	4.6 Carbon disulfide[3]	--
MW-15	MW-981-042	--	--	--	--	--	--	--	--	--	--
MW-16	MW-981-041	**30**	3.5	1.0	--	--	1.3	--	14	--	**1230**

E: Estimated concentration; result exceeded calibration range
--: Not detected
a: Only VOCs for which MCLs have been established are listed
1: Not sampled, no water over screen
2: California Department of Health Services Interim Action Level
3: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)
DUP: Duplicate
NE: Not established

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

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

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-17											
Screen 1	MW-981-040	--	--	--	--	--	--	--	2.4	0.5 Bromodichloromethane	--
Screen 2	MW-981-039	--	--	--	--	--	--	--	5.4	--	--
Screen 3	MW-981-038	**3.3**	**8.7**	--	--	--	--	--	6.0	0.8 Bromodichloromethane	**25**
Screen 4	MW-981-037	--	**7.3**	0.6	--	--	--	--	1.2	--	16
Screen 5	MW-981-036	--	**7.9**	--	--	--	--	--	1.5	--	15
MW-18											
Screen 1	MW-981-035	Not Sampled [1]									
Screen 2	MW-981-034	--	--	--	--	--	--	--	2.9	0.8 Bromodichloromethane	--
Screen 3	MW-981-033	--	1.9	1.7	--	--	--	--	6.6	4.1 Unknown RT=4.33	--
Screen 4	MW-981-032	**2.6**	--	1.0	--	--	--	--	0.5	--	11
Screen 5	MW-981-031	--	--	--	--	--	--	--	--	--	--
MW-19											
Screen 1	MW-981-030	--	--	--	--	--	--	--	0.8	--	--
Screen 2	MW-981-029	--	0.6	0.9	--	--	--	--	--	--	--
Screen 3	MW-981-028	--	--	2.1	--	--	--	--	--	--	--
Screen 4	MW-981-027	--	0.5	0.6	--	--	--	--	1.3	--	--
Screen 5	MW-981-026	--	--	1.4	--	--	--	--	--	--	--
MW-20											
Screen 1	MW-981-025	--	--	--	--	--	--	--	1.4	--	6.3
Screen 2	MW-981-024	--	--	--	--	--	--	--	2.7	--	--
Screen 3	MW-981-023	--	--	--	--	--	--	--	--	3.4 Unknown RT=6.2	--
Screen 4	MW-981-022	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-021	--	--	--	--	--	--	--	--	--	--

E: Estimated concentration; result exceeded calibration range
--: Not detected
a: Only VOCs for which MCLs have been established are listed
1: Not sampled, no water over screen
2: California Department of Health Services Interim Action Level
3: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)
DUP: Duplicate
NE: Not established

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

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

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-21											
Screen 1	MW-981-020	--	**16**	--	--	--	--	--	1.8	--	14
Screen 2	MW-981-019	--	--	1.1	--	--	--	--	--	--	--
Screen 3	MW-981-018	--	0.5	1.4	--	--	--	--	--	--	--
Screen 4	MW-981-017	--	--	2.4	--	--	--	--	--	--	--
Screen 5	MW-981-016	--	--	4.1	--	--	--	--	--	0.6 cis-1,2-Dichloroethene 5.0 Carbon disulfide[3]	5.2
MW-22											
Screen 1	MW-981-015	--	--	2.3	0.8	--	--	0.5	--	--	--
Screen 2	MW-981-014	--	--	--	--	--	--	--	--	--	--
Screen 3	MW-981-013	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-981-012	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-011	--	--	--	--	--	--	--	--	--	--
MW-23											
Screen 1	MW-981-010	--	4.2	1.6	1.2	--	--	--	0.9	0.6 1,2,3-Trichlorobenzene	5.2
Screen 2	MW-981-009	--	--	--	--	--	--	--	0.7	--	6.7
Screen 3	MW-981-008	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-981-007	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-006	--	--	--	--	--	--	--	--	--	--
MW-24											
Screen 1	MW-981-005	**30E**	**15**	0.5	--	**0.8**	--	0.6	15	--	**330**
Screen 2	MW-981-004	**6.9**	0.7	--	--	--	--	--	2.4	--	**110**
Screen 3	MW-981-003	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-981-002	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-981-001	--	--	--	--	--	--	--	--	--	--

E: Estimated concentration; result exceeded calibration range
--: Not detected
a: Only VOCs for which MCLs have been established are listed

1: Not sampled, no water over screen
2: California Department of Health Services Interim Action Level
3: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

DUP: Duplicate
NE: Not established

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

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

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
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 Contaminated Level		0.5	5.0	5.0	5.0	0.5	6.0	1,200	100	150 Tolune [a] 1,750 Xylenes (total)	18 [2]
EPA Region IX Maximum Contaminant Level		5.0	5.0	5.0	NE	5.0	7.0	NE	100	100 Bromodichloromethane [a] 1,000 Toluene 10,000 Xylenes (total)	NE

E: Estimated concentration; result exceeded calibration range
--: Not detected
a: Only VOCs for which MCLs have been established are listed
1: Not sampled, no water over screen
2: California Department of Health Services Interim Action Level
3: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)
DUP: Duplicate
NE: Not established

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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-1	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	1.3 m,p-xylenes	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
MW-3											
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	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
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	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
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**
	Sep/Oct 1997	**1.2**	0.5	--	--	--	--	--	1.6	--	13
	Jan/Feb 1998	**1.2**	--	--	--	--	--	--	2.7	--	6.5
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.2 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.0 Hexane	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	4.7 Carbon disulfide[4]	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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 Dichloromethane	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.1 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.2 Carbon disulfide 1.5 Carbon disulfide 2.7 Sulfur dioxide 1.3 Unknown (RT=2.51)	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	4.5 Carbon disulfide	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
MW-4											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.9(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	7.4
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	9.6
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**
	Sep/Oct 1997	**4.0**	**8.0**	0.5	0.6	--	0.5	--	3.5	--	**34**
	Jan/Feb 1998	**1.9**	2.7	0.6	--	--	--	--	1.8	--	**30**
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.0(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.5 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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	--	--	--	--	--	--	--	--	3.9(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 5	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	NA
	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	7.4 Hexane	--
MW-5	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	4.2
MW-6	Aug/Sep 1996	--	--	--	--	--	--	--	1.3(TB)	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	0.8	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	5.5
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	2.0	1.0	--	--	--	--	--	--
MW-7	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**
	Sep/Oct 1997	**93**	**22**	1.1	--	**0.9**	1.3	4.7	13	--	**550**
	Jan/Feb 1998	**150**	**24**	3.7	--	**0.8**	2.1	6.4	13	--	**720**

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
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NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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-8	Aug/Sep 1996	**4.0**	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	NA
										1.9 Carbon disulfide	
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	6.4
	Sep/Oct 1997	**3.2**	3.6	--	--	--	--	--	1.2	1.0 Freon 11	**29**
	Jan/Feb 1998	**1.8**	1.3	--	--	--	--	--	0.8	0.8 Freon 11	11
MW-9	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	3.9 Unknown RT=6.21	--
MW-10	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	NA
										1.1 Unknown scan #350	
	Feb/Mar 1997	--	**5.2**	--	--	--	--	--	0.6	--	NA
	Jun/Jul 1997	--	2.2	--	--	--	--	--	--	--	11
	Sep/Oct 1997	--	4.3	1.3	1.2	--	--	--	1.0	--	16
	Jan/Feb 1998	--	1.1	2.2	1.6	--	--	--	1.4	--	4.7
MW-11											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.6(B) Acetone	NA
										7.1 MTBE	
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.8 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	**1.4**	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
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TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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 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	--	--
	Sep/Oct 1997	**0.6**	--	--	--	--	--	--	0.6	--	--
	Jan/Feb 1998	**0.7**	--	--	--	--	--	--	0.7	--	--
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	--	--
	Sep/Oct 1997	**0.6**	--	--	--	--	--	--	1.3	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	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	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	0.5	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.4(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.1 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	44 Carbon disulfide[4]	--
MW-12											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	4.1	--	NA
	Oct/Nov 1996	Not Sampled*									
	Feb/Mar 1997	--	--	--	--	--	--	--	5.8	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.5	--	--
	Sep/Oct 1997	Not Sampled*									
	Jan/Feb 1998	--	--	--	--	--	--	--	0.8	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
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TABLE 3-4

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(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 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
	Sep/Oct 1997	**0.8**	--	--	--	--	--	--	0.8	--	5.8
	Jan/Feb 1998	**1.1**	--	--	--	--	--	--	0.6	--	6.3
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	**20**	--	--	--	--	--	--	1.6	--	5.7
	Sep/Oct 1997	**14**	--	--	--	--	--	--	1.7	--	6.2
	Jan/Feb 1998	**23E**	--	--	--	--	--	--	2.3	--	5.9
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
	Sep/Oct 1997	**3.8**	--	--	--	--	--	--	1.0	--	7.6
	Jan/Feb 1998	**4.0**	--	--	--	--	--	--	1.1	--	8.0
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
	Sep/Oct 1997	**1.3**	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	**1.3**	--	--	--	--	--	--	--	--	--
MW-13	Aug/Sep 1996	**21**	**47**	0.6	--	**2.5**	1.5	0.7	21(TB)	--	NA
	Oct/Nov 1996	**27**	**27**	--	--	**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**	**24 E**	--	--	**0.9**	0.5	--	11	--	**130**
	Sep/Oct 1997	**8.2**	**19**	--	--	**1.1**	0.5	--	10	--	**210**
	Jan/Feb 1998	**12**	**5.2**	0.5	--	--	0.5 (DUP [3])	--	2.9	1.8 Freon 11	**99**

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NE: Not established
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(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-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	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	1.9	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	2.1	--	--	--	0.5	--	--
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	--
	Sep/Oct 1997	--	1.2	1.9	1.6	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	1.2	0.7	--	--	--	--	8.9 Carbon disulfide[4]	9.0
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	4.3
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	5.6
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

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(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	--	--	--	--	--	--	--	--	2.1(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6(TB) Acetone	NA
										1.3 Carbon disulfide	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	4.6 Carbon disulfide[4]	--
MW-15	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.6 Acetone	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
MW-16	Aug/Sep 1996	**125**	**33**	1.3	--	**2.4**	2.2	2.0	40(TB)	--	NA
	Not Sampled*	--	--	--	--	--	--	--	--	--	NA
	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**
	Sep/Oct 1997	Not Sampled*									
	Jan/Feb 1998	**30**	3.5	1.0	--	--	1.3	--	14	--	**1230**
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	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	2.9	--	--
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	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	6.1	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	5.4	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
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(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	**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**	--	--	--	--	--	8.2	--	12
	Sep/Oct 1997	**6.6**	**22**	1.4	--	--	--	--	9.2	--	**55**
	Jan/Feb 1998	**3.3**	**8.7**	--	--	--	--	--	6.8	--	**25**
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
	Sep/Oct 1997	--	**6.8**	0.5	--	--	--	--	1.0	--	16
	Jan/Feb 1998	--	**7.3**	0.6	--	--	--	--	1.2	--	16
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	--	**11**	0.7	--	--	--	--	1.3	--	12
	Sep/Oct 1997	--	**8.6**	0.6	--	--	--	--	1.4	--	15
	Jan/Feb 1998	--	**7.9**	--	--	--	--	--	1.5	--	15
MW-18											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	1.6	--	NA
	Oct/Nov 1996	Not Sampled*									
	Feb/Mar 1997	--	--	--	--	--	--	--	3.0	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	--
	Sep/Oct 1997	Not Sampled*									
	Jan/Feb 1998	Not Sampled*									
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	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	2.5	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	3.7	--	--

--: Not detected
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(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 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	--	--
	Sep/Oct 1997	--	3.0	1.9	--	--	--	--	6.2	--	--
	Jan/Feb 1998	--	1.9	1.7	--	--	--	--	6.6	4.1 Unknown RT=4.33	--
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
	Sep/Oct 1997	**2.4**	--	0.7	--	--	--	--	--	1.5 Carbon Disulfide	12
	Jan/Feb 1998	**2.6**	--	1.0	--	--	--	--	0.5	--	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	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
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	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	1.4	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	0.8	--	--
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	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	0.6	0.9	--	--	--	--	--	--	--

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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
	Sep/Oct 1997	--	--	1.5	--	--	--	--	--	0.6 Toluene	--
	Jan/Feb 1998	--	--	2.1	--	--	--	--	--	--	--
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	--	--
	Sep/Oct 1997	--	0.7	0.6	--	--	--	--	1.7	--	4.9
	Jan/Feb 1998	--	0.5	0.6	--	--	--	--	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	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	2.2	--	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	1.4	--	--	--	--	--	--	--
MW-20											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	0.7	3.4(B) Acetone	NA
	Not Sampled*	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	1.4	2.4(EB) Acetone	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	5.7
	Sep/Oct 1997	Not Sampled*									
	Jan/Feb 1998	--	--	--	--	--	--	--	1.4	--	6.3
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	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	5.7	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	2.7	--	--

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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	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	3.4 Unknown RT=6.2	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.8(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	4.8(B) Acetone	NA
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	NA
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	NA
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
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**
	Sep/Oct 1997	Not Sampled*									
	Jan/Feb 1998	--	**16**	--	--	--	--	--	1.8	--	14
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	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	1.1	--	--	--	--	--	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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	--	0.7	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	--	--	--	--	--	--	--
	Sep/Oct 1997	--	0.6	1.3	--	--	--	--	--	--	--
	Jan/Feb 1998	--	0.5	1.4	--	--	--	--	--	--	--
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
	Sep/Oct 1997	--	0.6	4.4	--	--	--	--	--	--	7.7
	Jan/Feb 1998	--	--	2.4	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	2.9	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	4.1	--	--	--	--	--	0.6 cis-1,2-Dichloroethene 5.0 Carbon disulfide[4]	5.2
MW-22[1]											
Screen 1	Sep/Oct 1997	--	--	2.0	0.7	--	--	--	--	--	--
	Jan/Feb 1998	--	--	2.3	0.8	--	--	0.5	--	--	--
Screen 2	Sep/Oct 1997	--	--	--	--	--	--	--	--	0.8 Dichloromethane	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	15
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-4

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING 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-23(1)											
Screen 1	Sep/Oct 1997	--	3.1	0.6	0.8	--	--	--	--	--	4.4
	Jan/Feb 1998	--	4.2	1.6	1.2	--	--	--	0.9	0.6 1,2,3 Trichlorobenzene	5.2
Screen 2	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	7.6
	Jan/Feb 1998	--	--	--	--	--	--	--	0.7	--	6.7
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
MW-24(1)											
Screen 1	Sep/Oct 1997	**5.0**	**5.0**	--	--	--	--	0.6	3.1	--	**92**
	Jan/Feb 1998	**30E**	**15**	0.5	--	**0.8**	--	0.6	15	--	**330**
Screen 2	Sep/Oct 1997	**13**	1.3	--	--	--	--	--	3.8	--	**200**
	Jan/Feb 1998	**6.9**	0.7	--	--	--	--	--	2.4	--	**110**
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
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(2)
EPA Region IX Maximum Contaminant Level		5.0	5.0	5.0	NE	5.0	7.0	NE	100	5.0 Dichloromethane(a)	NE

--: Not detected
*: Not sampled, no water over screen
TB: Compound detected in associated trip blank
B: Compound detected in the laboratory method blank
NA: Not analyzed
NE: Not established
E: Estimated concentration; result exceeded calibration range
a: Only VOCs for which MCLs have been established are listed

1: Wells installed June-August 1997
2: California Department of Health Services Interim Action Level
3: DUP – Results from duplicate analysis; original sample was non-detect.
4: Suspected by the laboratory to have resulted from carry over in analysis (see letter, Appendix D, Tab 9)

TABLE 3-5

SUMMARY OF METALS DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sample Number	Arsenic	Total Chromium	Hexavalent Chromium	Lead	Field Turbidity (NTUs)
MW-1	MW-981-079	--	--	--	--	1.64
MW-3						
Screen 1	MW-981-078	--	--	--	--	2.87
Screen 2	MW-981-077	--	--	--	--	2.25
Screen 3	MW-981-076	--	--	--	--	4.89
Screen 4	MW-981-075	--	--	--	--	2.96
Screen 5	MW-981-074	0.009	--	--	0.008	2.28
MW-4						
Screen 1	MW-981-073	--	--	--	--	3.35
Screen 2	MW-981-072	--	--	--	--	4.84
Screen 2 (DUP)	MW-981-071	--	--	--	--	4.84
Screen 3	MW-981-070	--	--	--	--	4.55
Screen 4	MW-981-069	--	--	--	--	4.73
Screen 5	MW-981-068	--	--	--	--	4.47
MW-5	MW-981-067	--	--	--	--	0.86
MW-6	MW-981-066	--	--	--	--	4.42
MW-7	MW-981-065	--	0.012	--	--	1.21
MW-8	MW-981-064	--	--	--	--	3.39
MW-9	MW-981-063	--	--	--	--	2.43
MW-10	MW-981-062	--	--	--	--	2.11
MW-10 DUP	MW-981-061	--	--	--	--	2.11
MW-11						
Screen 1	MW-981-060	--	--	--	--	1.03
Screen 2	MW-981-059	--	--	--	--	2.37
Screen 3	MW-981-058	--	--	--	--	1.39
Screen 4	MW-981-057	--	--	--	--	3.43
Screen 5	MW-981-056	--	--	--	--	1.23
MW-12						
Screen 1	MW-981-055	--	--	--	--	2.63
Screen 2	MW-981-054	--	--	--	--	4.41
Screen 2 (DUP)	MW-981-053	--	--	--	--	4.41
Screen 3	MW-981-052	--	--	--	--	2.79
Screen 4	MW-981-051	--	--	--	--	3.39
Screen 5	MW-981-050	--	--	--	--	2.17

(DUP): Duplicate
NE: Not established
--: Not detected

1: Not Sampled: No water over screen
2: Action Level: Treatment technique and public notification triggered

D:\001 JPL\981-3TBL

TABLE 3-5

SUMMARY OF METALS DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sample Number	Arsenic	Total Chromium	Hexavalent Chromium	Lead	Field Turbidity (NTUs)
MW-13	MW-981-049	--	0.040	0.036	0.003	1.0
MW-13 DUP	MW-981-048	--	0.043	0.035	--	1.0
MW-14						
Screen 1	MW-981-047	--	--	--	0.004	4.96
Screen 2	MW-981-046	--	--	--	0.003	4.80
Screen 3	MW-981-045	--	0.026	--	0.003	2.14
Screen 4	MW-981-044	--	--	--	0.002	2.69
Screen 5	MW-981-043	--	--	--	--	4.65
MW-15	MW-981-042	--	--	--	--	1.40
MW-16	MW-981-041	--	--	--	--	1.12
MW-17						
Screen 1	MW-981-040	--	--	--	--	4.98
Screen 2	MW-981-039	--	--	--	--	0.79
Screen 3	MW-981-038	--	--	--	--	3.24
Screen 4	MW-981-037	--	--	--	--	3.94
Screen 5	MW-981-036	--	--	--	--	4.75
MW-18						
Screen 1	Not Sampled[1]					
Screen 2	MW-981-034	--	--	--	--	3.60
Screen 3	MW-981-033	--	--	--	--	0.58
Screen 4	MW-981-032	--	--	--	--	2.23
Screen 5	MW-981-031	--	--	--	--	1.63
MW-19						
Screen 1	MW-981-030	--	--	--	--	4.70
Screen 2	MW-981-029	--	--	--	--	4.72
Screen 3	MW-981-028	--	--	--	--	4.10
Screen 4	MW-981-027	--	--	--	--	4.57
Screen 5	MW-981-026	--	--	--	--	3.98
MW-20						
Screen 1	MW-981-025	--	--	--	--	3.17
Screen 2	MW-981-024	--	--	--	--	0.44
Screen 3	MW-981-023	--	--	--	--	2.16
Screen 4	MW-981-022	--	--	--	--	0.58
Screen 5	MW-981-021	--	--	--	--	0.13

(DUP): Duplicate
NE: Not established
--: Not detected

1: Not Sampled: No water over screen
2: Action Level: Treatment technique and public notification triggered

D:\001 JPL\981-3TBL

TABLE 3-5

SUMMARY OF METALS DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sample Number	Arsenic	Total Chromium	Hexavalent Chromium	Lead	Field Turbidity (NTUs)
MW-21						
Screen 1	MW-981-020	--	--	--	--	0.79
Screen 2	MW-981-019	--	--	--	--	0.60
Screen 3	MW-981-018	--	--	--	0.003	4.79
Screen 4	MW-981-017	--	--	--	--	1.10
Screen 5	MW-981-016	--	--	--	--	4.94
MW-22						
Screen 1	MW-981-015	--	--	--	--	4.50
Screen 2	MW-981-014	--	--	--	--	4.15
Screen 3	MW-981-013	--	--	--	--	3.75
Screen 4	MW-981-012	--	--	--	--	3.69
Screen 5	MW-981-011	--	--	--	--	2.81
MW-23						
Screen 1	MW-981-010	--	--	--	--	4.11
Screen 2	MW-981-009	--	--	--	--	4.89
Screen 3	MW-981-008	--	--	--	--	4.60
Screen 4	MW-981-007	--	--	--	--	4.51
Screen 5	MW-981-006	--	--	--	--	1.78
MW-24						
Screen 1	MW-981-005	--	--	--	--	3.82
Screen 2	MW-981-004	--	--	--	--	4.87
Screen 3	MW-981-003	0.006	--	--	--	4.71
Screen 4	MW-981-002	--	--	--	--	4.87
Screen 5	MW-981-001	--	--	--	--	4.76
Practical Quantitation Limit		0.005	0.01	0.005	0.002	
California Maximum Contaminant Level		0.050	0.05	NE	0.050	
EPA Maximum Contaminant Level		0.050	0.10	NE	0.15[2]	

(DUP): Duplicate
NE: Not established
--: Not detected

1: Not Sampled: No water over screen
2: Action Level: Treatment technique and public notification triggered

D:\001 JPL\981-3TBL

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-1	Aug/Sep 1996	--	--	--	--	0.8
	Oct/Nov 1996	--	--	--	--	0.5
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	1.92
	Sep/Oct 1997	--	--	--	--	0.73
	Jan/Feb 1998	--	--	--	--	1.64
MW-3						
Screen 1	Aug/Sep 1996	--	--	--	--	7.2
	Oct/Nov 1996	--	--	--	--	3.1
	Feb/Mar 1997	--	--	--	--	6.1
	Jun/Jul 1997	--	--	--	--	2.61
	Sep/Oct 1997	--	--	--	--	2.12
	Jan/Feb 1998	--	--	--	--	2.87
Screen 2	Aug/Sep 1996	--	--	--	--	1.7
	Oct/Nov 1996	--	--	--	--	2.7
	Feb/Mar 1997	--	--	--	--	3.8
	Jun/Jul 1997	--	--	--	--	1.13
	Sep/Oct 1997	--	--	--	--	2.11
	Jan/Feb 1998	--	--	--	--	2.25
Screen 3	Aug/Sep 1996	--	--	--	--	5.2
	Oct/Nov 1996	--	--	--	--	2.7
	Feb/Mar 1997	--	--	--	--	1.7
	Jun/Jul 1997	--	--	--	--	3.41
	Sep/Oct 1997	--	--	--	--	4.97
	Jan/Feb 1998	--	--	--	--	4.89
Screen 4	Aug/Sep 1996	--	--	--	--	4.3
	Oct/Nov 1996	--	--	--	--	2.6
	Feb/Mar 1997	--	--	--	--	4.5
	Jun/Jul 1997	--	--	--	--	2.71
	Sep/Oct 1997	--	--	--	--	2.45
	Jan/Feb 1998	--	--	--	--	2.96
Screen 5	Aug/Sep 1996	0.011	--	--	--	1.5
	Oct/Nov 1996	0.007	--	--	--	1.9
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	0.007	--	--	--	0.83
	Sep/Oct 1997	0.010	--	--	--	0.96
	Jan/Feb 1998	0.009	0.008	--	--	2.28

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-4						
Screen 1	Aug/Sep 1996	--	--	--	--	2.6
	Oct/Nov 1996	--	--	--	--	1.7
	Feb/Mar 1997	--	--	--	--	4.6
	Jun/Jul 1997	--	--	--	--	2.79
	Sep/Oct 1997	--	--	--	--	4.76
	Jan/Feb 1998	--	--	--	--	3.35
Screen 2	Aug/Sep 1996	--	--	0.023	--	3.8
	Oct/Nov 1996	--	--	0.014	--	4.2
	Feb/Mar 1997	--	--	0.011	--	4.5
	Jun/Jul 1997	--	--	0.013	--	2.69
	Sep/Oct 1997	--	--	0.012	--	3.51
	Jan/Feb 1998	--	--	--	--	4.84
Screen 3	Aug/Sep 1996	--	--	--	--	0.6
	Oct/Nov 1996	--	--	--	--	1.5
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	--	--	--	--	1.98
	Sep/Oct 1997	--	--	--	--	1.42
	Jan/Feb 1998	--	--	--	--	4.55
Screen 4	Aug/Sep 1996	--	--	--	--	3.0
	Oct/Nov 1996	--	--	--	--	1.4
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	4.62
	Sep/Oct 1997	--	--	--	--	3.28
	Jan/Feb 1998	--	--	--	--	4.73
Screen 5	Aug/Sep 1996	--	--	--	--	4.5
	Oct/Nov 1996	--	--	--	--	4.1
	Feb/Mar 1997	--	--	--	--	4.4
	Jun/Jul 1997	--	--	--	--	3.98
	Sep/Oct 1997	--	--	--	--	3.92
	Jan/Feb 1998	--	--	--	--	4.47
MW-5	Aug/Sep 1996	--	--	--	--	2.7
	Oct/Nov 1996	--	0.003	--	--	2.7
	Feb/Mar 1997	--	--	--	--	1.5
	Jun/Jul 1997	--	--	--	--	4.50
	Sep/Oct 1997	--	--	--	--	1.00
	Jan/Feb 1998	--	--	--	--	0.86

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

E:\001 JPL\981-3TBL

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-6	Aug/Sep 1996	--	--	**0.050**	--	4.5
	Oct/Nov 1996	--	--	0.011	--	1.1
	Feb/Mar 1997	--	--	0.014	--	4.3
	Jun/Jul 1997	--	--	0.019	--	2.50
	Sep/Oct 1997	--	--	--	--	1.78
	Jan/Feb 1998	--	--	--	--	0.42
MW-7	Aug/Sep 1996	--	--	0.013	0.007	4.8
	Oct/Nov 1996	--	--	0.019	0.019	3.5
	Feb/Mar 1997	--	--	--	0.010	2.2
	Jun/Jul 1997	--	--	--	--	0.98
	Sep/Oct 1997	--	--	0.018	--	0.77
	Jan/Feb 1998	--	--	0.012	--	1.21
MW-8	Aug/Sep 1996	--	--	--	--	4.0
	Oct/Nov 1996	--	0.003	--	--	4.7
	Feb/Mar 1997	--	--	--	--	3.1
	Jun/Jul 1997	--	0.002	--	--	4.61
	Sep/Oct 1997	--	--	--	--	4.20
	Jan/Feb 1998	--	--	--	--	3.39
MW-9	Aug/Sep 1996	--	--	--	--	2.1
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	4.2
	Jun/Jul 1997	--	--	--	--	3.22
	Sep/Oct 1997	--	--	--	--	1.03
	Jan/Feb 1998	--	--	--	--	2.43
MW-10	Aug/Sep 1996	--	--	0.011	0.010	4.5
	Oct/Nov 1996	--	0.003	0.011	--	4.9
	Feb/Mar 1997	--	--	--	--	2.2
	Jun/Jul 1997	--	--	0.014	--	2.92
	Sep/Oct 1997	--	--	--	--	3.23
	Jan/Feb 1998	--	--	--	--	2.11
MW-11						
Screen 1	Aug/Sep 1996	--	--	--	--	4.0
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	1.53
	Sep/Oct 1997	--	--	--	--	4.64
	Jan/Feb 1998	--	--	--	--	1.03

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	--	--	4.5
	Oct/Nov 1996	--	--	--	--	4.7
	Feb/Mar 1997	--	--	--	--	3.1
	Jun/Jul 1997	--	--	--	--	4.67
	Sep/Oct 1997	--	--	--	--	3.00
	Jan/Feb 1998	--	--	--	--	2.37
Screen 3	Aug/Sep 1996	--	--	--	--	0.5
	Oct/Nov 1996	--	--	--	--	2.3
	Feb/Mar 1997	--	--	--	--	1.7
	Jun/Jul 1997	--	--	--	--	1.88
	Sep/Oct 1997	--	--	--	--	3.02
	Jan/Feb 1998	--	--	--	--	1.39
Screen 4	Aug/Sep 1996	--	--	--	--	3.9
	Oct/Nov 1996	--	--	--	--	3.3
	Feb/Mar 1997	--	0.009	--	--	5.2
	Jun/Jul 1997	--	--	--	--	4.80
	Sep/Oct 1997	--	--	--	--	4.95
	Jan/Feb 1998	--	--	--	--	3.43
Screen 5	Aug/Sep 1996	0.007	--	--	--	0.6
	Oct/Nov 1996	0.005	--	--	--	1.9
	Feb/Mar 1997	--	0.002	--	--	1.6
	Jun/Jul 1997	--	--	--	--	0.69
	Sep/Oct 1997	--	--	--	--	2.55
	Jan/Feb 1998	--	--	--	--	1.23
MW-12						
Screen 1	Aug/Sep 1996	--	0.004	--	--	50.4
	Oct/Nov 1996	Not Sampled*				
	Feb/Mar 1997	--	0.003	--	--	3.8
	Jun/Jul 1997	--	--	--	--	4.80
	Sep/Oct 1997	Not Sampled*				
	Jan/Feb 1998	--	--	--	--	2.63
Screen 2	Aug/Sep 1996	--	0.024	--	--	4.0
	Oct/Nov 1996	--	--	--	--	4.0
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	3.16
	Sep/Oct 1997	--	--	--	--	3.37
	Jan/Feb 1998	--	--	--	--	4.41

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 3	Aug/Sep 1996	--	--	--	--	2.5
	Oct/Nov 1996	--	--	--	--	3.1
	Feb/Mar 1997	--	--	--	--	5.0
	Jun/Jul 1997	--	--	--	--	4.79
	Sep/Oct 1997	--	--	--	--	4.18
	Jan/Feb 1998	--	--	--	--	2.79
Screen 4	Aug/Sep 1996	--	0.005	--	--	1.8
	Oct/Nov 1996	--	--	--	--	0.7
	Feb/Mar 1997	--	--	--	--	2.4
	Jun/Jul 1997	--	--	--	--	2.49
	Sep/Oct 1997	--	--	--	--	1.58
	Jan/Feb 1998	--	--	--	--	3.39
Screen 5	Aug/Sep 1996	--	--	--	--	2.0
	Oct/Nov 1996	--	--	--	--	2.0
	Feb/Mar 1997	--	--	--	--	1.5
	Jun/Jul 1997	--	--	--	--	4.97
	Sep/Oct 1997	--	--	--	--	0.99
	Jan/Feb 1998	--	--	--	--	2.17
MW-13	Aug/Sep 1996	--	--	0.046	0.047	4.1
	Oct/Nov 1996	--	0.005	0.031	0.028	3.0
	Feb/Mar 1997	--	--	0.032	0.035	0.5
	Jun/Jul 1997	--	--	0.038	0.037	1.21
	Sep/Oct 1997	--	--	**0.050**	0.045	2.36
	Jan/Feb 1998	--	0.003	0.040	0.036	1.0
MW-14						
Screen 1	Aug/Sep 1996	--	--	--	--	3.3
	Oct/Nov 1996	--	--	--	--	4.5
	Feb/Mar 1997	--	--	--	--	4.3
	Jun/Jul 1997	--	--	--	--	2.21
	Sep/Oct 1997	--	--	--	--	3.89
	Jan/Feb 1998	--	0.004	--	--	4.96
Screen 2	Aug/Sep 1996	--	--	--	--	4.4
	Oct/Nov 1996	--	--	--	--	3.8
	Feb/Mar 1997	--	--	--	--	4.8
	Jun/Jul 1997	--	--	--	--	4.97
	Sep/Oct 1997	--	--	--	--	3.22
	Jan/Feb 1998	--	0.003	--	--	4.80

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 3	Aug/Sep 1996	--	--	--	--	1.7
	Oct/Nov 1996	--	--	--	--	2.0
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	0.70
	Sep/Oct 1997	--	--	--	--	2.94
	Jan/Feb 1998	--	0.003	0.026	--	2.14
Screen 4	Aug/Sep 1996	--	--	--	--	3.1
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	4.1
	Jun/Jul 1997	--	--	--	--	2.31
	Sep/Oct 1997	--	--	--	--	1.73
	Jan/Feb 1998	--	0.002	--	--	2.69
Screen 5	Aug/Sep 1996	--	--	--	--	1.5
	Oct/Nov 1996	--	--	--	--	4.1
	Feb/Mar 1997	--	0.028	--	--	2.3
	Jun/Jul 1997	--	--	--	--	1.90
	Sep/Oct 1997	--	--	--	--	3.80
	Jan/Feb 1998	--	--	--	--	4.65
MW-15	Aug/Sep 1996	--	--	--	--	1.3
	Oct/Nov 1996	--	--	NA	--	0.5
	Feb/Mar 1997	--	--	--	--	2.6
	Jun/Jul 1997	--	--	--	--	0.21
	Sep/Oct 1997	--	--	--	--	0.94
	Jan/Feb 1998	--	--	--	--	1.40
MW-16	Aug/Sep 1996	--	--	0.018	--	3.4
	Oct/Nov 1996	Not Sampled*				
	Feb/Mar 1997	--	--	--	0.007	0.2
	Jun/Jul 1997	--	--	--	--	0.12
	Sep/Oct 1997	Not Sampled*				
	Jan/Feb 1998	--	--	--	--	1.12
MW-17						
Screen 1	Aug/Sep 1996	--	--	NA	NA	1.0
	Oct/Nov 1996	--	--	--	--	2.9
	Feb/Mar 1997	--	--	--	--	2.0
	Jun/Jul 1997	--	--	--	--	2.23
	Sep/Oct 1997	--	--	--	--	1.30
	Jan/Feb 1998	--	--	--	--	4.98

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	NA	NA	4.5
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	2.7
	Jun/Jul 1997	--	--	--	--	4.49
	Sep/Oct 1997	--	--	--	--	1.23
	Jan/Feb 1998	--	--	--	--	0.79
Screen 3	Aug/Sep 1996	--	0.002	NA	NA	4.9
	Oct/Nov 1996	--	--	--	--	4.8
	Feb/Mar 1997	--	--	--	--	6.0
	Jun/Jul 1997	--	--	--	--	4.83
	Sep/Oct 1997	--	--	--	0.006	2.54
	Jan/Feb 1998	--	--	--	--	3.24
Screen 4	Aug/Sep 1996	--	--	NA	NA	2.8
	Oct/Nov 1996	--	--	--	--	2.6
	Feb/Mar 1997	--	--	--	--	5.6
	Jun/Jul 1997	--	--	--	--	4.09
	Sep/Oct 1997	--	--	--	--	3.57
	Jan/Feb 1998	--	--	--	--	3.94
Screen 5	Aug/Sep 1996	--	--	NA	NA	5.0
	Oct/Nov 1996	--	0.005	--	--	5.2
	Feb/Mar 1997	--	0.003	--	--	24.5
	Jun/Jul 1997	--	--	--	--	34.0
	Sep/Oct 1997	--	--	--	--	4.83
	Jan/Feb 1998	--	--	--	--	4.75
MW-18						
Screen 1	Aug/Sep 1996	--	--	NA	NA	0.9
	Oct/Nov 1996	Not Sampled*				
	Feb/Mar 1997	--	--	--	--	1.9
	Jun/Jul 1997	--	--	--	--	0.42
	Sep/Oct 1997	Not Sampled*				
	Jan/Feb 1998	Not Sampled*				
Screen 2	Aug/Sep 1996	--	--	NA	NA	3.5
	Oct/Nov 1996	--	0.003	--	--	3.4
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	--	--	--	--	1.53
	Sep/Oct 1997	--	--	--	--	1.43
	Jan/Feb 1998	--	--	--	--	3.60

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 3	Aug/Sep 1996	--	--	NA	NA	4.2
	Oct/Nov 1996	--	0.002	NA	--	4.0
	Feb/Mar 1997	--	--	0.015	0.007	3.3
	Jun/Jul 1997	--	--	--	--	3.88
	Sep/Oct 1997	--	--	--	--	2.05
	Jan/Feb 1998	--	--	--	--	0.58
Screen 4	Aug/Sep 1996	--	--	NA	NA	2.0
	Oct/Nov 1996	--	0.003	--	--	1.9
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	0.005	--	--	--	3.58
	Sep/Oct 1997	--	--	--	--	1.12
	Jan/Feb 1998	--	--	--	--	2.23
Screen 5	Aug/Sep 1996	--	--	NA	NA	2.8
	Oct/Nov 1996	--	0.002	--	--	3.6
	Feb/Mar 1997	--	--	--	--	2.9
	Jun/Jul 1997	--	--	--	--	3.97
	Sep/Oct 1997	--	--	--	--	1.65
	Jan/Feb 1998	--	--	--	--	1.63
MW-19						
Screen 1	Aug/Sep 1996	--	--	NA	NA	5.0
	Oct/Nov 1996	--	--	--	--	3.4
	Feb/Mar 1997	--	--	--	--	6.6
	Jun/Jul 1997	--	--	--	--	0.78
	Sep/Oct 1997	--	--	--	--	4.63
	Jan/Feb 1998	--	--	--	--	4.70
Screen 2	Aug/Sep 1996	--	--	NA	NA	4.5
	Oct/Nov 1996	--	--	--	--	3.6
	Feb/Mar 1997	--	--	--	--	21.9
	Jun/Jul 1997	--	--	--	--	2.80
	Sep/Oct 1997	--	--	--	--	4.57
	Jan/Feb 1998	--	--	--	--	4.72
Screen 3	Aug/Sep 1996	--	--	NA	NA	3.0
	Oct/Nov 1996	--	--	--	--	5.0
	Feb/Mar 1997	--	--	--	--	4.9
	Jun/Jul 1997	--	--	--	--	4.88
	Sep/Oct 1997	--	--	--	--	2.02
	Jan/Feb 1998	--	--	--	--	4.10

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 4	Aug/Sep 1996	--	--	NA	NA	4.2
	Oct/Nov 1996	--	--	--	--	8.0
	Feb/Mar 1997	--	0.003	--	--	15.8
	Jun/Jul 1997	--	--	--	--	4.88
	Sep/Oct 1997	--	--	--	--	4.82
	Jan/Feb 1998	--	--	--	--	4.75
Screen 5	Aug/Sep 1996	--	--	NA	NA	4.9
	Oct/Nov 1996	--	--	NA	--	4.6
	Feb/Mar 1997	--	--	--	--	3.8
	Jun/Jul 1997	--	--	--	--	2.15
	Sep/Oct 1997	--	--	--	--	4.98
	Jan/Feb 1998	--	--	--	--	3.98
MW-20						
Screen 1	Aug/Sep 1996	--	--	--	NA	3.5
	Oct/Nov 1996	Not Sampled*				
	Feb/Mar 1997	--	--	--	--	2.3
	Jun/Jul 1997	--	--	--	--	0.16
	Sep/Oct 1997	Not Sampled*				
	Jan/Feb 1998	--	--	--	--	3.17
Screen 2	Aug/Sep 1996	--	--	NA	NA	3.9
	Oct/Nov 1996	--	--	--	--	1.1
	Feb/Mar 1997	--	--	--	--	2.1
	Jun/Jul 1997	--	--	--	--	2.54
	Sep/Oct 1997	--	--	--	--	3.57
	Jan/Feb 1998	--	--	--	--	0.44
Screen 3	Aug/Sep 1996	--	--	NA	NA	1.7
	Oct/Nov 1996	--	--	--	--	1.6
	Feb/Mar 1997	--	--	--	--	1.9
	Jun/Jul 1997	--	--	--	--	2.14
	Sep/Oct 1997	--	--	--	--	4.56
	Jan/Feb 1998	--	--	--	--	2.16
Screen 4	Aug/Sep 1996	--	--	NA	NA	1.0
	Oct/Nov 1996	--	--	--	--	1.3
	Feb/Mar 1997	--	--	--	--	3.3
	Jun/Jul 1997	--	--	--	--	1.29
	Sep/Oct 1997	--	--	--	--	1.35
	Jan/Feb 1998	--	--	--	--	0.58

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

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TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 5	Aug/Sep 1996	--	--	NA	NA	1.8
	Oct/Nov 1996	--	--	NA	--	1.3
	Feb/Mar 1997	--	0.004	--	--	1.6
	Jun/Jul 1997	0.006	--	--	--	1.94
	Sep/Oct 1997	--	--	--	--	3.50
	Jan/Feb 1998	--	--	--	--	0.13
MW-21						
Screen 1	Aug/Sep 1996	--	--	NA	NA	0.9
	Oct/Nov 1996	Not Sampled*				
	Feb/Mar 1997	--	--	--	--	1.1
	Jun/Jul 1997	--	--	--	--	2.76
	Sep/Oct 1997	Not Sampled*				
	Jan/Feb 1998	--	--	--	--	0.79
Screen 2	Aug/Sep 1996	--	--	NA	NA	2.1
	Oct/Nov 1996	--	--	--	--	1.2
	Feb/Mar 1997	--	--	--	--	3.9
	Jun/Jul 1997	--	--	--	--	1.68
	Sep/Oct 1997	--	--	--	--	0.75
	Jan/Feb 1998	--	--	--	--	0.60
Screen 3	Aug/Sep 1996	--	--	NA	NA	4.6
	Oct/Nov 1996	--	--	--	--	4.9
	Feb/Mar 1997	--	0.003	--	--	4.6
	Jun/Jul 1997	--	--	--	--	1.40
	Sep/Oct 1997	--	--	--	--	3.16
	Jan/Feb 1998	--	0.003	--	--	4.79
Screen 4	Aug/Sep 1996	--	--	NA	NA	2.5
	Oct/Nov 1996	--	--	--	--	3.3
	Feb/Mar 1997	--	0.004	--	--	4.4
	Jun/Jul 1997	--	--	--	--	2.46
	Sep/Oct 1997	--	--	--	--	4.51
	Jan/Feb 1998	--	--	--	--	1.10
Screen 5	Aug/Sep 1996	--	--	NA	NA	4.9
	Oct/Nov 1996	--	--	--	--	5.0
	Feb/Mar 1997	--	--	--	--	28.0
	Jun/Jul 1997	--	--	--	--	26.4
	Sep/Oct 1997	--	--	--	--	12.19
	Jan/Feb 1998	--	--	--	--	4.94

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

TABLE 3-6

SUMMARY OF METALS DETECTED DURING LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/l)
Values equal to or above state MCLs are in bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-22[1]						
Screen 1	Sep/Oct 1997	--	--	--	--	33.8
	Jan/Feb 1998	--	--	--	--	4.50
Screen 2	Sep/Oct 1997	--	--	--	--	4.90
	Jan/Feb 1998	--	--	--	--	4.15
Screen 3	Sep/Oct 1997	--	--	--	--	2.96
	Jan/Feb 1998	--	--	--	--	3.75
Screen 4	Sep/Oct 1997	--	--	--	--	2.79
	Jan/Feb 1998	--	--	--	--	3.69
Screen 5	Sep/Oct 1997	--	--	--	--	4.41
	Jan/Feb 1998	--	--	--	--	2.81
MW-23[1]						
Screen 1	Sep/Oct 1997	--	--	--	--	3.44
	Jan/Feb 1998	--	--	--	--	4.11
Screen 2	Sep/Oct 1997	--	--	--	--	4.92
	Jan/Feb 1998	--	--	--	--	4.89
Screen 3	Sep/Oct 1997	--	--	--	--	3.04
	Jan/Feb 1998	--	--	--	--	4.60
Screen 4	Sep/Oct 1997	--	--	--	--	4.88
	Jan/Feb 1998	--	--	--	--	4.51
Screen 5	Sep/Oct 1997	--	--	--	--	1.76
	Jan/Feb 1998	--	--	--	--	1.78
MW-24[1]						
Screen 1	Sep/Oct 1997	--	--	--	--	1.56
	Jan/Feb 1998	--	--	--	--	3.82
Screen 2	Sep/Oct 1997	--	--	--	--	4.36
	Jan/Feb 1998	--	--	--	--	4.87
Screen 3	Sep/Oct 1997	--	--	--	--	4.63
	Jan/Feb 1998	0.006	--	--	--	4.71
Screen 4	Sep/Oct 1997	--	--	--	--	4.03
	Jan/Feb 1998	--	--	--	--	4.87
Screen 5	Sep/Oct 1997	--	--	--	--	4.79
	Jan/Feb 1998	--	--	--	--	4.76
Practical Quantitation Limit		0.005	0.002	0.01	0.005	
Calif. Maximum Contaminant Level		0.05	0.05	0.05	NE	
EPA Maximum Contaminant Level		0.05	(a)	0.10	NE	

NA: Not analyzed
NE: Not established
1: Wells installed June-August 1997
a: Treatment technique and public notification triggered at 0.015 mg/l
--: Not detected
*: Not sampled, no water over screen

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TABLE 4-1

SUMMARY OF WATER-CHEMISTRY RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/L)

Well Number	ANIONS					CATIONS					Measured Alkalinity	Measured pH
	Cl	CO_3	HCO_3	NO_3-N	SO_4	Na	Mg	K	Ca	Fe		
MW-1	16	0.713	219	1.3	42	28	17	3.6	43	--	180	7.7
MW-3												
Screen 1	17	0.389	238	1.5	36	21	19	2.9	48	0.65	195	7.4
Screen 2	12	0.551	213	0.91	38	20	17	2.7	42	0.82	175	7.6
Screen 3	21	4.22	163	0.18	22	42	12	3.1	11	1.3	135	8.6
Screen 4	11	2.97	182	0.4	14	49	8.7	2.1	19	0.26	150	8.4
Screen 5	10	15	146	--	13	71	--	1.2	4.7	0.08	125	9.2
MW-4												
Screen 1	42	0.14	213	4.9	59	25	22	3.5	51	0.14	175	7.0
Screen 2	78	0.2	195	9.1	90	30	29	2.6	50	0.31	160	7.2
Screen 3	21	1.44	176	7.1	10	34	12	1.9	33	0.06	145	8.1
Screen 4	15	1.87	182	1.0	7.1	42	9.7	2.0	20	0.45	150	8.2
Screen 5	9.0	1.31	201	0.99	19	38	9.4	2.0	28	0.54	165	8.0
MW-5	26	0.070	171	2.4	58	20	17	3.4	39	0.140	140	6.8
MW-6	79	0.174	213	7.8	89	28	32	2.2	66	--	175	7.1
MW-7	20	0.52	158	6.0	40	19	17	2.8	36	--	130	7.7
MW-8	15	0.19	183	2.3	39	18	16	2.8	42	--	150	7.2
MW-9	15	0.224	274	5.5	44	27	23	4.2	64	--	225	7.1
MW-10	100	0.17	262	18	160	33	49	3.5	170	0.14	215	7.0
MW-11												
Screen 1	18	0.73	225	0.9	41	26	18	3.3	41	0.12	185	7.7
Screen 2	15	1.31	201	0.4	36	23	17	3.1	35	0.31	165	8.0
Screen 3	13	2.13	207	0.4	27	27	13	2.3	38	0.24	170	8.2
Screen 4	11	1.94	188	--	22	26	13	2.4	41	0.83	155	8.2
Screen 5	11	2.05	158	--	19	49	2.0	1.2	17	0.12	130	8.3
MW-12												
Screen 1	15	0.21	207	2.3	38	23	16	3.2	37	0.12	170	7.2
Screen 2	15	0.6	232	1.9	39	26	17	3.2	41	0.16	190	7.6
Screen 3	17	1.13	219	1.2	36	26	16	3.0	44	0.24	180	7.9
Screen 4	14	1.2	225	1.3	31	25	14	2.3	50	1.1	185	7.9
Screen 5	13	1.1	207	1.0	20	38	11	2.1	35	0.24	170	7.9
MW-13	57	0.12	152	7.0	67	25	21	3.0	71	0.09	125	7.1
MW-14												
Screen 1	130	0.13	244	17	200	46	48	3.2	160	0.74	200	6.9
Screen 2	110	0.70	341	16	170	37	53	3.0	160	0.50	280	7.5
Screen 3	87	0.63	244	15	110	39	40	3.2	106	0.20	200	7.6
Screen 4	31	0.95	183	10	22	29	18	2.3	53	0.18	150	7.9
Screen 5	8.6	4.22	163	0.3	17	37	13	2.5	19	0.89	135	8.6

--: Not detected 1: Not sampled, no water over screen

TABLE 4-1

SUMMARY OF WATER-CHEMISTRY RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/L)

Well Number	ANIONS					CATIONS					Measured Alkalinity	Measured pH
	Cl	CO_3	HCO_3	NO_3-N	SO_4	Na	Mg	K	Ca	Fe		
MW-15	13	0.251	244	4.4	36	24	21	3.4	53	--	200	7.2
MW-16	39	0.26	158	4.8	28	22	17	2.5	39	--	130	7.4
MW-17												
Screen 1	6.6	0.67	164	0.4	24	15	13	2.6	39	0.27	135	7.8
Screen 2	7.7	10.6	130	--	25	16	18	3.1	16	0.65	110	9.1
Screen 3	14	0.80	195	1.6	32	24	16	2.1	46	0.21	160	7.8
Screen 4	12	1.07	207	2.3	29	33	13	1.8	49	0.26	170	7.9
Screen 5	13	1.69	207	2.2	29	34	13	1.8	48	0.65	170	8.1
MW-18												
Screen 1	Not Sampled [1]											
Screen 2	12	1.07	207	1.2	37	20	17	3.1	53	0.31	170	7.9
Screen 3	15	1.50	231	0.7	35	23	19	3.3	57	0.16	190	8.0
Screen 4	8.8	1.60	195	0.7	23	34	10	1.6	41	0.26	160	8.1
Screen 5	10	13.0	159	0.1	5.9	57	4.9	1.8	8.5	--	135	9.1
MW-19												
Screen 1	6.0	0.52	158	0.7	23	14	13	3.2	39	0.2	130	7.7
Screen 2	67	0.07	226	7.3	92	19	34	3.2	100	1.6	185	6.7
Screen 3	77	0.25	244	9.6	70	32	32	3.0	98	0.22	200	7.2
Screen 4	42	0.40	244	5.2	55	27	26	2.5	80	0.50	200	7.4
Screen 5	72	0.44	268	8.7	69	33	32	2.8	102	0.40	220	7.4
MW-20												
Screen 1	54	1.04	201	12	130	26	32	4.1	103	0.19	165	7.9
Screen 2	14	8.45	130	0.1	30	41	12	2.2	13	0.14	110	9.0
Screen 3	30	1.84	225	2.7	23	60	13	2.4	39	--	185	8.1
Screen 4	10	2.58	158	0.1	23	65	3.1	1.0	11	0.18	130	8.4
Screen 5	8.9	23.2	179	--	21	83	1.6	1.5	7.1	--	155	9.3
MW-21												
Screen 1	77	0.10	189	--	98	30	31	2.3	65	0.24	155	6.9
Screen 2	140	0.26	317	8.4	150	62	45	3.4	140	--	260	7.1
Screen 3	92	0.38	293	10	91	40	36	3.2	120	1.40	240	7.3
Screen 4	45	0.28	219	8.1	38	28	22	2.4	76	0.15	180	7.3
Screen 5	63	0.80	244	10	75	35	30	3.0	96	2.10	200	7.7
MW-22												
Screen 1	120	0.72	280	11	160	34	49	3.4	98	1.60	230	7.6
Screen 2	47	1.64	201	9.1	43	32	25	2.7	52	1.30	165	8.1
Screen 3	27	1.23	189	7.9	19	35	15	2.2	42	0.63	155	8.0
Screen 4	11	0.88	170	4.3	8.0	29	10	1.9	33	0.44	140	7.9
Screen 5	9.9	7.63	186	0.2	31	61	7.5	2.0	14	0.30	155	8.8

--: Not detected

1: Not sampled, no water over screen

TABLE 4-1

SUMMARY OF WATER-CHEMISTRY RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(concentrations in mg/L)

Well Number	ANIONS					CATIONS					Measured Alkalinity	Measured pH
	Cl	CO_3	HCO_3	NO_3-N	SO_4	Na	Mg	K	Ca	Fe		
MW-23												
Screen 1	120	0.259	317	13	170	36	54	3.5	180	1.70	260	7.1
Screen 2	100	0.324	250	15	140	38	43	3.6	69	--	205	7.3
Screen 3	24	0.914	177	9.1	15	29	15	2.1	40	0.18	145	7.9
Screen 4	12	5.29	162	3.6	7.3	31	17	2.4	24	0.55	135	8.7
Screen 5	38	31.7	194	--	43	117	3.3	3.9	6.6	0.30	170	9.4
MW-24												
Screen 1	20	1.8	176	5.6	39	29	19	3.8	30	0.53	145	8.2
Screen 2	39	8.0	155	1.9	22	44	18	3.4	14	0.96	130	8.9
Screen 3	17	12.0	184	1.0	12	49	11	2.7	19	1.80	155	9.0
Screen 4	11	5.7	175	2.4	9.7	44	11	2.4	20	0.47	145	8.7
Screen 5	9.2	1.1	207	1.0	23	43	8.9	2.0	29	0.63	170	7.9
Detection Limit	1.0	0.001	0.001	0.10	2.0	1.0	1.0	1.0	1.0	0.10	2.0	

--: Not detected

1: Not sampled, no water over screen

TABLE 4-2

SUMMARY OF QUALITY CONTROL ANALYSES OF WATER-CHEMISTRY DATA FROM GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(ion concentrations are meq/L; TDS concentrations are mg/l)

Well Number	Total Anions	Total Cations	Total Ions	Charge Balance	Measured TDS	Calculated TDS	Measured TDS/ Calculated TDS
MW-1	5.02	4.86	9.88	1.62	280	264	1.1
MW-3							
Screen 1	5.24	4.95	10.19	2.85	320	269	1.2
Screen 2	4.70	4.44	9.14	2.84	280	242	1.2
Screen 3	3.76	3.44	7.20	4.44	220	198	1.1
Screen 4	3.63	3.85	7.48	2.94	210	198	1.1
Screen 5	3.05	3.35	6.40	4.69	220	187	1.2
MW-4							
Screen 1	6.26	5.54	11.80	**6.10**	400	329	1.2
Screen 2	7.93	6.26	14.19	**11.77**	500	416	1.2
Screen 3	4.21	4.16	8.37	0.60	270	231	1.2
Screen 4	3.64	3.68	7.32	0.55	240	192	1.2
Screen 5	4.02	3.88	7.90	1.77	250	210	1.2
MW-5	4.91	4.31	9.22	**6.51**	290	258	1.1
MW-6	8.14	7.20	15.34	**6.13**	490	436	1.1
MW-7	4.43	4.10	8.53	3.87	260	240	1.1
MW-8	4.40	4.27	8.67	1.50	260	233	1.1
MW-9	6.23	6.37	12.60	1.11	360	337	1.1
MW-10	11.7	14.1	25.80	**9.30**	700	724	1.0
MW-11							
Screen 1	5.12	4.75	9.87	3.75	340	263	**1.3**
Screen 2	4.50	4.23	8.73	3.09	330	231	**1.4**
Screen 3	4.36	4.20	8.56	1.87	280	226	1.2
Screen 4	3.87	4.31	8.18	3.38	260	211	1.2
Screen 5	3.31	3.18	6.49	2.00	240	179	**1.3**
MW-12							
Screen 1	4.78	4.25	9.03	**5.87**	330	245	**1.3**
Screen 2	5.17	4.66	9.83	**5.19**	320	264	1.2
Screen 3	4.92	4.72	9.64	2.07	320	256	1.2
Screen 4	4.83	4.80	9.63	0.31	300	255	1.2
Screen 5	4.25	4.36	8.61	1.28	300	227	**1.3**
MW-13	6.00	6.44	12.44	3.54	390	350	1.1

Note: Shaded areas represent values that fall outside the ideal range for each particular QA/QC test.

1: Not sampled, no water over screen

TABLE 4-2

SUMMARY OF QUALITY CONTROL ANALYSES OF WATER-CHEMISTRY DATA FROM GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(ion concentrations are meq/L; TDS concentrations are mg/l)

Well Number	Total Anions	Total Cations	Total Ions	Charge Balance	Measured TDS	Calculated TDS	Measured TDS/ Calculated TDS
MW-14							
Screen 1	13.0	14.0	27.00	3.70	830	783	1.1
Screen 2	13.4	14.0	27.40	2.19	840	773	1.1
Screen 3	9.82	10.4	20.22	2.87	590	572	1.0
Screen 4	5.05	5.45	10.50	3.81	310	291	1.1
Screen 5	3.32	3.69	7.01	**5.28**	210	184	1.1
MW-15	5.43	5.51	10.94	0.73	300	890	1.0
MW-16	4.63	4.37	9.00	2.89	270	247	1.1
MW-17							
Screen 1	3.42	3.74	7.16	4.47	190	184	1.0
Screen 2	2.94	3.06	6.00	2.00	170	161	1.1
Screen 3	4.38	4.71	9.09	3.63	250	238	1.1
Screen 4	4.51	5.00	9.51	**5.15**	240	251	1.0
Screen 5	4.53	4.99	9.52	4.83	260	253	1.0
MW-18							
Screen 1	Not Sampled [1]						
Screen 2	4.60	5.00	9.60	4.17	270	251	1.1
Screen 3	5.01	5.50	10.51	4.66	290	271	1.1
Screen 4	3.98	4.39	8.37	4.90	240	219	1.1
Screen 5	3.11	3.35	6.46	3.72	180	180	1.0
MW-19							
Screen 1	3.30	3.71	7.01	**5.85**	200	180	1.1
Screen 2	8.03	8.71	16.74	4.06	490	460	1.1
Screen 3	8.32	9.00	17.32	3.93	510	475	1.1
Screen 4	6.70	7.38	14.08	4.83	420	376	1.1
Screen 5	8.49	9.24	17.73	4.23	520	482	1.1
MW-20							
Screen 1	8.39	9.02	17.41	3.62	570	502	1.1
Screen 2	3.23	3.48	6.71	3.73	220	185	1.2
Screen 3	5.22	5.69	10.91	4.31	330	292	1.1
Screen 4	3.37	3.66	7.03	4.13	210	194	1.1
Screen 5	3.79	4.13	7.92	4.29	230	234	1.0
MW-21							
Screen 1	7.31	7.16	14.47	1.04	530	397	**1.3**
Screen 2	12.9	13.5	26.40	2.27	790	734	1.1
Screen 3	10.0	10.8	20.80	3.85	610	572	1.1
Screen 4	6.24	6.89	13.13	4.95	380	355	1.1
Screen 5	8.05	8.87	16.92	4.85	490	469	1.0

Note: Shaded areas represent values that fall outside the ideal range for each particular QA/QC test.

1: Not sampled, no water over screen

TABLE 4-2

SUMMARY OF QUALITY CONTROL ANALYSES OF WATER-CHEMISTRY DATA FROM GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, JANUARY-FEBRUARY 1998

(ion concentrations are meq/L; TDS concentrations are mg/l)

Well Number	Total Anions	Total Cations	Total Ions	Charge Balance	Measured TDS	Calculated TDS	Measured TDS/ Calculated TDS
MW-22							
Screen 1	12.1	10.5	22.60	**7.08**	780	653	1.2
Screen 2	6.17	6.12	12.29	0.41	380	344	1.1
Screen 3	4.82	4.91	9.73	0.92	300	270	1.1
Screen 4	3.58	3.78	7.36	2.72	230	197	1.2
Screen 5	4.04	4.02	8.06	0.25	230	225	1.0
MW-23							
Screen 1	13.1	15.1	28.20	**7.09**	810	779	1.0
Screen 2	10.9	8.73	19.63	**11.05**	680	583	1.2
Screen 3	4.54	4.55	9.09	0.11	290	254	1.1
Screen 4	3.45	3.51	6.96	0.86	220	189	1.2
Screen 5	5.37	5.70	11.07	2.98	350	339	1.0
MW-24							
Screen 1	4.68	4.42	9.10	2.86	300	254	1.2
Screen 2	4.29	4.18	8.47	1.30	320	234	**1.4**
Screen 3	3.90	4.05	7.95	1.89	250	219	1.1
Screen 4	3.58	3.88	7.46	4.02	260	201	**1.3**
Screen 5	4.21	4.10	8.31	1.32	280	223	**1.3**

Note: Shaded areas represent values that fall outside the ideal range for each particular QA/QC test.

1: Not sampled, no water over screen

TABLE 5-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS, JANUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1	1/12/98	25.97	1116.69	1090.72
MW-3				
Screen 1 (top)	1/12/98	142.60	1100.34	957.74
Screen 2	1/12/98	154.03	1100.34	946.31
Screen 3	1/12/98	157.41	1100.34	942.93
Screen 4	1/12/98	230.45	1100.34	869.89
Screen 5	1/12/98	259.08	1100.34	841.26
MW-4				
Screen 1 (top)	1/12/98	120.96	1082.84	961.88
Screen 2	1/12/98	132.90	1082.84	949.94
Screen 3	1/12/98	135.42	1082.84	947.42
Screen 4	1/12/98	143.93	1082.84	938.91
Screen 5	1/12/98	218.49	1082.84	864.35
MW-5	1/12/98	111.77	1071.62	959.85
MW-6	1/12/98	212.72	1188.54	975.82
MW-7	1/12/98	252.77	1212.90	960.13
MW-8	1/12/98	177.41	1139.55	962.14
MW-9	1/12/98	19.23	1106.06	1086.83
MW-10	1/12/98	126.46	1087.73	961.27
MW-11				
Screen 1 (top)	1/12/98	123.41	1139.30	1015.89
Screen 2	1/12/98	174.27	1139.30	965.03
Screen 3	1/12/98	189.48	1139.30	949.82
Screen 4	1/12/98	193.36	1139.30	945.94
Screen 5	1/12/98	256.84	1139.30	882.46
MW-12				
Screen 1 (top)	1/12/98	130.41	1102.14	971.73
Screen 2	1/12/98	149.45	1102.14	952.69
Screen 3	1/12/98	152.59	1102.14	949.55
Screen 4	1/12/98	164.96	1102.14	937.18
Screen 5	1/12/98	223.81	1102.14	878.33
MW-13	1/12/98	220.41	1183.49	963.08

TABLE 5-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS, JANUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-14				
Screen 1 (top)	1/12/98	194.70	1173.47	978.77
Screen 2	1/12/98	195.20	1173.47	978.27
Screen 3	1/12/98	194.95	1173.47	978.52
Screen 4	1/12/98	194.96	1173.47	978.51
Screen 5	1/12/98	195.56	1173.47	977.91
MW-15	1/12/98	30.52	1120.68	1090.16
MW-16	1/12/98	274.07	1236.29	962.22
MW-17				
Screen 1 (top)	1/12/98	248.05	1191.21	943.16
Screen 2	1/12/98	254.41	1191.21	936.80
Screen 3	1/12/98	267.48	1191.21	923.73
Screen 4	1/12/98	311.17	1191.21	880.04
Screen 5	1/12/98	320.06	1191.21	871.15
MW-18				
Screen 1 (top)	1/12/98	N/W	1225.41	N/W
Screen 2	1/12/98	283.18	1225.41	942.23
Screen 3	1/12/98	286.46	1225.41	938.95
Screen 4	1/12/98	311.12	1225.41	914.29
Screen 5	1/12/98	320.45	1225.41	904.96
MW-19				
Screen 1 (top)	1/12/98	198.99	1142.94	943.95
Screen 2	1/12/98	207.33	1142.94	935.61
Screen 3	1/12/98	211.90	1142.94	931.04
Screen 4	1/12/98	309.39	1142.94	833.55
Screen 5	1/12/98	312.28	1142.94	830.66
MW-20				
Screen 1 (top)	1/12/98	227.89	1165.05	937.16
Screen 2	1/12/98	228.10	1165.05	936.95
Screen 3	1/12/98	236.67	1165.05	928.38
Screen 4	1/12/98	247.87	1165.05	917.18
Screen 5	1/12/98	227.69	1165.05	937.36

TABLE 5-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS, JANUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-21				
Screen 1 (top)	1/12/98	N/W	1059.10	N/W
Screen 2	1/12/98	89.03	1059.10	970.07
Screen 3	1/12/98	89.30	1059.10	969.80
Screen 4	1/12/98	90.47	1059.10	968.63
Screen 5	1/12/98	89.56	1059.10	969.54
MW-22				
Screen 1 (top)	1/12/98	210.13	1176.98	966.85
Screen 2	1/12/98	210.37	1176.98	966.61
Screen 3	1/12/98	209.93	1176.98	967.05
Screen 4	1/12/98	227.67	1176.98	949.31
Screen 5	1/12/98	239.66	1176.98	937.32
MW-23				
Screen 1 (top)	1/12/98	144.97	1108.84	963.87
Screen 2	1/12/98	148.36	1108.84	960.48
Screen 3	1/12/98	148.53	1108.84	960.31
Screen 4	1/12/98	170.07	1108.84	938.77
Screen 5	1/12/98	170.34	1108.84	938.50
MW-24				
Screen 1 (top)	1/12/98	238.58	1200.94	962.36
Screen 2	1/12/98	242.66	1200.94	958.28
Screen 3	1/12/98	244.72	1200.94	956.22
Screen 4	1/12/98	268.18	1200.94	932.76
Screen 5	1/12/98	290.68	1200.94	910.26

TABLE 5-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS FEBRUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1	2/12/98	23.63	1116.69	1093.06
MW-3				
Screen 1 (top)	2/12/98	123.44	1100.34	976.90
Screen 2	2/12/98	131.73	1100.34	968.61
Screen 3	2/12/98	131.62	1100.34	968.72
Screen 4	2/12/98	136.88	1100.34	963.46
Screen 5	2/12/98	139.88	1100.34	960.46
MW-4				
Screen 1 (top)	2/12/98	102.90	1082.84	979.94
Screen 2	2/12/98	111.42	1082.84	971.42
Screen 3	2/12/98	111.50	1082.84	971.34
Screen 4	2/12/98	112.30	1082.84	970.54
Screen 5	2/12/98	118.74	1082.84	964.10
MW-5	2/12/98	95.34	1071.62	976.28
MW-6	2/12/98	207.51	1188.54	981.03
MW-7	2/12/98	243.28	1212.90	969.62
MW-8	2/12/98	166.13	1139.55	973.42
MW-9	2/12/98	18.34	1106.06	1087.72
MW-10	2/12/98	115.40	1087.73	972.33
MW-11				
Screen 1 (top)	2/12/98	121.26	1139.30	1018.04
Screen 2	2/12/98	159.41	1139.30	979.89
Screen 3	2/12/98	164.86	1139.30	974.44
Screen 4	2/12/98	162.56	1139.30	976.74
Screen 5	2/12/98	177.44	1139.30	961.86
MW-12				
Screen 1 (top)	2/12/98	114.21	1102.14	987.93
Screen 2	2/12/98	129.96	1102.14	972.18
Screen 3	2/12/98	130.48	1102.14	971.66
Screen 4	2/12/98	130.82	1102.14	971.32
Screen 5	2/12/98	136.66	1102.14	965.48
MW-13	2/12/98	211.77	1183.49	971.72

TABLE 5-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS FEBRUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-14				
Screen 1 (top)	2/12/98	189.53	1173.47	983.94
Screen 2	2/12/98	188.69	1173.47	984.78
Screen 3	2/12/98	187.73	1173.47	985.74
Screen 4	2/12/98	187.61	1173.47	985.86
Screen 5	2/12/98	187.37	1173.47	986.10
MW-15	2/12/98	28.95	1120.68	1091.73
MW-16	2/12/98	265.67	1236.29	970.62
MW-17				
Screen 1 (top)	2/12/98	236.09	1191.21	955.12
Screen 2	2/12/98	233.87	1191.21	957.34
Screen 3	2/12/98	244.72	1191.21	946.49
Screen 4	2/12/98	233.14	1191.21	958.07
Screen 5	2/12/98	236.43	1191.21	954.78
MW-18				
Screen 1 (top)	2/12/98	N/W	1225.41	N/W
Screen 2	2/12/98	281.88	1225.41	943.53
Screen 3	2/12/98	267.63	1225.41	957.78
Screen 4	2/12/98	271.49	1225.41	953.92
Screen 5	2/12/98	276.01	1225.41	949.40
MW-19				
Screen 1 (top)	2/12/98	181.76	1142.94	961.18
Screen 2	2/12/98	182.50	1142.94	960.44
Screen 3	2/12/98	181.47	1142.94	961.47
Screen 4	2/12/98	182.24	1142.94	960.70
Screen 5	2/12/98	182.26	1142.94	960.68
MW-20				
Screen 1 (top)	2/12/98	224.73	1165.05	940.32
Screen 2	2/12/98	222.20	1165.05	942.85
Screen 3	2/12/98	219.06	1165.05	945.99
Screen 4	2/12/98	223.44	1165.05	941.61
Screen 5	2/12/98	218.82	1165.05	946.23

TABLE 5-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS FEBRUARY 12, 1998

Well Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-21				
Screen 1 (top)	2/12/98	83.44	1059.10	975.66
Screen 2	2/12/98	80.37	1059.10	978.73
Screen 3	2/12/98	79.83	1059.10	979.27
Screen 4	2/12/98	80.65	1059.10	978.45
Screen 5	2/12/98	80.75	1059.10	978.35
MW-22				
Screen 1 (top)	2/12/98	202.34	1176.98	974.64
Screen 2	2/12/98	197.36	1176.98	979.62
Screen 3	2/12/98	197.02	1176.98	979.96
Screen 4	2/12/98	199.65	1176.98	977.33
Screen 5	2/12/98	202.54	1176.98	974.44
MW-23				
Screen 1 (top)	2/12/98	135.36	1108.84	973.48
Screen 2	2/12/98	132.95	1108.84	975.89
Screen 3	2/12/98	132.47	1108.84	976.37
Screen 4	2/12/98	135.13	1108.84	973.71
Screen 5	2/12/98	135.89	1108.84	972.95
MW-24				
Screen 1 (top)	2/12/98	232.49	1200.94	968.45
Screen 2	2/12/98	226.86	1200.94	974.08
Screen 3	2/12/98	226.21	1200.94	974.73
Screen 4	2/12/98	228.35	1200.94	972.59
Screen 5	2/12/98	231.47	1200.94	969.47

FIGURES

Jet Propulsion Laboratory

MW-24
MW-7
MW-16
MW-1
MW-15
MW-11
MW-13
MW-9
MW-6
MW-8
MW-22
MW-12
MW-14
MW-3
MW-18
MW-23
MW-2
MW-4
MH-01
MW-10
MW-5
MW-17
MW-21
MW-19
MW-20

#6 La Canada Irrigation District

#1 #3 #2 #4 #1 Valley Water Company

City of Pasadena Arroyo Well

City of Pasadena Well 52

City of Pasadena Ventura Well

City of Pasadena Windsor Well

Lincoln Ave. Water Co. Well #3

Lincoln Ave. Water Co. Well #5

Rubio Canyon Land and Water Co. #4 #7

Los Flores Water Co. Well #2

Oak Grove Ranger Station

Oak Grove Park

Devils Gate Reservoir

Spreading Grounds

WY AVE
GOULD AVE
HAMPTON RD
CROWN RD
VIRO RD
BLVD
FOOTHILL AVE
LINCOLN AVE
LOMA ALTA
MARIPOSA AVE
ALTADENA DR
CASITAS AVE
HARRIET
OLIVE DR
ST
GLENROSE AVE
VENTURA ST
WINDSOR AVE
FIGUEROA ST
CROSBY LN

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well

N

Scale in Feet

0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 1-1

Locations of JPL Groundwater Monitoring Wells and Nearby Municipal Production Wells

Jet Propulsion Laboratory
Pasadena, California

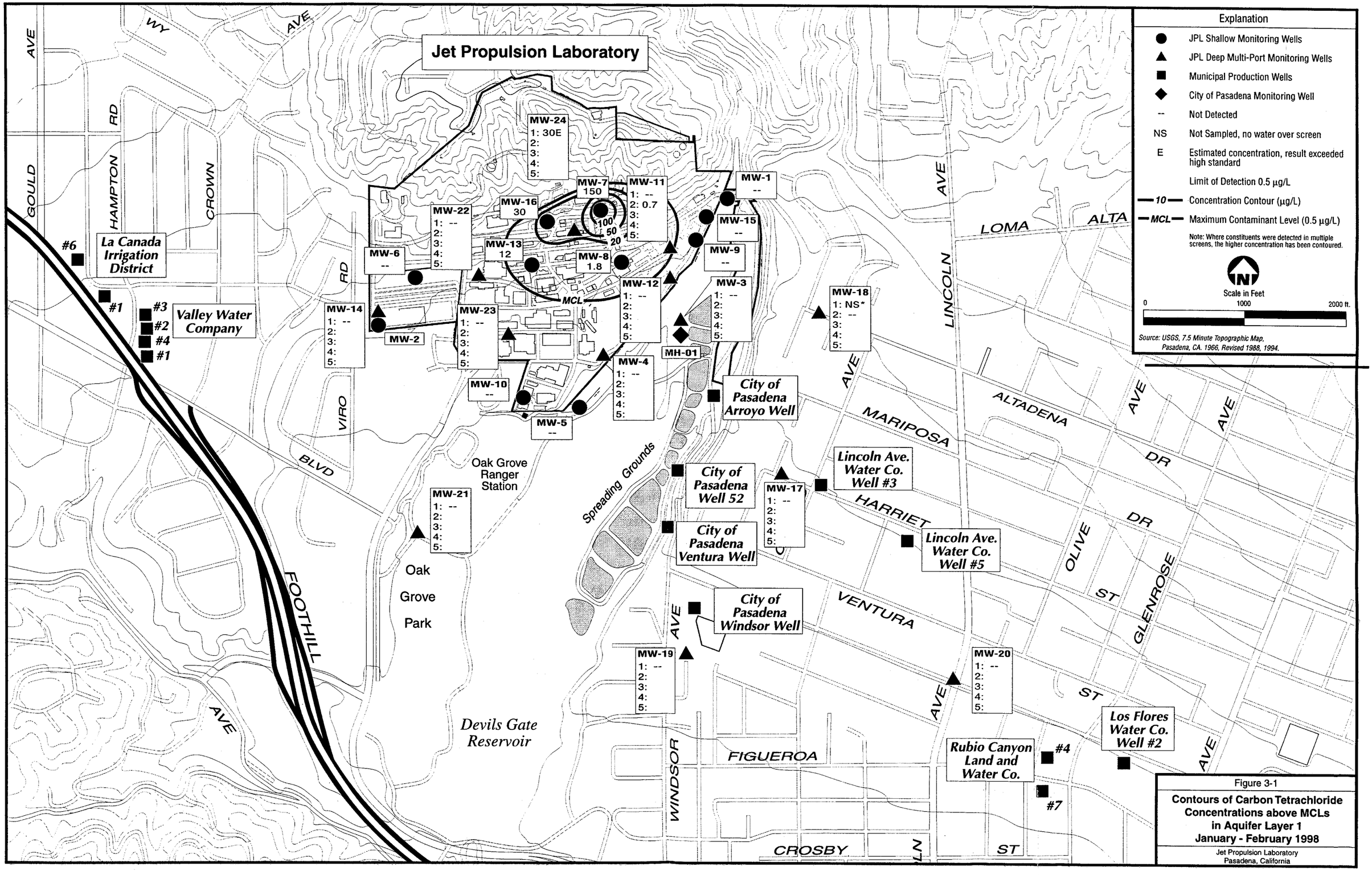


Figure 3-1

Contours of Carbon Tetrachloride Concentrations above MCLs in Aquifer Layer 1 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 1: 2: 6.9 3: -- 4: 5:
MW-7
MW-11 1: 2: 3: -- 4: 5:
MW-1
MW-16
MW-22 1: 2: -- 3: -- 4: 5:
MW-15
MW-13
MW-6
MW-8
MW-9
MW-12 1: 2: 1.1 3: 23E 4: 5:
MW-3 1: 2: -- 3: 1.2 4: 5:
MW-14 1: 2: -- 3: -- 4: 5:
MW-23 1: 2: -- 3: -- 4: 5:
MW-2
MW-18 1: 2: 3: -- 4: 5:
MH-01
MW-4 1: 2: 1.9 3: -- 4: 5:
MW-10
MW-5
MW-21 1: 2: -- 3: -- 4: 5:
MW-17 1: 2: -- 3: 3.3 4: 5:
MW-19 1: 2: -- 3: -- 4: 5:
MW-20 1: 2: -- 3: 4: 5:

#6 La Canada Irrigation District
#1
#3 #2 #4 #1 Valley Water Company
City of Pasadena Arroyo Well
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well
Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Rubio Canyon Land and Water Co. #4 #7
Los Flores Water Co. Well #2

Oak Grove Ranger Station
Oak Grove Park
Devils Gate Reservoir
Spreading Grounds

GOULD AVE
WY AVE
HAMPTON RD
CROWN RD
VIRO RD
BLVD
FOOTHILL AVE
LINCOLN AVE
LOMA ALTA
ALTADENA DR
MARIPOSA AVE
HARRIET ST
OLIVE DR
GLENROSE ST
VENTURA ST
FIGUEROA ST
WINDSOR AVE
CROSBY LN
ST
AVE

10
20
5.0
MCL

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- E Estimated concentration, result exceeded high standard
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- MCL Maximum Contaminant Level (0.5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-2
Contours of Carbon Tetrachloride Concentrations above MCLs in Aquifer Layer 2 January - February 1998
Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 1: 2: 3: 4: -- 5: --
MW-7
MW-11 1: 2: 3: 4: -- 5: --
MW-1
MW-16
MW-22 1: 2: 3: 4: -- 5: --
MW-15
MW-13
MW-6
MW-8
MW-9
MW-12 1: 2: 3: 4: 4.0 5: 1.3
4.0
MW-3 1: 2: 3: 4: -- 5: --
2.0 MCL
MW-18 1: 2: 3: 4: 2.6 5: --
MW-14 1: 2: 3: 4: -- 5: --
MW-23 1: 2: 3: 4: -- 5: --
MW-2
MH-01
MW-4 1: 2: 3: 4: -- 5: --
MW-10
City of Pasadena Arroyo Well
MW-5
MW-21 1: 2: 3: 4: -- 5: --
MW-17 1: 2: 3: 4: -- 5: --
MW-19 1: 2: 3: 4: -- 5: --
MW-20 1: 2: 3: 4: -- 5:

La Canada Irrigation District
#6
#1
#3
#2
#4
#1
Valley Water Company
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well
Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Rubio Canyon Land and Water Co.
#4
#7
Los Flores Water Co. Well #2

Oak Grove Ranger Station
Oak Grove Park
Devils Gate Reservoir
Spreading Grounds

GOULD AVE
WY
AVE
HAMPTON RD
CROWN
RD
VIRO
BLVD
FOOTHILL
AVE
LOMA ALTA
LINCOLN AVE
ALTADENA DR
MARIPOSA
CASITAS AVE
HARRIET
OLIVE DR
ST
GLENROSE AVE
VENTURA
AVE
ST
FIGUEROA
WINDSOR AVE
CROSBY
ST
AVE

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- MCL Maximum Contaminant Level (0.5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-3
Contours of Carbon Tetrachloride Concentrations above MCLs in Aquifer Layer 3 January - February 1998
Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24
1: 15
2:
3:
4:
5:

MW-7
24

MW-11
1: --
2: --
3:
4:
5:

MW-1
--

MW-16
3.5

MW-22
1: --
2:
3:
4:
5:

MW-15
--

MW-13
5.2

MW-6
--

MW-9
--

MW-8
1.3

MW-12
1: --
2:
3:
4:
5:

MW-3
1: --
2:
3:
4:
5:

MW-18
1: NS*
2: --
3:
4:
5:

MW-14
1: --
2:
3:
4:
5:

MW-2

MW-23
1: 4.2
2:
3:
4:
5:

MH-01

MW-4
1: --
2:
3:
4:
5:

MW-10
1.1

MW-5
--

City of Pasadena Arroyo Well

City of Pasadena Well 52

City of Pasadena Ventura Well

City of Pasadena Windsor Well

Lincoln Ave. Water Co. Well #3

Lincoln Ave. Water Co. Well #5

Rubio Canyon Land and Water Co. #4 #7

Los Flores Water Co. Well #2

MW-17
1: --
2:
3:
4:
5:

MW-19
1: --
2:
3:
4:
5:

MW-20
1: --
2:
3:
4:
5:

MW-21
1: 16
2:
3:
4:
5:

? MCL
10
15
20
MCL

La Canada Irrigation District #6 #1

Valley Water Company #3 #2 #4 #1

Oak Grove Ranger Station

Oak Grove Park

Devils Gate Reservoir

Spreading Grounds

GOULD AVE
WY AVE
HAMPTON RD
CROWN RD
VIRO RD
BLVD
FOOTHILL AVE
LINCOLN AVE
LOMA ALTA
CASITAS AVE
MARIPOSA
ALTADENA DR
HARRIET
OLIVE DR
ST
GLENROSE AVE
VENTURA
FIGUEROA
WINDSOR
CROSBY
ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- NS Not Sampled, no water over screen
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- MCL Maximum Contaminant Level (0.5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-4

Contours of Trichloroethene Concentrations above MCLs in Aquifer Layer 1 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 1: 2: 0.7 3: -- 4: 5:
MW-7
MW-11 1: 2: 3: -- 4: 5:
MW-1
MW-16
MW-22 1: 2: -- 3: -- 4: 5:
MW-15
MW-13
MW-6
MW-9
MW-8
MW-12 1: 2: -- 3: -- 4: 5:
MW-3 1: 2: -- 3: -- 4: 5:
MW-18 1: 2: 3: 1.9 4: 5:
MW-14 1: 2: -- 3: -- 4: 5:
MW-23 1: 2: -- 3: -- 4: 5:
MW-2
MH-01
MW-4 1: 2: 2.7 3: -- 4: 5:
MW-10
MW-5
City of Pasadena Arroyo Well
MCL
MW-17 1: 2: -- 3: 8.7 4: 5:
Lincoln Ave. Water Co. Well #3
City of Pasadena Well 52
City of Pasadena Ventura Well
Lincoln Ave. Water Co. Well #5
City of Pasadena Windsor Well
MW-21 1: 2: -- 3: 0.5 4: 5:
MW-19 1: 2: 0.6 3: -- 4: 5:
MW-20 1: 2: -- 3: 4: 5:
Rubio Canyon Land and Water Co.
Los Flores Water Co. Well #2
La Canada Irrigation District
#6
#1
#3
#2
#4
#1
Valley Water Company
Oak Grove Ranger Station
Oak Grove Park
Devils Gate Reservoir
GOULD AVE
WY
AVE
HAMPTON RD
CROWN
VIRO
RD
BLVD
FOOTHILL
AVE
LOMA ALTA
LINCOLN AVE
CASITAS AVE
MARIPOSA
ALTADENA
AVE
DR
HARRIET
OLIVE DR
ST
GLENROSE
VENTURA
AVE
ST
FIGUEROA
WINDSOR
CROSBY
LN
ST
AVE

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- MCL Maximum Contaminant Level (5.0 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-5

Contours of Trichloroethene Concentrations above MCLs in Aquifer Layer 2 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

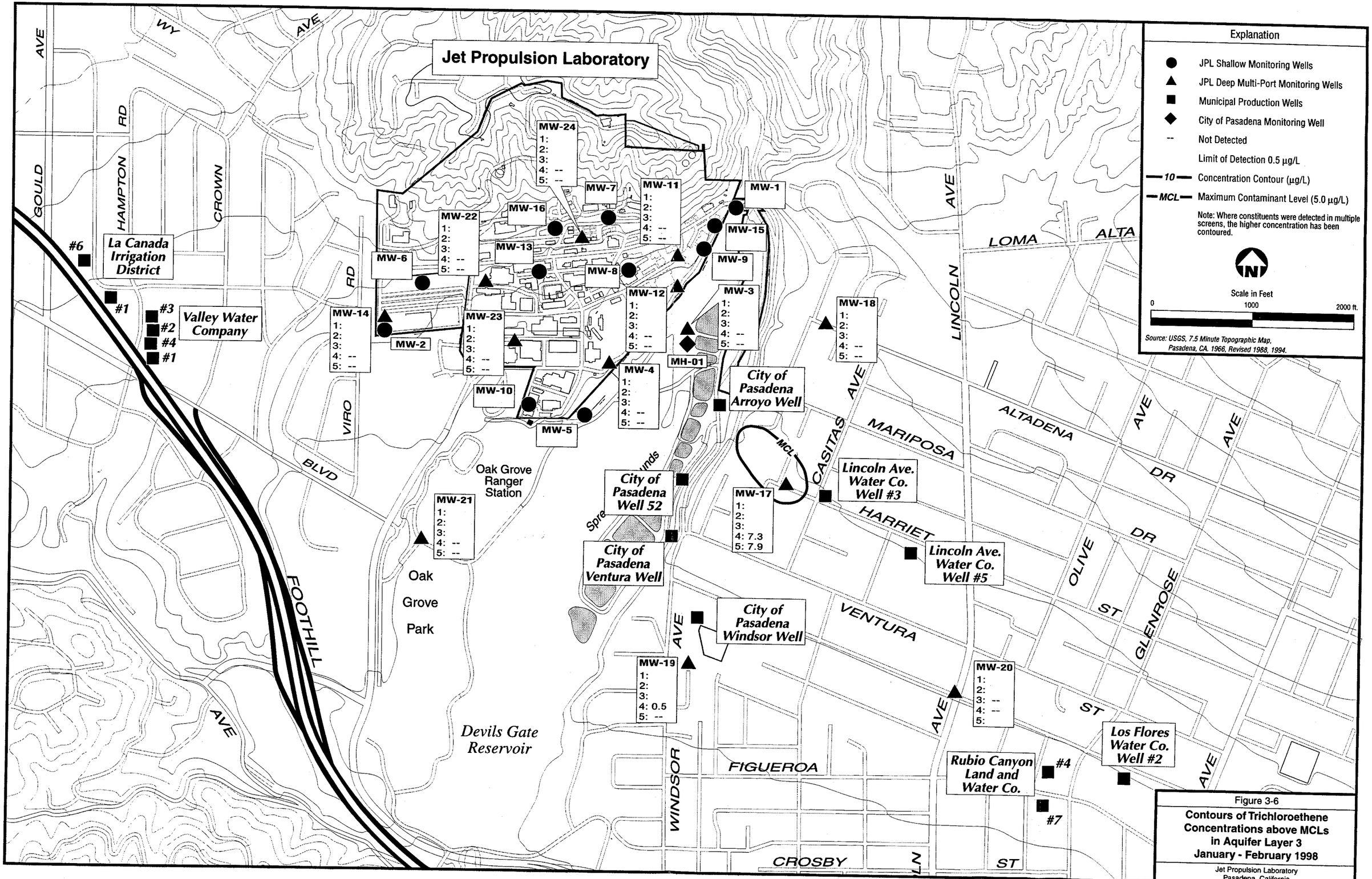


Figure 3-6

Contours of Trichloroethene Concentrations above MCLs in Aquifer Layer 3 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24
1: 0.8
2:
3:
4:
5:

MW-7
0.8

MW-11
1: --
2: --
3:
4:
5:

MW-1
--

MW-16
--

MW-22
1: --
2:
3:
4:
5:

MCL

MW-15
--

MW-6
--

MW-9
--

MW-8
--

MW-13
--

MW-12
1: --
2:
3:
4:
5:

MW-3
1: --
2:
3:
4:
5:

MW-18
1: NS*
2: --
3:
4:
5:

MW-14
1: --
2:
3:
4:
5:

MW-2

MW-23
1: --
2:
3:
4:
5:

MH-01

City of Pasadena Arroyo Well

MW-4
1: --
2:
3:
4:
5:

MW-10
--

MW-5
--

La Canada Irrigation District

#6

#1

#3
#2
#4
#1

Valley Water Company

GOULD AVE

HAMPTON RD

CROWN WY

VIRO RD

LINCOLN AVE

LOMA ALTA

CASITAS AVE

MARIPOSA

ALTADENA DR

AVE

BLVD

FOOTHILL

Oak Grove Ranger Station

MW-21
1: --
2:
3:
4:
5:

Oak Grove Park

Devils Gate Reservoir

City of Pasadena Well 52

City of Pasadena Ventura Well

MW-17
1: --
2:
3:
4:
5:

Lincoln Ave. Water Co. Well #3

HARRIET

Lincoln Ave. Water Co. Well #5

OLIVE DR

GLENROSE ST

City of Pasadena Windsor Well

VENTURA

MW-19
1: --
2:
3:
4:
5:

MW-20
1: --
2:
3:
4:
5:

AVE

WINDSOR AVE

FIGUEROA

CROSBY ST

Rubio Canyon Land and Water Co.

#4

#7

Los Flores Water Co. Well #2

ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- NS Not Sampled, no water over screen
- Limit of Detection 0.5 µg/L
- —10— Concentration Contour (µg/L)
- —MCL— Maximum Contaminant Level (0.5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-7

Contours of 1,2 - Dichloroethane Concentrations above MCLs in Aquifer Layer 1 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24
1: 0.5
2:
3:
4:
5:

MW-7
3.7

MW-11
1: --
2: --
3:
4:
5:

MW-1
--

MW-16
1.0

MW-22
1: 2.3
2:
3:
4:
5:

MW-15
--

MW-13
0.5

MW-6
2.0

MW-8
--

MW-9
--

MW-12
1: --
2:
3:
4:
5:

MW-3
1: --
2:
3:
4:
5:

MW-23
1: 1.6
2:
3:
4:
5:

MW-18
1: NS*
2: --
3:
4:
5:

MW-14
1: --
2:
3:
4:
5:

MW-2

MH-01

MW-4
1: --
2:
3:
4:
5:

City of Pasadena Arroyo Well

MW-10
2.2

MW-5
--

? 0.5

La Canada Irrigation District

#6

#1

#3
#2
#4
#1

Valley Water Company

Oak Grove Ranger Station

MW-21
1: --
2:
3:
4:
5:

Oak Grove Park

Devils Gate Reservoir

City of Pasadena Well 52

City of Pasadena Ventura Well

City of Pasadena Windsor Well

MW-17
1: --
2:
3:
4:
5:

Lincoln Ave. Water Co. Well #3

Lincoln Ave. Water Co. Well #5

MW-19
1: --
2:
3:
4:
5:

MW-20
1: --
2:
3:
4:
5:

Rubio Canyon Land and Water Co.

#4

#7

Los Flores Water Co. Well #2

GOULD AVE
WY
AVE
HAMPTON RD
CROWN
VIRO RD
BLVD
FOOTHILL AVE
LINCOLN AVE
LOMA ALTA
ALTADENA DR
MARIPOSA
CASITAS AVE
HARRIET
OLIVE DR
ST
GLENROSE AVE
VENTURA
FIGUEROA
WINDSOR AVE
CROSBY ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- NS Not Sampled, no water over screen
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- Maximum Contaminant Level (5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-8

Contours of Tetrachloroethene Concentrations in Aquifer Layer 1 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 1: 2: -- 3: -- 4: 5:
MW-7
MW-11 1: 2: 3: -- 4: 5:
MW-1
MW-16
MW-22 1: 2: -- 3: -- 4: 5:
MW-15
MW-13
MW-6
MW-9
MW-8
MW-12 1: 2: -- 3: -- 4: 5:
MW-3 1: 2: -- 3: -- 4: 5:
MW-23 1: 2: -- 3: -- 4: 5:
MW-18 1: 2: 3: 1.7 4: 5:
MW-14 1: 2: 1.2 3: -- 4: 5:
MW-2
MH-01
MW-4 1: 2: 0.6 3: -- 4: 5:
MW-10
MW-5
MW-17 1: 2: -- 3: -- 4: 5:
MW-21 1: 2: 1.1 3: 1.4 4: 5:
MW-19 1: 2: 0.9 3: 2.1 4: 5:
MW-20 1: 2: -- 3: 4: 5:

#6 #1 #3 #2 #4 #1

La Canada Irrigation District

Valley Water Company

City of Pasadena Arroyo Well

City of Pasadena Well 52

City of Pasadena Ventura Well

City of Pasadena Windsor Well

Lincoln Ave. Water Co. Well #3

Lincoln Ave. Water Co. Well #5

Rubio Canyon Land and Water Co. #4 #7

Los Flores Water Co. Well #2

Oak Grove Ranger Station

Oak Grove Park

Devils Gate Reservoir

0.5

?

GOULD AVE
WY
AVE
HAMPTON RD
CROWN
RD
VIRO
BLVD
FOOTHILL
AVE
LINCOLN AVE
LOMA ALTA
CASITAS AVE
MARIPOSA
ALTADENA
AVE
DR
HARRIET
OLIVE DR
ST
GLENROSE AVE
VENTURA
ST
WINDSOR AVE
FIGUEROA
CROSBY ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- Maximum Contaminant Level (5 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-9

Contours of Tetrachloroethene Concentrations in Aquifer Layer 2 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

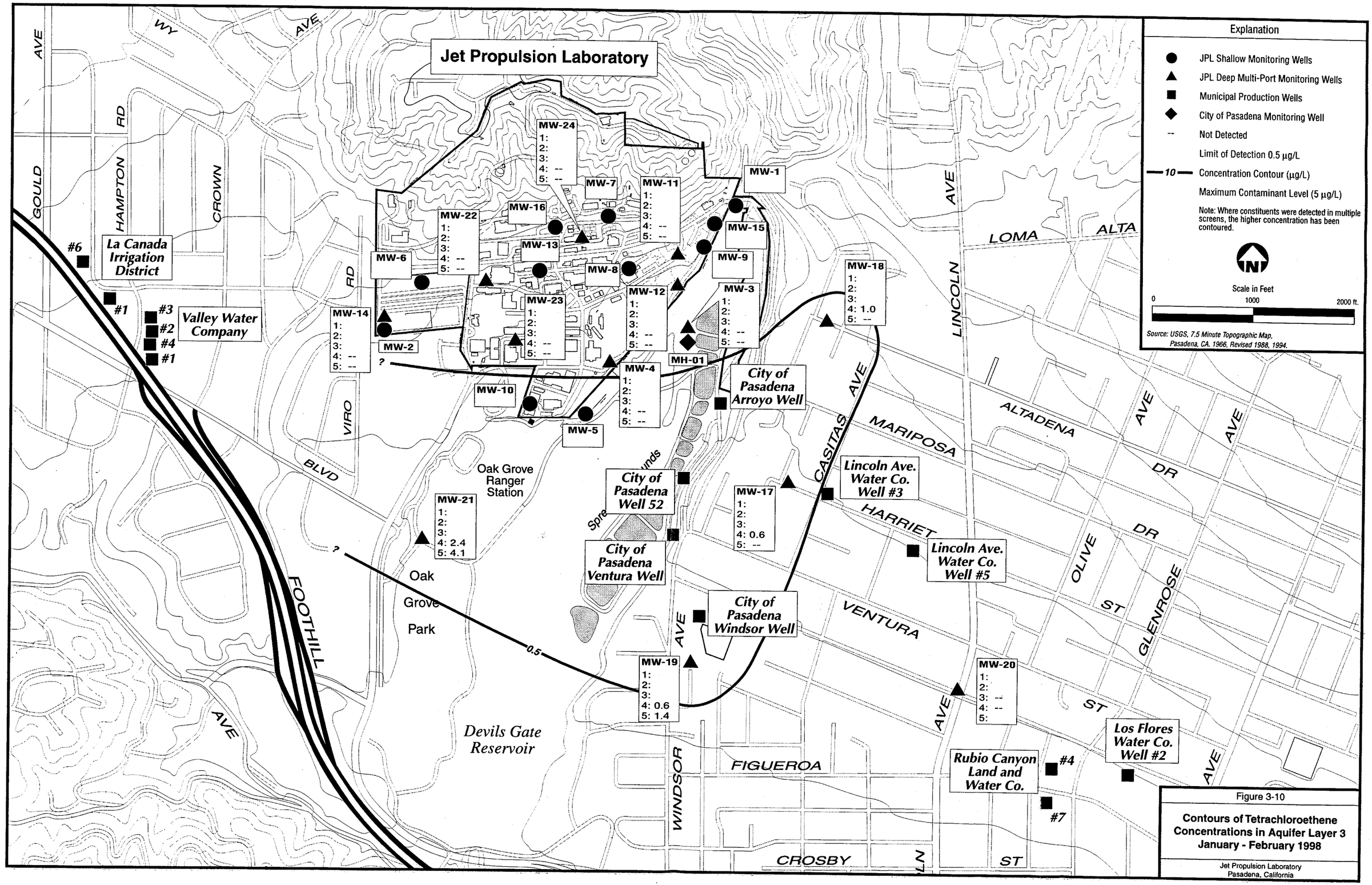


Figure 3-10

Contours of Tetrachloroethene Concentrations in Aquifer Layer 3 January - February 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24
1: 330
2:
3:
4:
5:

MW-7
720

MW-11
1: --
2: --
3:
4:
5:

MW-1
--

MW-22
1: --
2:
3:
4:
5:

MW-16
1230

1000

500

MW-15
--

MW-6
--

MW-8
11

MW-9
--

MW-18
1: NS*
2: --
3:
4:
5:

MW-13
98

IAL

IAL

MW-12
1: --
2:
3:
4:
5:

MW-3
1: --
2:
3:
4:
5:

MW-14
1: --
2:
3:
4:
5:

MW-23
1: 5.2
2:
3:
4:
5:

MW-2

MH-01

MW-4
1: 9.6
2:
3:
4:
5:

City of Pasadena Arroyo Well

MW-10
4.7

MW-5
4.2

La Canada Irrigation District

#6

#1

#3
#2
#4
#1

Valley Water Company

Oak Grove Ranger Station

MW-21
1: 14
2:
3:
4:
5:

Oak Grove Park

Devils Gate Reservoir

City of Pasadena Well 52

City of Pasadena Ventura Well

MW-17
1: --
2:
3:
4:
5:

Lincoln Ave. Water Co. Well #3

Lincoln Ave. Water Co. Well #5

City of Pasadena Windsor Well

MW-19
1: --
2:
3:
4:
5:

MW-20
1: 6.3
2:
3:
4:
5:

Rubio Canyon Land and Water Co.

#4

#7

Los Flores Water Co. Well #2

GOULD AVE

WY

AVE

HAMPTON RD

CROWN

RD

VIRO

BLVD

FOOTHILL

AVE

LOMA ALTA

LINCOLN AVE

ALTADENA DR

MARIPOSA

CASITAS AVE

HARRIET

OLIVE DR

GLENROSE ST

VENTURA

ST

AVE

WINDSOR AVE

FIGUEROA

CROSBY LN

ST

AVE

AVE

AVE

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- -- Not Detected
- NS Not sampled, no water over screen
- Limit of Detection 0.5 µg/L
- 10 Concentration Contour (µg/L)
- IAL Interim Action Level (18 µg/L)

Note: Where constituents were detected in multiple screens, the higher concentration has been contoured.

N

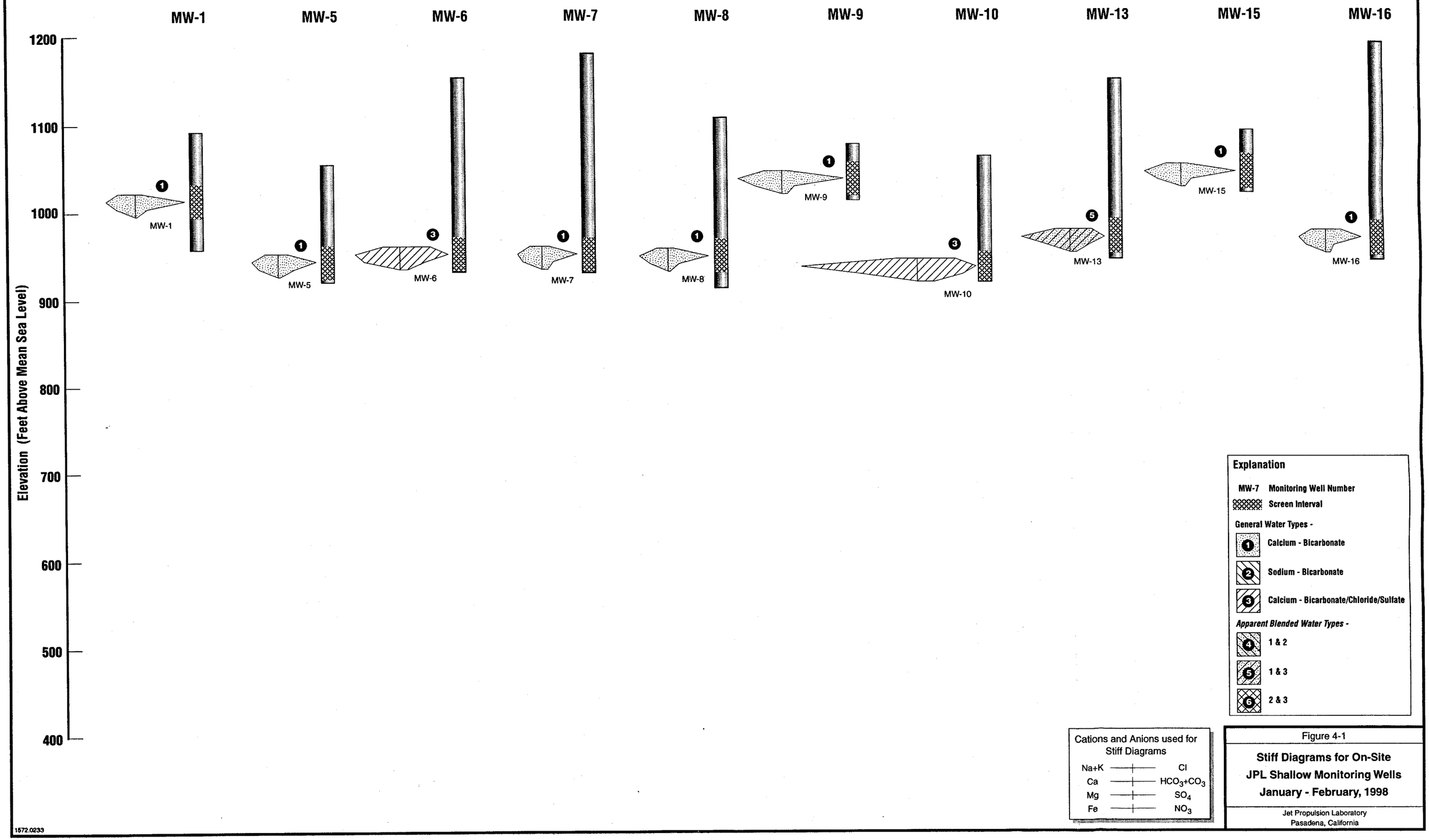
Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 3-11

Contours of Perchlorate Concentrations above IAL in Aquifer Layer 1 January - February 1998

Jet Propulsion Laboratory
Pasadena, California



1572.0233

Figure 4-1

Stiff Diagrams for On-Site JPL Shallow Monitoring Wells January - February, 1998

Jet Propulsion Laboratory
Pasadena, California

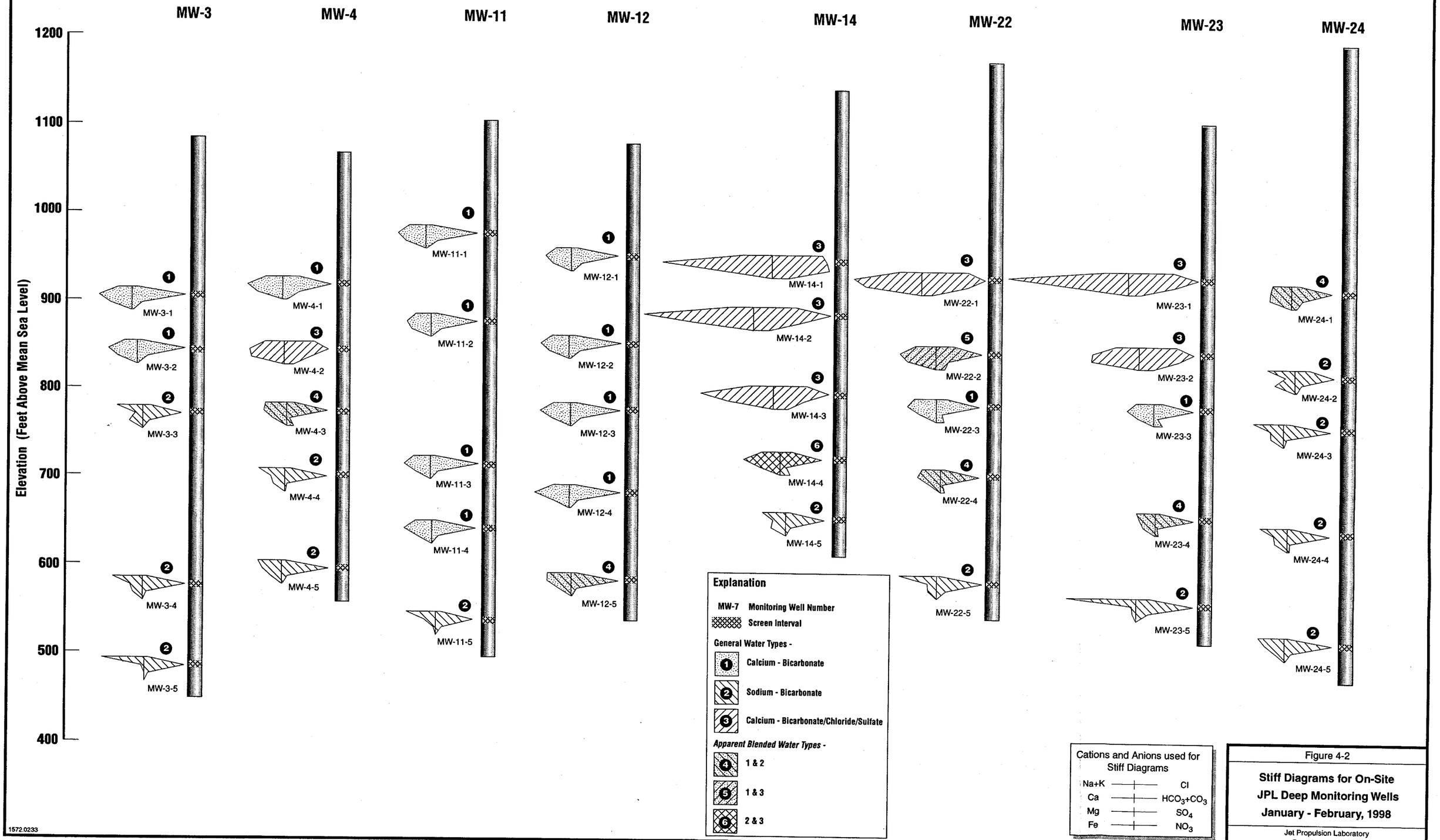
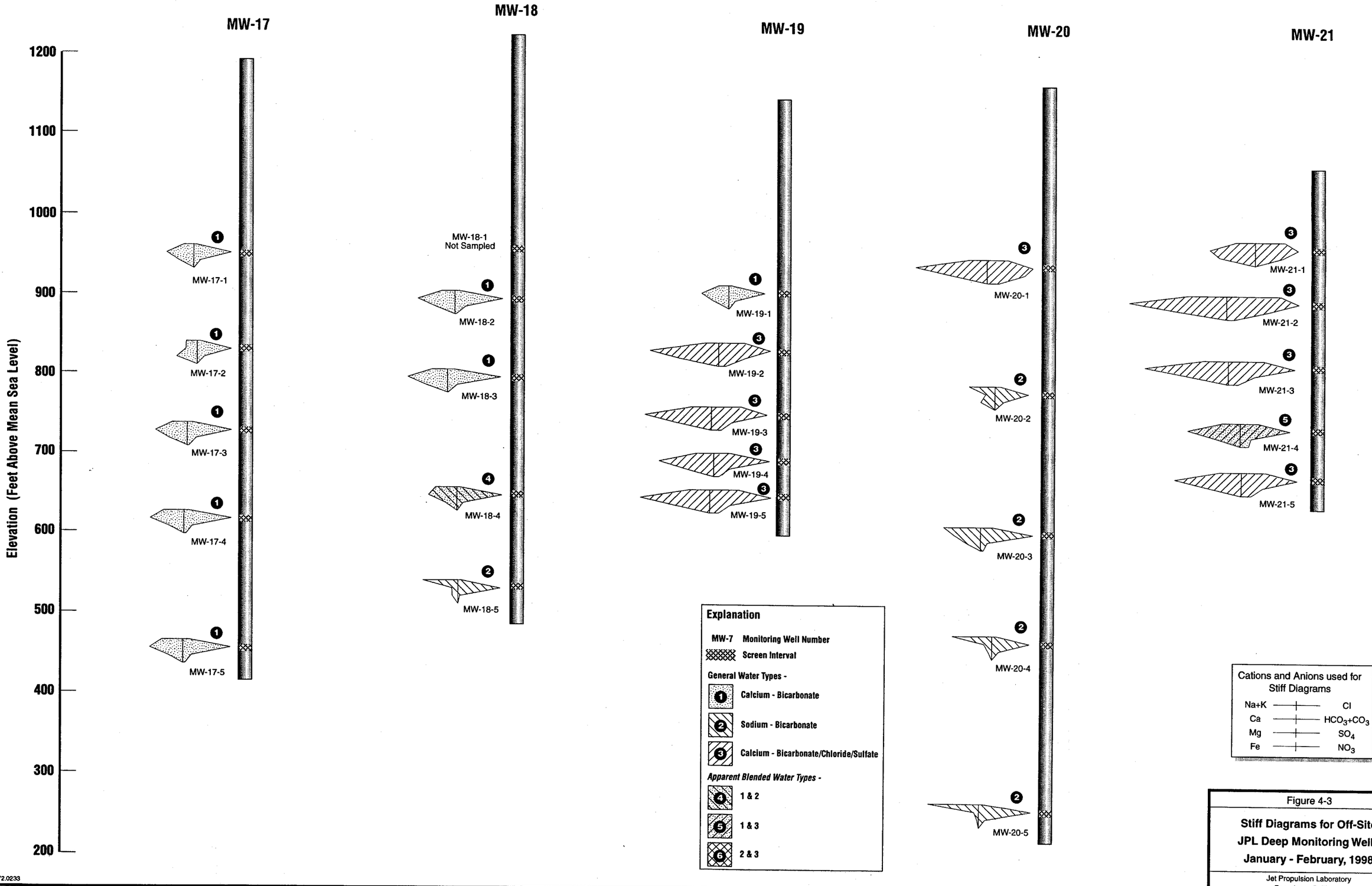


Figure 4-2

Stiff Diagrams for On-Site JPL Deep Monitoring Wells January - February, 1998

Jet Propulsion Laboratory
Pasadena, California

1572.0233



1572.0233

Figure 4-3

Stiff Diagrams for Off-Site JPL Deep Monitoring Wells January - February, 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 962.36
MW-7 960.13
MW-1 1090.72
MW-16 962.22
MW-15 1090.16
MW-11 1015.89
MW-13 963.08
MW-6 975.82
MW-8 962.14
MW-9 1086.83
MW-14 978.77
MW-22 966.85
MW-12 971.73
MW-3 957.74
MW-18 ND
MW-23 963.87
MW-2
MW-4 961.88
MH-01
MW-10 961.27
MW-5 959.85
MW-17 943.16
MW-21 ND
MW-19 943.95
MW-20 937.16

1090 1070 1050 1030 1010 990 970 965 960 955 950 945 940 975

La Canada Irrigation District
#6
#1
#3
#2
#4
#1
Valley Water Company
City of Pasadena Arroyo Well
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well
Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Rubio Canyon Land and Water Co. #4
#7
Los Flores Water Co. Well #2

Oak Grove Ranger Station
Spreading Grounds
Oak Grove Park
Devils Gate Reservoir

GOULD AVE
WY AVE
HAMPTON RD
CROWN RD
VIRO RD
FOOTHILL BLVD
LINCOLN AVE
LOMA ALTA
MARIPOSA AVE
ALTADENA DR
OLIVE DR
GLENROSE AVE
HARRIET ST
VENTURA ST
CASITAS AVE
WINDSOR AVE
FIGUEROA ST
CROSBY ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- ND — No Data; Top screen dry. Second screen significantly affected by nearby pumping
- Direction of groundwater flow
- Note: Contours Represent Feet Above Mean Sea Level

N

Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 5-1

Water-Table Elevation Contour Map
January 12, 1998

Jet Propulsion Laboratory
Pasadena, California

Jet Propulsion Laboratory

MW-24 968.45
MW-7 969.62
MW-1 1093.06
MW-16 970.62
MW-15 1091.73
MW-11 1018.04
MW-13 971.72
MW-6 981.03
MW-8 973.42
MW-9 1087.72
MW-14 983.94
MW-22 974.64
MW-12 987.93
MW-3 976.90
MW-18 ND
MW-23 973.48
MW-2
MW-4 979.94
MH-91
MW-10 972.33
MW-5 976.28
MW-17 955.12
MW-21 975.66
MW-19 961.18
MW-20 940.32

1090 1070 1050 1030 1010 1000 990 980 975 970 980 975 970 965 960 955 950 945 940

La Canada Irrigation District
#6
#1
Valley Water Company
#3
#2
#4
#1
City of Pasadena Arroyo Well
City of Pasadena Well 52
City of Pasadena Ventura Well
City of Pasadena Windsor Well
Lincoln Ave. Water Co. Well #3
Lincoln Ave. Water Co. Well #5
Rubio Canyon Land and Water Co.
#4
#7
Los Flores Water Co. Well #2
Oak Grove Ranger Station
Spreading Grounds
Oak Grove Park
Devils Gate Reservoir

GOULD AVE
WY
AVE
HAMPTON RD
CROWN
VIRO RD
BLVD
FOOTHILL
LOMA ALTA
LINCOLN AVE
MARIPOSA
ALTADENA DR
AVE
OLIVE DR
ST
GLENROSE AVE
HARRIET
CASITAS
VENTURA
AVE
WINDSOR
FIGUEROA
CROSBY
ST
LN
ST

Explanation

- JPL Shallow Monitoring Wells
- JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells
- City of Pasadena Monitoring Well
- ND — No Data; Top screen dry. Second screen significantly affected by nearby pumping
- Direction of groundwater flow
- Note: Contours Represent Feet Above Mean Sea Level

N

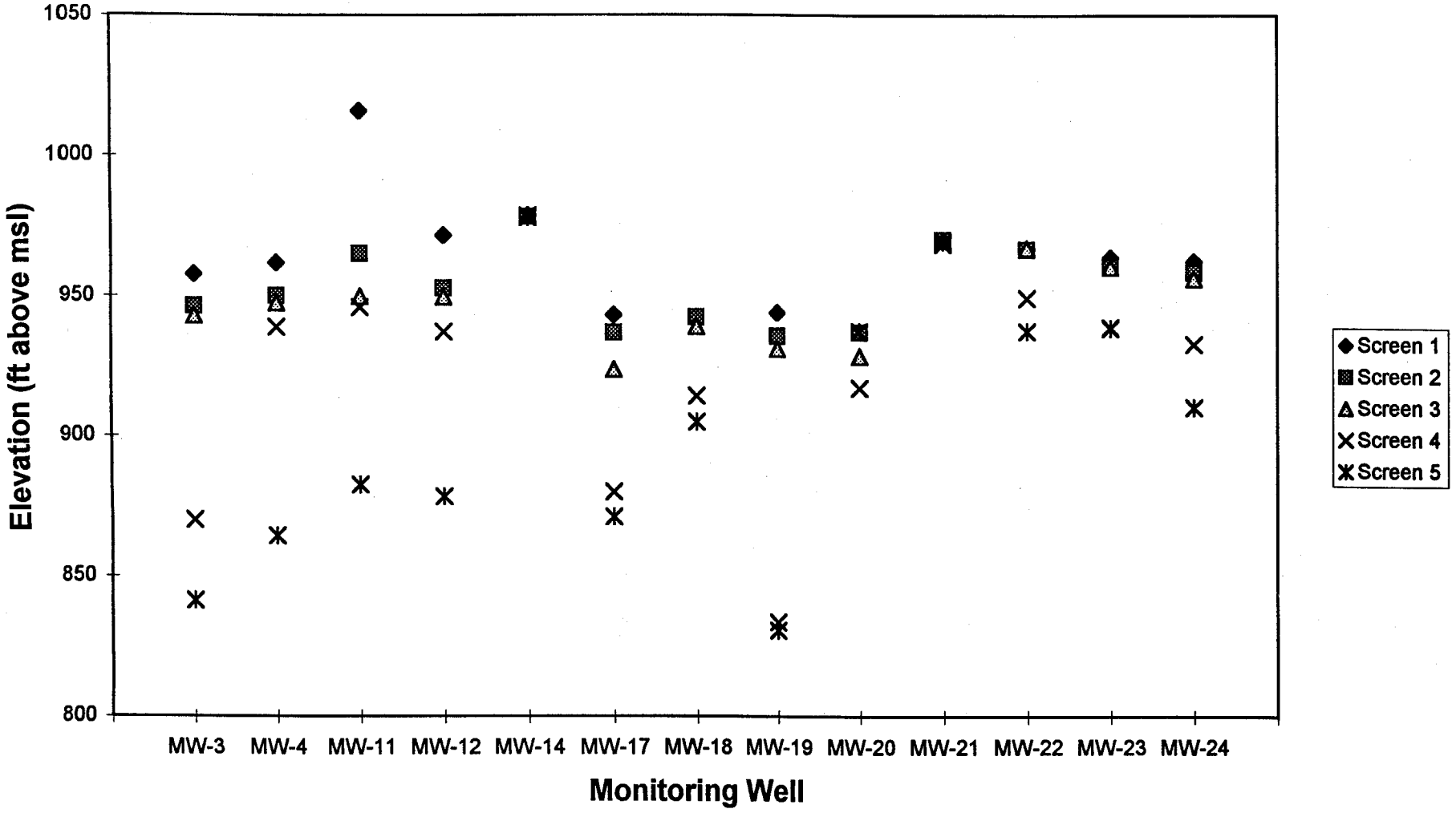
Scale in Feet
0 1000 2000 ft.

Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA. 1966, Revised 1988, 1994.

Figure 5-2

Water-Table Elevation Contour Map
February 12, 1998

Jet Propulsion Laboratory
Pasadena, California



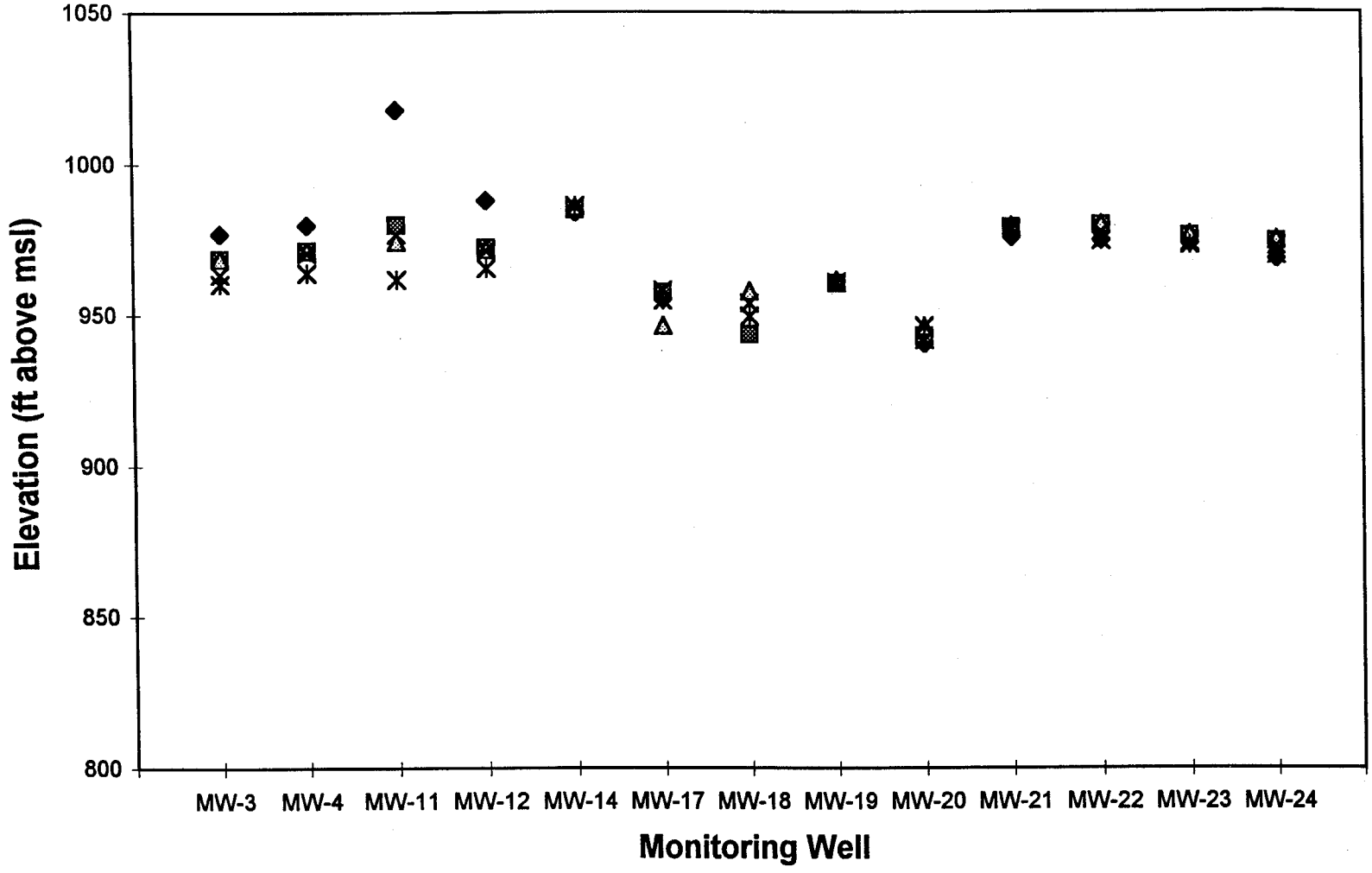
Note: Water levels were below screen 1 for MW-18 and 21.

Figure 5-3

PIEZOMETRIC WATER LEVELS FROM DEEP (MP) WELLS

January 12, 1998

Jet Propulsion Laboratory
Pasadena, California



Note: Water level was below screen 1 for MW-18.

Figure 5-4

PIEZOMETRIC WATER LEVELS FROM DEEP (MP) WELLS

February 12, 1998

Jet Propulsion Laboratory
Pasadena, California

APPENDIX A

WELL DEVELOPMENT/WELL SAMPLING LOG FORMS FOR SHALLOW WELLS

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/10/98
Site Engineer : J.BRENNER D.DIRICK
Well Number : MW-1
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	23.39	TOP OF 4" CASING	23.39
Depth to Sediment (ft)	119.27	TOP OF 4" CASING	119.27
Thickness of Sediment (ft)	0.73		0.73

Depth of Well (ft) 120.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 95.88

Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 62.4
Casing Volumes Purged 1.3

Total Volume Purged (gals) 81

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1445	9.39	2.45	17.6	484	2.7 gal/min	PUMP ON, CONTROL BOX
1450	8.53	4.05	17.7	423	2.7	SET AT 166 Hz
1455	7.97	4.36	17.5	416	2.7	WATER APPEARS CLEAR
1500	7.58	4.10	17.5	412	2.7	" " "
1502	7.50	10.85	17.2	410	2.7	WATER CLEAR
1505	7.37	7.96	16.5	400	2.7	WATER CLEAR
1510	7.35	5.31	16.2	405	2.7	WATER CLEAR
1512	7.30	2.54	16.0	411	2.7	WATER CLEAR
1514	7.28	1.64	16.2	414	2.7	Ready to sample
1515	—	—	—	—	0.02	COLLECT MW-981-079
~~1520~~						REDUCE FLOW RATE
1520						PUMP OFF

Notes Sampling Procedures: * PUMP SET AT 29' BTOC

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/10/95
Site Engineer : J.BRUNER / D.PIRKLN
Well Number : MW-5
Equipment : DRT-ISC
YSI 350
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	98.61	TOP OF 4" CASING	98.61
Depth to Sediment (ft)	139.07	TOP OF 4" CASING	139.09
Thickness of Sediment (ft)	0.91		0.91

Depth of Well (ft) 140.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 40.48

Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 26.4
Casing Volumes Purged 3.4

Total Volume Purged (gals) 90

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1140	7.53	137.7	16.2	416	3.0	PUMP ON; CONTROL BOX
1145	7.17	149.4	16.4	406	3.0	SET AT 300 Hz; WATER
1150	6.78	63.2	16.7	414	3.0	IS CLOUDY; WATER CLOUDY
1155	6.53	11.43	16.9	415	3.0	WATER CLEARING
1200	6.48	1.93	17.0	412	3.0	WATER CLEAR
1205	6.47	0.94	16.9	412	3.0	WATER CLEAR
1207	6.40	0.86	16.7	408	3.0	READY TO SAMPLE
1210	—	—	—	—	0.02	COLLECT MW-981-067;
—						FLOW REDUCED
1215	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: * PUMP SET AT 103' BTOC

F4

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : IPC
Project Number : 1572.0233
Date : 2/10/98
Site Engineer : J. BRENNER, D. DIRKEN

Well Number : MW-6
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	208.62	TOP OF 4" CASING	208.62
Depth to Sediment (ft)	244.19	TOP OF 4" CASING	244.19
Thickness of Sediment (ft)	0.81		0.81

Depth of Well (ft) 245.00
Diameter of Casing (ft) 0.333
Water Column Height (ft) 35.57

Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 23.2
Casing Volumes Purged 2.84

Total Volume Purged (gals) [redacted]66

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0840	7.67	53.3	20.1	788	1.2	PUMP ON; CONTROL BOX SET AT [redacted]375HZ
0845	6.70	46.6	21.0	816	1.2	WATER CLOUDY
0850	6.60	46.9	21.7	836	1.2	WATER CLOUDY
0851	—	—	—	—	1.8	PUMP RESET TO 390 HZ
0855	6.58	38.5	21.9	825	1.9	WATER CLOUDY
0900	6.96	14.6	21.5	805	1.8	WATER CLEARING
0905	6.57	2.53	21.4	792	1.8	WATER CLEAR
0910	6.56	1.86	21.3	790	1.8	WATER CLEAR
0915	6.55	0.42	20.9	781	1.8	READY TO SAMPLE
0920	—	—	—	—	0.02	COLLECT MW-98I-006
					0.02	FLOW RATE REDUCE; CONTROL BOX @ 319HZ
0930	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: * SET PUMP AT 215' BTOC

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/11/98
Site Engineer : J. BRENNER, D. DIRKIN

Well Number : MW-7
Equipment : YSI 3500
DRT-15C
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	243.97	TOP OF 4" CASING	243.97
Depth to Sediment (ft)	272.80	TOP OF 4" CASING	272.80
Thickness of Sediment (ft)	2.20		2.20

Depth of Well (ft) 275.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 28.83
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 18.8
Casing Volumes Purged 3.4
Total Volume Purged (gals) 63

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0820	8.72	34.3	18.6	433	1.8	PUMP ON; CONTROL BOX
						SET AT 330 Hz
0825	8.30	32.4	20.2	436	1.8	WATER SL. CLOUDY
0830	7.95	16.0	19.7	437	1.8	WATER SL. CLOUDY
0835	7.84	8.79	20.3	441	1.8	WATER CLEARING
0840	7.81	5.62	20.4	441	1.8	WATER CLEAR
0845	7.80	3.43	20.0	440	1.8	WATER CLEAR
0850	7.76	1.71	20.7	439	1.8	WATER CLEAR
0852	7.72	1.21	20.1	437	1.8	READY TO SAMPLE
0855	—	—	—	—	0.02	FLOW REDUCED; COLLECT
						MW-981-065 (MS/MSD METALS)
0855					0.02	COLLECT MW-981-065MS
0855					0.02	COLLECT MW-981-065MSD
0900	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: PUMP SET AT 249' BTOC

F4

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/11/98
Site Engineer : J. BRUNER, L. DAVENPORT

Well Number : MW-8
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	166.84	TOP OF 4" CASING	166.84
Depth to Sediment (ft)	202.43	TOP OF 4" CASING	202.43
Thickness of Sediment (ft)	2.57		2.57

Depth of Well (ft) 205.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 35.59

Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 23.2
Casing Volumes Purged 2.7

Total Volume Purged (gals) 64

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1115	8.94	95.7	16.0	379	1.6	PUMP ON, CONTROL BOX SET AT 3.2 Hz
	—	—	—	—	—	
1120	8.11	67.1	17.2	387	1.6	WATER CLOUDY
1125	7.68	20.66	18.2	389	1.6	Water slightly cloudy
1130	7.57	14.62	18.0	388	1.6	WATER CLEARING
1135	7.58	9.11	18.0	389	1.6	Water clear
1140	7.52	5.95	18.0	388	1.6	WATER CLEAR
1145	7.52	4.71	18.0	387	1.6	WATER CLEAR
1150	7.50	3.77	18.2	390	1.6	WATER CLEAR
1152	7.49	3.39	18.5	392	1.6	READY TO SAMPLE
1155	—	—	—	—	0.02	COLLECT MW-98-064; FLOW RATE REDUCED
1200	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: * PUMP SET AT 172' BTOC

F4

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/10/98
Site Engineer : J. BRENNER, D. DIRKIN

Well Number : MW-9
Equipment : DRT-1SC
YSI-3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	17.94	TOP OF 4" CASING	17.94
Depth to Sediment (ft)	67.75	TOP OF 4" CASING	67.75
Thickness of Sediment (ft)	0.25		0.25

Depth of Well (ft) 68.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 49.81
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 32.4
Casing Volumes Purged 2.7
Total Volume Purged (gals) 87.5

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1400	6.9				3.5	PUMP ON / CONTROL BOX
1405	6.89	20.2	19.5	551	3.5	SET AT 20 PSI
1410	6.88	12.9	20.1	577	3.5	WATER CLEAR
1415	6.89	3.84	20.2	573	3.5	WATER CLEAR
1420	6.82	2.92	20.1	579	3.5	WATER CLEAR
1423	6.82	2.43	19.6	576	3.5	READY TO SAMPLE
1425	—	—	—	—	0.02	COLLECT MW-98I-063, FLOW RATE REDUCED
1430	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: * PUMP SET AT 23' BTOC

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0233
Date : 2/10/98
Site Engineer : J. BRENNER, D. DRAKE
Well Number : MW-10
Equipment : DRT-15C, YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	117.57	TOP OF 4" CASING	117.57
Depth to Sediment (ft)	153.80	TOP OF 4" CASING	153.80
Thickness of Sediment (ft)	1.2		1.2

Depth of Well (ft) 155.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 36.23
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 23.6
Casing Volumes Purged 4.23
Total Volume Purged (gals) 100

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1020	—	—	—	—	2.5	PUMP ON, CONTROL BOX
1025	7.03	55.5	19.5	1,049	2.5 gal/min	SET AT 325 HZ
1030	6.73	67.5	20.1	1,081	"	WATER CLOUDY
1035	6.60	30.6	20.1	1,079	"	WATER CLEARING
1040	6.54	8.84	20.1	1075	2.5	WATER CLEARING
1045	6.55	6.90	20.0	1078	2.5	WATER APPEARS CLEAR
1050	6.55	4.80	19.4	1077	2.5	" " "
1055	6.56	4.20	20.0	1079	2.5	" " "
1057	6.55	2.11	20.1	1076	2.5	READY TO SAMPLE
1100	—	—	—	—	0.02	COLLECT MW-981-061
						FLOW REDUCED
1105	—	—	—	—	0.02	COLLECT MW-981-061
						(DUPLICATE AT MW-10)
1110	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: pump set @ 122 ft BTOC

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/26/99
Site Engineer : J. BRENNAN D. DIRKIN L. DARRAH
Well Number : MW-13
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	219.21	TOP OF 4" CASING	219.10
Depth to Sediment (ft)	234.40	TOP OF 4" CASING	231.40
Thickness of Sediment (ft)			

Depth of Well (ft) 235.000
Diameter of Casing (ft) 0.333
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0840	6.24	45.5	20.7	566	2.0	PUMP ON; CONTROL BOX @ 34 Hz
0845	6.72	4.7	21.8	588	2.0	WATER CLEAR
0848	6.83	1.3	22.0	592	2.0	WATER CLEAR
0854	6.89	0.80	21.9	594	2.0	WATER CLEAR
0900	6.90	1.0	22.0	597	2.0	READY TO SAMPLE
0905	—	—	—	—	0.02	FLOW REDUCED; COLLECT MW-981-049
0905	—	—	—	—	0.02	COLLECT MW-981-049MS
0905	—	—	—	—	0.02	COLLECT MW-981-049MSD
0910	—	—	—	—	0.02	COLLECT MW-981-098 (DUPLICATE)
0911					—	PUMP OFF

Notes Sampling Procedures: PUMP SET AT 224' BTOC

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0233
Date : 2/10/98
Site Engineer : J. BRENNER

Well Number : MW-15
Equipment : D.G-15C
-15, 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	28.43	TOP OF 4" CASING	28.43
Depth to Sediment (ft)	73.48	TOP OF 4" CASING	73.48
Thickness of Sediment (ft)	0.52		0.52

Depth of Well (ft) 74.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 45.05

Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 29.3

Casing Volumes Purged 2.4

Total Volume Purged (gals) 70

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1550	7.35	10.62	17.7	397	2.8	PUMP ON, CONTROL
—	—	—	—	—	—	BOX SET AT 175 Hz
1555	7.34	6.90	17.2	449	2.8 (mL/min)	
1600	7.23	3.94	17.4	458	2.8	WATER APPEARS CLEAR
1605	6.88	2.91	17.5	466	2.8	
1610	6.84	2.68	17.3	465	2.8	
1612	6.88	1.40	17.2	475	2.8	READY TO SAMPLE
1615	—	—	—	—	0.02	COLLECT MW-981-042
~~1620~~						FLOW RATE REDUCED
1620	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures: PUMP SET AT 33' BTOC

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/11/98
Site Engineer : J BIRENBAUM, D. DIRKN, L [illegible]
Well Number : MW-16
Equipment : D.P.-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	266.29	TOP OF 4" CASING	266.29
Depth to Sediment (ft)	285.00	TOP OF 4" CASING	285.0
Thickness of Sediment (ft)	0.0		0.0

Depth of Well (ft) 285.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 18.71
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 12.2
Casing Volumes Purged 2.9
Total Volume Purged (gals) 36

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1015	9.19	15.13	20.7	450	2.0	PUMP ON; CONTROL BOX
						SET AT 400 Hz
1018					—	FLOW INTERRUPTED
1021	—	—	—	—	—	FLOW RESTORED; CONTROL
1021	—	—	—	—	0.8	BOX SET AT 366 Hz
1025	8.20	19.33	21.9	485	0.8	WATER SL CLOUDY
1030	7.99	3.61	22.8	476	0.8	WATER CLEAR
1035	7.84	1.83	23.8	479	0.8	WATER CLEAR
1040	7.82	1.12	24.0	480	0.8	READY TO SAMPLE
1045	—	—	—	—	0.02	COLLECT MW-981-0411;
						FLOW RATE REDUCED
1050					—	PUMP OFF

Notes Sampling Procedures: PUMP SET AT 271' BTOC

F4

APPENDIX B

WELL DEVELOPMENT/WELL SAMPLING LOG FORMS, PIEZOMETRIC PRESSURE PROFILE RECORDS, AND GROUNDWATER SAMPLING FIELD DATA SHEETS FOR DEEP MULTI-PORT WELLS

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/26/98
Site Engineer : J. BRENNER, L. DAUGHERTY

Well Number : MW-3
Equipment : DRT-15C
YSI-3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROFILE SHEET>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1130	9.12	2.28	20.6	300	—	1ST RUN TO SCREEN #5; INITIAL PARAMETERS
1145	—	—	—	—	—	COLLECT MW-981-074
1225	9.10	1.98	20.7	309	—	3RD RUN TO SCREEN #5; FINAL PARAMETERS
1255	8.39	2.96	20.8	329	—	1ST RUN TO SCREEN #4; INITIAL PARAMETERS
1315	—	—	—	—	—	COLLECT MW-981-075
1345	8.27	4.10	21.0	334	—	3RD RUN TO SCREEN #4; FINAL PARAMETERS
1410	8.49	9.10	20.2	340		1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1435	8.50	8.50	19.9	344		2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1505	8.49	10.50	19.7	339		3RD RUN; STILL ATTEMPTING TO REDUCE TURBIDITY; * WILL RETURN LATER (TOMORROW, 1/27/98)

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/27/98
Site Engineer : J. BRANNAK, L. DAMRAGH

Well Number : MW-3
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE FIELD FIELD SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0815	7.27	9.00	15.9	317	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
0840	7.29	4.89	16.1	318	—	COLLECT MW-981-076 (MS/MSD METALS)
0900	7.31	4.79	15.8	326	—	3RD RUN TO SCREEN #3; FINAL PARAMETERS
0925	7.51	2.25	15.7	390	—	1ST RUN TO SCREEN #2; INITIAL PARAMETERS
0945	—	—	—	—	—	COLLECT MW-981-077
1005	7.20	8.91	16.7	398	—	3RD RUN TO SCREEN #2; FINAL PARAMETERS
1025	7.25	2.87	16.5	428	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1045	—	—	—	—	—	COLLECT MW-981-078
1100	7.15	4.43	16.7	431	—	3RD RUN TO SCREEN #1; FINAL PARAMETERS

Notes Sampling Procedures:

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1-27-98
Site Engineer : L. DeRaaf

Well Number : MW-4
Equipment : DRT-15C
YSI 3500
Contractor : None

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure profile	Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1215	7.68	4.47	20.3	366	—	1st Run to screen #5. Initial Parameters. NTUs = 4.47
1230	-	-	-	-	-	Collect MW-981-068
1300	7.73	4.77	20.6	369		3rd Run to screen #5 Final Parameters
-	-	-	-	-	—	
1345	7.97	4.73	20.4	330		1st Run screen #4, Initial Parameters, NTUs = 4.73
1400	-	-	-	-	-	Collect MW-981-069
1435	7.98	9.15	20.1	337		3rd Run to screen 4 - Final Parameters.

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : SPL
Project Number : 1572.0233
Date : 1/28/98
Site Engineer : T. BLANEY

Well Number : MW-4
Equipment : DRT-15CE
YSI 3500
Contractor : N/A

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets for water levels		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0835	8.34	4.55	18.6	384	—	1ST Run @ Screen # 3; READY TO Sample
0855					—	Sample MW-981-070
0915	8.31	2.26	18.7	395	—	3RD Run; FINAL PARAMETERS
0936	7.96	4.84	19.1	715	—	1ST Run @ Screen # 2; Ready to Sample
0950					—	~~Sample MW-981-072~~ Sample MW-981-072
1020					—	Sample MW-981-071
1027	7.24	3.63	19.2	720	—	4TH Run; FINAL PARAMETERS
1045	7.10	3.35	18.1	552	—	1ST Run @ Screen # 1; Ready to Sample
IJ						

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0233
Date : 1/28/97
Site Engineer : T. Blaney

Well Number : MW-11
Equipment : DRT-15CE
YSI 3500
Contractor : N/A

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile SHEETS FOR WATER LEVELS.		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1220	8.20	1.23	20.2	310	–	1ST Pump @ Screen #5. Ready to Sample
1245	–	–	–	–	–	Sample MW-981-056 + Matrix ms/msd
1335	8.45	2.22	19.6	302	–	3RD Pump; Final Parameters
1350	8.42	3.43	19.1	343	–	1ST PUMP AT SCREEN #4; READY TO SAMPLE
1415	–	–	–	–	–	SAMPLE MW-981-057 COLLECTED
1440	9.43	3.45	18.9	346	–	3RD PUMP; FINAL PARAMETERS

Notes Sampling Procedures: _____

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/29/98
Site Engineer : J. BRENNER

Well Number : MW-11
Equipment : DRT-15C
VSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	*SEE PIEZOMETER PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0905	7.93	1.39	16.9	362	—	1ST RUN TO SCREEN # 3 INITIAL PARAMETERS
0930	—	—	—	—	—	COLLECT MW-981-058
1000	7.96	1.62	17.3	370	—	3RD RUN TO SCREEN #3 FINAL PARAMETERS
1020	7.80	2.37	17.3	390	—	1ST RUN TO SCREEN #2 INITIAL PARAMETERS
1045	—	—	—	—	—	COLLECT MW-981-059
1100	7.74	3.03	18.4	395	—	3RD RUN TO SCREEN #2 FINAL PARAMETERS
—	—	—	—	—	—	
1125	7.77	1.03	17.8	449	—	1ST RUN TO SCREEN # 1 INITIAL PARAMETERS
1143	—	—	—	—	—	COLLECT MW-981-060
1203	7.70	1.14	19.5	461	—	3rd RUN TO SCREEN # 1 - FINAL PARAMETERS.

Notes Sampling Procedures: _____

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0233
Date : 1/29/98
Site Engineer : D. Dimmick

Well Number : MW-12
Equipment : Dict-ISE
YSI 3500
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1310	7.57	2.17	19.2	387	—	1st Run to screen 5, Initial Param.
1330	—	—	—	—	—	Collect MW-98I-050
1400	7.61	1.09	18.8	387	—	3rd run to screen 5, Final parameters
1437	7.63	3.34	18.0	420	—	1st run to screen 4, initial parameters.
1500	—	—	—	—	—	Collect MW-98I-050
1530	7.65	3.19	18.7	429	—	3rd run, Final Parameters

Notes Sampling Procedures:

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : J.P.L.
Project Number : 1572.0233
Date : 1/30/98
Site Engineer : J. BRENNER, L. DARRAGH
Well Number : MW-12
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PIEZOMETER PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0830	8.38	2.79	15.7	419	—	1ST RUN TO SCREEN # 3; INITIAL PARAMETERS
0955	—	—	—	—	—	COLLECT MW-981-052
0910	8.88	2.45	17.4	425	—	3RD RUN TO SCREEN # 3; FINAL PARAMETERS
-	-	-	-	-	-	—
0935	8.54	4.41	17.1	436		1ST RUN TO SCREEN # 2 INITIAL PARAMETERS
0950	—	—	—	—	—	COLLECT MW-981-054
1020	—	—	—	-	-	COLLECT MW-981-053
1035	8.37	2.45	17.2	440		4TH RUN TO SCREEN # 2 (#2) FINAL PARAMETERS
—	—	-	—	—	—	
1055	8.23	2.63	16.6	386		1ST RUN TO SCREEN # 1, INITIAL PARAMETERS
1115	—	—	—	—	—	COLLECT MW-981-055
1140	8.33	1.26	16.4	393		3RD RUN TO SCREEN #1 - FINAL

Notes Sampling Procedures:

F4

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/23/98
Site Engineer : J. BRENNER, D DIRKIN, L DANIELS

Well Number : MW-14
Equipment : DRT-15C
YSI 3500
Contractor : HONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0925	8.13	4.65	18.7	305	—	1ST RUN TO SCREEN #5, INITIAL PARAMETERS
1000	—	—	—	—	—	COLLECT MW-981-043
1025	9.12	4.64	19.5	302	—	3RD RUN TO SCREEN #5; FINAL PARAMETERS
—						
1050	8.54	2.69	19.4	472	—	1ST RUN TO SCREEN #4, INITIAL PARAMETERS
1120	—	—	—	—	—	MW-981-044 COLLECTED
1135	8.37	2.88	20.9	484	—	3RD RUN TO SCREEN #4; FINAL PARAMETERS
1205	8.28	2.14	19.7	882	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1220	—	—	—	—	—	COLLECT MW-981-045
1245	8.09	0.09	21.2	924	—	3RD RUN TO SCREEN #2; FINAL PARAMETERS
1305	8.10	4.8	20.7	1153	—	1ST RUN TO SCREEN #2; INITIAL PARAMETERS
1330	—	—	—	—	—	COLLECT MW-981-046
1400	7.91	5.5	21.0	1175	—	8TH RUN TO SCREEN #2; FINAL PARAMETERS
	7.44					
1425	[illegible]	4.96	21.0	1187	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1440	—	—	—	—	—	COLLECT MW-981-046
1505	7.35	4.78	20.6	1184	—	3RD RUN, 4TH SCREEN #1 FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/15/98
Site Engineer : J. BRENNER / L. DARRAGH
Well Number : MW-17
Equipment : YSI 3500
DRT-1SC
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE	PROFILE SHEETS	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1215	7.83	11.0	15.9	384	—	1ST RUN AT SCREEN #5; INITIAL PARAMETERS
1245	7.91	17.0	16.1	371	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1315	7.96	28.3	15.4	372	—	3RD RUN; ATTEMPTING TO REDUCE TU. 33.0 NTU
						* WILL RETURN TO SCREEN #5 LATER
1415	7.86	25.1	14.6	371	—	CHECK PARAMETERS AT SCREEN #4
1450	8.90	0.79	14.7	235	—	1ST RUN TO SCREEN #2; INITIAL PARAMETERS
1510	—	—	—	—	—	MW-98I-039 COLLECTED
1530	9.05	1.00	15.3	237	—	3RD RUN TO SCREEN #2; FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/16/98
Site Engineer : J. BIZZARRO, L. DAMIANO

Well Number : MW-17
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0855	7.90	3.94	18.1	394	—	1ST RUN AT SCREEN #4; INITIAL PARAMETERS
0925	—	—	—	—	—	COLLECT MW-981-037
0955	7.72	3.83	17.6	389	—	3RD RUN AT SCREEN #4; FINAL PARAMETERS
1020	7.75	3.24	16.7	366	—	1ST RUN TO SCREEN # 3; INITIAL PARAMETERS
1040	—	—	—	—	—	COLLECT MW-981-038
1040	—	—	—	—	—	COLLECT MW-981-038MS
1040	—	—	—	—	—	COLLECT MW-981-038MSD
1115	7.83	3.51	17.1	374	—	3RD RUN TO SCREEN # 3; FINAL PARAMETERS
1140	7.63	4.98	17.9	299	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1150	—	—	—	—	—	COLLECT MW-981-040
1240	7.89	2.67	17.0	293	—	3RD RUN TO SCREEN #1; FINAL PARAMETERS
1250	7.83	4.75	17.2	376	—	1ST RUN TO SCREEN #5; INITIAL PARAMETERS
1335	—	—	—	—	—	COLLECT MW-981-036
						(METALS MS/MSD ALSO)
1415	7.84	9.20	18.8	395	—	3RD RUN TO SCREEN #5; FINAL PARAMETERS

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0233
Date : 1/14/98
Site Engineer : J BRENNER, L. DARRAGH
Well Number : MW-18
Equipment : YSI 3500
PIT-19C
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROBE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft)
Diameter of Casing (ft)
Water Column Height (ft)
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) =
Casing Volumes Purged
Total Volume Purged (gals)

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1150	7.04	1.63	19.1	303	—	1ST RUN AT SCREEN #5; INITIAL PARAMETERS
1225	—	—	—	—	—	COLLECT MW-981-031
1225	—	—	—	—	—	COLLECT MW-981-031 MS/MSD METALS
1225	—	—	—	—	—	COLLECT MW-981-031 MS (VOAS)
1225	—	—	—	—	—	COLLECT MW-981-031 MSD (VOAS)
1330	8.71	4.5	18.9	278	—	4TH RUN TO SCREEN #5; FINAL PARAMETERS
1400	8.02	2.23	18.6	351	—	1ST RUN AT SCREEN #4; INITIAL PARAMETERS
1430	—	—	—	—	—	MW-981-032 COLLECTED
1455	7.86	3.17	17.8	346	—	3RD RUN TO SCREEN #4; FINAL PARAMETERS
1530	7.83	0.58	17.2	422	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1550	—	—	—	—	—	COLLECT MW-981-033
1615	7.91	0.81	18.1	413	—	3RD RUN TO SCREEN #3; FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 1/15/98
Site Engineer : J. BENNETT/L. DARRAGH
Well Number : MW-18
Equipment : DIET-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0945	8.08	3.60	16.5	390	—	1ST RUN TO SCREEN # 2; INITIAL PARAMETERS
1000	—	—	—	—	—	MW-931-034 COLLECTED
1030	7.77	3.50	16.7	383	—	3RD RUN; FINAL PARAMETERS

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0233
Date : 1/21/98
Site Engineer : T. BLANEY

Well Number : MW-19
Equipment : YSI 3500
DRT-15CE
Contractor : N/A

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE	PROFILE SHEETS	FOR WATER Levels
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0837	7.69	3.98	16.7	711	—	1ST Run @ Screen #5. Ready to Sample
0900						Sample MW-981-026
0900						Sample MW-981-026 MS
0900						Sample MW-981-026 MSD
0925	7.54	3.90	16.5	696	—	3RD Run; Final Parameters Screen #5
0955	7.47	4.57	16.4	571	—	1ST Run @ Screen #4; Ready to Sample
1015						Sample MW-981-027
1035	7.43	7.64	17.9	586	—	3RD Run; Final Parameters
1104	7.21	4.10	18.1	726	—	1ST Run @ Screen #3; READY TO Sample
1120						Sample MW-981-028
1145	7.19	3.58	18.7	740	—	3RD Run; Final Parameters
1210	6.89	4.72	18.1	694	—	1ST Run @ Screen #2; Ready to Sample
1225						Sample MW-981-029
1250	6.83	2.75	18.0	694	—	3RD Run; Final Parameters
1308	7.27	4.7	18.4	304	—	1ST Run @ Screen #1; Ready to Sample
1325						Sample MW-981-030
1345	7.28	4.9	17.7	307		3RD Run; Final Parameters

Notes Sampling Procedures: _____

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : IPL
Project Number : 15720233
Date : 1/20/04
Site Engineer : J. BRENNER/T. BRANEN

Well Number : MW-20
Equipment : DAT-150
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PIZEO. FIELD SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0855	8.96	0.13	16.6	341	—	1ST RUN TO SCREEN # 5; INITIAL PARAMETERS
0915	—	—	—	—	—	COLLECT MW-981-021
0940	9.17	2.70	17.1	333	—	3RD RUN; FINAL PARAMETERS
1020	8.65	0.58	17.3	293	—	1ST RUN TO SCREEN #4 INITIAL PARAMETERS
1040	—	—	—	—	—	COLLECT MW-981-022
1110	8.27	0.02	17.4	295	—	3RD RUN TO SCREEN #4; FINAL PARAMETERS
1150	7.97	2.16	17.1	446	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1200	—	—	—	—	—	COLLECT MW-981-023
1235	7.95	0.06	17.7	453	—	3RD RUN; FINAL PARAMETERS
1300	8.82	0.44	16.7	286	—	1ST RUN TO SCREEN # 2; INITIAL PARAMETERS
1315	—	—	—	—	—	COLLECT MW-981-024
1340	8.77	0.59	17.0	289	—	3RD RUN TO SCREEN #2; FINAL PARAMETERS
1355	8.02	3.17	17.2	697	—	1ST RUN, INITIAL PARAMETERS
1410	—	—	—	—	—	COLLECT MW-981-025
1435	7.71	1.00	17.8	711	—	3RD RUN; FINAL PARAMETERS

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 157202 33
Date : 1/22/98
Site Engineer : T. Blaney

Well Number : MW-21
Equipment : DRT-15CE
YSI 3500
Contractor : N/A

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile sheets For water Levels		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0835	7.36	14.8	15.8	690	—	1ST Run Screen #5; Reducing Turbidity
0855	7.62	12.5	16.1	708	—	2ND Run Screen #5; Reducing Turbidity
0915	7.68	17.0	17.1	710	—	3RD Run Screen #5; Reducing Turbidity
0935	7.65	15.1	17.7	703	—	4TH Run Screen #5; Reducing Turbidity
1000	7.62	4.94	17.3	709	—	5TH Run Screen #5; Ready to Sample
1020					—	Sample MW-981-016
1038	7.64	9.5	17.2	710	—	7TH Run; Final Parameters
1059	7.36	1.1	18.6	574	—	1ST Run Screen #4; Ready to Sample
1120						Sample MW-981-017
1140	7.31	4.5	18.9	574	—	Final Parameters Screen #4
1200	7.21	4.79	18.9	877	—	1ST Run Screen #3; Ready to Sample
1215						Sample MW-981-018
1233	7.13	5.0	19.2	889	—	Final Parameters Screen #3
1255	7.12	0.60	19.1	1,100	—	1ST Run Screen #2 Ready to Sample
~~1310~~	~~7.25~~	~~0.52~~	~~19.1~~	~~1,110~~		Sample MW-981-019
1330	7.25	0.52	19.1	1,110	—	Final Parameters Screen #2

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/11/98
Site Engineer : J. BRENNER, L. DARRAGH

Well Number : MW-21
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1420	7.44	0.79	20.5	777	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1440	—	—	—	—	—	COLLECT MW-98I-080
1500	7.30	1.25	19.0	750	—	3RD RUN TO SCREEN #1; FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/4/98
Site Engineer : J. BRENNER

Well Number : MW-22
Equipment : DIRT-ISC
YSI-3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE TROUBLE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1140	8.31	2.81	18.1	361	—	1ST RUN TO SCREEN #5; INITIAL PARAMETERS
1200	—	—	—	—	—	COLLECT MW-981-011 (MS/MSD METALS)
1200	—	—	—	—	—	COLLECT MW-981-011 MS
1200	—	—	—	—	—	COLLECT MW-981-011 MSD
1235	8.58	1.77	17.6	449	—	3RD RUN TO SCREEN #5; FINAL PARAMETERS
1300	7.99	3.69	17.7	323	—	1ST RUN TO SCREEN #4; INITIAL PARAMETERS
1330	—	—	—	—	—	COLLECT MW-981-012
1345	7.73	4.19	18.3	330	—	3RD RUN TO SCREEN #4; FINAL PARAMETERS
1405	7.81	3.75	19.0	429	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1430	—	—	—	—	—	COLLECT MW-981-013
1445	7.78	4.55	19.1	442	—	3RD RUN TO SCREEN #3; FINAL PARAMETERS
1510	7.84	50.8	18.6	565	—	1ST RUN TO SCREEN #2; INITIAL PARAMETERS
1530	7.87	21.4	18.6	574	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1550	7.88	15.9	19.8	585	—	3RD RUN; ATTEMPTING TO REDUCE TURBIDITY
1600	7.89	4.15	19.7	586	—	4TH RUN; READY TO SAMPLE
1600	—	—	—	—	—	COLLECT MW-981-014
1625	7.80	6.20	18.6	577		5TH RUN TO SCREEN #2; FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0233
Date : 2/5/98
Site Engineer : J. BRENNER, L. DARRAGH

Well Number : MW-22
Equipment : YSI 3500
DIP-ISC
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE FIELD FIELD SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1007	7.20	39.6	17.2	1,017	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1020	6.99	41.7	17.3	1,087	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1040	6.93	40.1	18.2	1,035	—	3RD RUN; ATTEMPTING TO REDUCE TURBIDITY — WILL PURGE *
1130	6.90	40.0	17.8	1032	—	4TH RUN; * AFTER INITIAL PURGE; TURBIDITY STILL HIGH
1340	6.90	22.4	18.1	1,053	—	5TH RUN; * AFTER APPROX. 4.5 GALS PUR
1545	6.93	30.9	18.0	1,036	—	6TH RUN; AFTER APPROX 2 MORE GALS PURGED
						* WILL RETURN 2/6/98

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572
Date : 2.6.98
Site Engineer : L. Darrah

Well Number : MW-22
Equipment : DRT-15
YSI 3500
Contractor : NA

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1135	6.71	4.50	17.2	981		Set Pump to screen #1 - Initial Parameters.
1145	-	-	-	-	-	Collect MW-981-015
1220	7.01	4.73	16.6	978	—	Set Pump to screen #1 - Final Parameters.

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0233
Date : 2/9/98
Site Engineer : J. BRENNER, D. DIRKIN

Well Number : MW-23
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PIEZ. PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0840	8.50	1.78	17.9	512	—	1ST RUN TO SCREEN #5; INITIAL PARAMETERS
0915	—	—	—	—	—	COLLECT MW-981-006 (MS/MSD METALS & VOAS)
0930	9.09	3.18	19.0	517	—	3RD RUN; FINAL PARAMETERS
1000	8.39	4.51	19.7	317	—	1ST RUN TO SCREEN #4; INITIAL PARAMETERS
	—	—	—	—	—	COLLECT MW-981-007
1100	8.33	4.75	19.9	314	—	3RD RUN; FINAL PARAMETERS
1120	7.71	16.3	20.6	424	—	1ST RUN TO SCREEN #3; INITIAL PARAMETERS
1140	7.69	80.1	20.7	432	—	2ND RUN; ATTEMPTING TO RESOLVE TURBIDITY
1200	7.57	48.6	20.1	427	—	3RD RUN; ATTEMPTING TO RESOLVE TURBIDITY
1225	7.24	4.89	19.4	940	—	1ST RUN TO SCREEN #2; INITIAL PARAMETERS
1240	—	—	—	—	—	COLLECT MW-981-009
1300	7.03	4.69	18.8	941	—	3RD RUN TO SCREEN #2; FINAL PARAMETERS
1320	6.83	4.11	18.7	1133	—	1ST RUN TO SCREEN #1; INITIAL PARAMETERS
1345	—	—	—	—	—	COLLECT MW-981-010
1400	6.68	7.23	18.8	1135	—	3RD RUN; FINAL PARAMETERS

Notes Sampling Procedures: _____

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/9/98
Site Engineer : J. BRANDT, D. DIRK, J.

Well Number : MW-23
Equipment : YSI 3500
DRT-15C
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESS. PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1600	7.70	4.60	20.5	431	—	1ST PUN TO SCREEN #3 AFTER PURGING.
						COLLECT MW-981-005
1615	7.48	4.75	18.4	417	—	2ND PUN TO SCREEN #3; FINAL PARAMETERS

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : IPL
Project Number : 1572.0233
Date : 1/30/98
Site Engineer : J. BRENNAN, L. DARRAGH

Well Number : MW-24
Equipment : DRT-15X
YSI-3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESSURE PROBE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1245	8.94	20.51	20.9	388	—	1ST RUN TO SCREEN #5; INITIAL PARAMETERS
1320	9.10	9.55	20.5	395	—	2ND RUN, ATTEMPTING TO REDUCE TURBIDITY
1345	9.02	4.76	21.2	390	—	3RD RUN, READY TO SAMPLE
1415	—	—	—	—	—	COLLECT MW-981-0031
1445	9.01	4.56	21.3	386	—	5TH RUN TO SCREEN #5; FINAL PARAMETERS

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2/2/98
Site Engineer : J. ZENNER / L. DARROUGH

Well Number : MW-24
Equipment : DIST-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PIEZ. PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0935	8.31	9.58	18.7	303	—	1ST RUN TO SCREEN # 4; INITIAL PARAMETERS
0955	8.76	8.72	18.3	321	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1045	8.76	12.43	19.0	320	—	3RD RUN; ATTEMPTING TO REDUCE TURBIDITY
1105	8.76	11.88	18.6	318	—	4TH ATTEMPT TO REDUCE TURBIDITY
						* WILL PURGE AT SCREEN # 4
1230	8.54	4.87	18.0	315	—	5TH RUN AFTER PURGING 2.7 GALS FROM SCREEN # 4
1230	—	—	—	—	—	COLLECT MW-981-002
1300	8.59	7.15	18.7	325	—	6TH RUN TO SCREEN # 4; FINAL PARAMETERS
1325	8.74	93.1	19.5	363	—	1ST RUN TO SCREEN # 3; INITIAL PARAMETERS
1345	8.75	58.9	19.1	360	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1420	8.75	573	19.1	364	—	3RD RUN; TURBIDITY REMAINS HIGH. * WILL RERUN LATER
1440	8.25	3.82	18.2	414	—	1ST RUN TO SCREEN # 1; INITIAL PARAMETERS
1450	—	—	—	—	—	COLLECT MW-981-005
1525	8.03	3.78	17.9	412		3RD RUN TO SCREEN # 1; FINAL PARAMETERS
1555	8.67	42.3	19.5	363	—	CHECK FOR TURBIDITY AT SCREEN # 3 WILL RERUN (2/3/98)

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0233
Date : 2/3/99
Site Engineer : D DIRKIN / J. BRENNER

Well Number : MW-24
Equipment : YSI 3500
DRI-ISE
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	* SEE PRESS. PROFILE SHEETS		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0955	8.53	20.6	17.4	350	—	1ST RUN TO SCREEN # 3; INITIAL PARAMETERS
1014	8.69	24.3	17.9	360	—	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY
1042	8.77	38.7	18.8	363	—	3RD RUN; ATTEMPTING TO REDUCE TURBIDITY
						(* WILL RETURN TO SCREEN #3 LATER)
1109	8.83	13.1	18.7	380	—	1ST RUN TO SCREEN # 2; INITIAL PARAMETERS
1132	8.86	4.81	18.9	393	—	2ND RUN TO SCREEN # 2; READY TO SAMPLE
1200	—	—	—	—	—	COLLECT MW-98.1-0004
1220	8.85	10.5	18.6	401	—	4TH RUN TO SCREEN # 2; FINAL PARAMETERS
1430	8.50	39.3	16.7	348	—	RETURN TO SCREEN # 3 AFTER PURGING APPROX. 4 GALS
1550	8.51	30.5	17.6	353	—	CHECK FOR PARAMETERS AFTER PURGING ADDITIONAL 3 GALS FROM SCREEN # 3
						(* WILL RETURN LATER)

Notes Sampling Procedures: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0233
Date : 2-5-98
Site Engineer : J. Brenner, L. Dakkak

Well Number : MW-24
Equipment : DRT-15C
YSI-3500
Contractor : None

	Before	Reference Point	After
Depth to Water (ft)	*See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0815	8.65	4.71	19.0	361		1st Purge to screen #3, initial parameters after 3 packer volumes.
0840	–	–	–	–		Collect MW-981-003
0901	8.70	4.89	20.8	359		3rd Purge to screen #3, final parameters.

Notes Sampling Procedures: _____

F4

Field Water Level Measurements

DATE: 1/12/98
PERSONNEL: T. BLANEY, J BREWER
WEATHER: OVERCAST, 65°F
PROJECT NAME: JPL
PROJECT OFS: 1572.0233
MEASUREMENT DEVICE: SOLNST
COMMENTS:

Time	Well I.D.	Top of Casing Elev. Measuring Point (feet above MSL)	Depth to Water from Measuring Point (feet)	Elevation of Groundwater (feet above MSL)
	MH01	1,099.78	147.45	952,33
	MW-1	1116.09	25.97	1090.72
	MW-5	1071.62	111.77	959.85
	MW-6	1188.54	212.72	975.82
	MW-7	1212.90	252.77	960.13
	MW-8	1139.55	177.41	962.14
	MW-9	1106.06	19.23	1086.83
	MW-10	1087.73	126.46	961.27
	MW-13	1183.49	220.41	963.08
	MW-15	1120.68	30.52	1090.16
	MW-16	1236.29	274.07	962.22

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Field Water Level Measurements

DATE: 2/12/98
PERSONNEL: T. BLANEY, M. Losi
WEATHER: PARTLY CLOUDY, 70°F
PROJECT NAME: JPL
PROJECT OFS: 1572 0221
MEASUREMENT DEVICE:
COMMENTS:

Time	Well I.D.	Top of Casing Elev. Measuring Point (feet above MSL)	Depth to Water from Measuring Point (feet)	Elevation of Groundwater (feet above MSL)
	MW-1	1116.69	23.63	1093.06
	MW-5	1071.62	95.34	976.28
	MW-6	1188.54	207.51	981.03
	MW-7	1212.90	243.28	969.62
	MW-8	1139.55	166.13	973.42
	MW-9	1106.06	18.34	1087.72
	MW-10	1087.73	115.40	972.33
	MW-13	1183.49	211.77	971.72
	MW-15	1120.68	28.95	1091.73
	MW-16	1236.29	265.67	970.62
	MH#1	1099.78	127.23	972.55

E-12a

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-3

Elevation of atum(ft msl): 1100.34 | Range: 0 to 750 psia | Weather: 60 degrees, Overcast | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.18/20.50/1307 | Finish: 14.15/21.24/1323

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	653	159.55			23.32	1313		259.08	841.26
			184.94						
			184.91						
			184.94						
				159.57					
4	558	118.32			23.71	1315		230.45	869.89
			156.17						
			156.14						
			156.17						
				118.35					
3	346	26.25			22.65	1317		157.41	942.93
			95.91						
			95.94						
			95.90						
				26.22					
2	252	14.35			22.09	1319		154.03	946.31
			56.63						
			56.66						
			56.62						
				14.34					
1	172	14.27			21.69	1321		142.60	957.74
			26.93						
			26.90						
			26.90						
				14.28					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-4

Elevation of atum(ft msl): 1082.84 | Range: 0 to 750 psia | Weather: 60 degrees, Overcast | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.15/20.51/1204 | Finish: 14.51/20.45/1221

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	513	126.18			21.63	1207		218.49	864.35
			142.01						
			142.01						
			141.98						
				126.16					
4	392	73.53			22.36	1209		143.93	938.91
			121.85						
			121.88						
			121.88						
				73.55					
3	322	43.07			22.27	1211		135.42	947.42
			95.23						
			95.20						
			95.21						
				43.09					
2	240	14.30			20.74	1215		132.90	949.94
			60.78						
			60.75						
			60.75						
				14.29					
1	150	14.29			20.55	1218		120.96	961.88
			26.91						
			26.94						
			26.91						
				14.30					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-11

Elevation of atum(ft msl): 1139.30 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.16/21.09/1442 | Finish: 14.15/19.44/1509

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	639	158.23			21.98	1447		256.84	882.46
			179.81						
			179.84						
			179.81						
				158.26					
4	524	108.69			22.26	1449		193.36	945.94
			157.50						
			157.47						
			157.49						
				108.71					
3	429	67.90			20.52	1456		189.48	949.82
			117.98						
			117.97						
			118.01						
				67.90					
2	259	14.22			20.13	1500		174.27	965.03
			50.87						
			50.89						
			50.90						
				14.25					
1	149	14.25			19.61	1504		123.41	1015.89
			25.21						
			25.26						
			25.27						
				14.30					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-12

Elevation of atum(ft msl): 1102.14 | Range: 0 to 750 psia | Weather: 60 degrees, Overcast | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.04/20.01/1237 | Finish: 14.47/20.06/1252

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	548	97.58			21.19	1240		223.81	878.33
			154.78						
			154.81						
			154.78						
				97.60					
4	436	48.84			21.33	1243		164.96	937.18
			131.74						
			131.77						
			131.74						
				48.83					
3	323	14.24			20.93	1245		152.59	949.55
			88.14						
			88.11						
			88.13						
				14.25					
2	243	14.28			20.58	1247		149.45	952.69
			54.82						
			54.79						
			54.82						
				14.29					
1	140	14.30			20.26	1249		130.41	971.73
			18.43						
			18.39						
			18.42						
				14.29					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 1/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-14

Elevation of atum(ft msl): 1173.47 Range: 0 to 750 psia Weather: 60 degrees, Overcast

Client: Jet Propulsion Laboratory

Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.16/20.52/1045 Finish: 14.13/20.82/1101

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	540	143.47			22.08	1051		195.56	977.91
			163.45						
			163.48						
			163.45						
				143.46					
4	456	106.93			22.25	1053		194.96	978.51
			127.32						
			127.29						
			127.31						
				106.96					
3	382	74.72			21.83	1055		194.95	978.52
			95.24						
			95.24						
			95.21						
				74.76					
2	277	29.04			21.27	1057		195.20	978.27
			49.59						
			49.62						
			49.61						
				29.01					
1	207	14.27			20.95	1059		194.70	978.77
			19.45						
			19.51						
			19.47						
				14.28					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-17

Elevation of atum(ft msl): 1191.21 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.02/16.45/0823 | Finish: 14.20/16.92/0838

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	726	173.44			18.79	827		320.06	871.15
			190.08						
			190.10						
			190.08						
				173.44					
4	582	110.83			19.34	829		311.17	880.04
			131.51						
			131.53						
			131.50						
				110.85					
3	468	61.31			18.36	831		267.48	923.73
			101.04						
			101.03						
			101.04						
				61.32					
2	370	18.67			17.63	833		254.41	936.80
			64.22						
			64.21						
			64.22						
				18.69					
1	250	14.29			17.09	835		248.05	943.16
			14.95						
			14.96						
			14.95						
				14.31					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 1/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-18

Elevation of atum(ft msl): 1225.41 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.07/16.62/0844 Finish: 14.14/18.83/0900

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	684	149.86			19.85	847		320.45	904.96
			171.70						
			171.71						
			171.70						
				149.82					
4	564	97.70			20.88	849		311.12	914.29
			123.74						
			123.71						
			123.73						
				97.70					
3	424	36.89			20.14	851		286.46	938.95
			73.74						
			73.71						
			73.74						
				36.90					
2	330	14.27			19.35	853		283.18	942.23
			34.40						
			34.41						
			34.39						
				14.26					
1	270	14.24			19.07	855	o water over measur		N/A
			14.27						
			14.26						
			14.27						
				14.25					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 1/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-19

Elevation of atum(ft msl): 1142.94 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.15/18.07/0948 Finish: 14.18/18.35/1003

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	498	96.81			18.67	951		312.28	830.66
			94.68						
			94.67						
			94.67						
				96.80					
4	444	73.31			18.43	954		309.39	833.55
			72.52						
			72.51						
			72.52						
				73.32					
3	392	50.70			18.63	956		211.90	931.04
			92.24						
			92.23						
			92.24						
				50.69					
2	314	16.68			18.76	958		207.33	935.61
			60.40						
			60.41						
			60.41						
				16.69					
1	242	14.30			18.52	1000		198.99	943.95
			32.81						
			32.80						
			32.82						
				14.31					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-20

Elevation of atum(ft msl): 1165.05 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.14/18.80/0905 | Finish: 14.24/19.13/0923

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	900	267.41			22.45	912		227.69	937.36
			305.64						
			305.62						
			305.65						
				267.40					
4	700	180.59			23.30	915		247.87	917.18
			210.19						
			210.20						
			210.18						
				180.61					
3	562	120.58			22.54	917		236.67	928.38
			155.22						
			155.23						
			155.21						
				120.59					
2	392	46.74			20.64	919		228.10	936.95
			85.23						
			85.25						
			85.24						
				46.75					
1	230	14.39			19.58	921		227.89	937.16
			15.10						
			15.11						
			15.10						
				14.41					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 1/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-21

Elevation of atum(ft msl): 1059.10 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.13/18.23/1018 Finish: 14.25/20.01/1031

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	372	122.62			19.64	1021		89.56	969.54
			136.64						
			136.62						
			136.62						
				122.61					
4	310	95.58			20.44	1023		90.47	968.63
			109.37						
			109.34						
			109.36						
				95.61					
3	240	65.61			20.38	1025		89.30	969.80
			79.53						
			79.50						
			79.53						
				65.59					
2	161	31.21			20.16	1027		89.03	970.07
			45.38						
			45.39						
			45.40						
				31.20					
1	90	14.28			20.02	1029	o water over measur		N/A
			14.31						
			14.30						
			14.29						
				14.28					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-22

Elevation of atum(ft msl): 1176.98 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.16/21.09/1419 | Finish: 14.13/21.64/1433

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	588	158.80			22.71	1423		239.66	937.32
			165.17						
			165.14						
			165.14						
				158.78					
4	467	106.22			22.98	1425		227.67	949.31
			117.88						
			117.91						
			117.89						
				106.24					
3	389	72.25			22.82	1427		209.93	967.05
			91.75						
			91.78						
			91.78						
				72.23					
2	329	46.19			22.55	1429		210.37	966.61
			65.56						
			65.56						
			65.59						
				46.23					
1	245	14.27			21.96	1431		210.13	966.85
			29.27						
			29.24						
			29.27						
				14.25					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-23

Elevation of atum(ft msl): 1108.84 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.16/19.46/1140 | Finish: 14.22/21.31/1154

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	542	139.31			21.04	1144		170.34	938.50
			175.31						
			175.30						
			175.31						
				139.31					
4	445	97.13			22.01	1146		170.07	938.77
			133.39						
			133.36						
			133.37						
				97.13					
3	319	42.37			21.95	1148		148.53	960.31
			88.10						
			88.07						
			88.09						
				42.36					
2	254	14.27			21.67	1150		148.36	960.48
			59.97						
			60.00						
			59.98						
				14.28					
1	174	14.31			21.42	1152		144.97	963.87
			26.76						
			26.78						
			26.78						
				14.30					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 1/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-24

Elevation of atum(ft msl): 1200.94 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 60 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.08/21.20/1337 | Finish: 14.17/21.49/1353

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	678	188.54			22.23	1341		290.68	910.26
			182.04						
			182.01						
			182.04						
				182.49					
4	554	134.64			22.88	1343		268.18	932.76
			138.04						
			138.04						
			138.01						
				134.61					
3	435	82.92			22.91	1345		244.72	956.22
			96.62						
			96.59						
			96.63						
				82.95					
2	373	55.97			21.69	1347		242.66	958.28
			70.62						
			70.63						
			70.63						
				55.96					
1	279	15.11			21.84	1349		238.58	962.36
			31.63						
			31.66						
			31.65						
				15.08					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1764 Well Name: MW-3

Elevation of Datum(ft msl): 1100.34 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.27/21.55/1045 Finish: 14.20/20.88/1105

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Fluid Pressure Readings: Outside Casing (psia)	Fluid Pressure Readings: Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	653	159.39			23.63	1050		139.88	960.46
			236.65						
			236.67						
			236.70						
				159.41					
4	558	118.18			23.92	1053		136.88	963.46
			196.82						
			196.79						
			196.76						
				118.20					
3	346	26.15			22.50	1057		131.62	968.72
			107.15						
			107.18						
			107.18						
				26.12					
2	252	14.35			21.79	1100		131.73	968.61
			66.37						
			66.40						
			66.35						
				14.38					
1	172	14.36			21.36	1102		123.44	976.90
			35.28						
			35.31						
			35.27						
				14.33					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1764 Well Name: MW-4

Elevation of Datum(ft msl): 1082.84 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.17/23.29/1359 Finish: 14.21/21.36/1419

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	513	125.96			23.36	1403		118.74	964.10
			185.12						
			185.09						
			185.09						
				126.02					
4	392	73.37			22.82	1407		112.30	970.54
			135.46						
			135.43						
			135.43						
				73.34					
3	322	42.93			22.44	1410		111.50	971.34
			105.45						
			105.42						
			105.45						
				42.93					
2	240	14.36			22.06	1413		111.42	971.42
			69.94						
			69.94						
			69.91						
				14.37					
1	150	14.31			21.45	1416		102.90	979.94
			34.62						
			34.65						
			34.56						
				14.35					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1764 | Well Name: MW-11

Elevation of Datum(ft msl): 1139.30 | Range: 0 to 750 psia | Weather: 65 degrees, Overcast | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.12/22.92/1245 | Finish: 14.23/19.84/1301

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	639	158.37			22.74	1248		177.44	961.86
			214.28						
			214.27						
			214.24						
				158.40					
4	524	108.95			22.75	1251		162.56	976.74
			170.87						
			170.84						
			170.87						
				108.98					
3	429	68.11			21.22	1255		164.86	974.44
			128.67						
			128.67						
			128.70						
				68.12					
2	259	14.36			20.56	1258		159.41	979.89
			57.33						
			57.36						
			57.35						
				14.29					
1	149	14.27			20.12	1259		121.26	1018.04
			26.23						
			26.22						
			26.15						
				14.31					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1764 | Well Name: MW-12

Elevation of Datum(ft msl): 1102.14 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.17/22.04/1430 | Finish: 14.20/21.00/1448

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	548	99.26			22.21	1431		136.66	965.48
			192.48						
			192.51						
			192.51						
				99.22					
4	436	50.49			22.37	1434		130.82	971.32
			146.45						
			146.48						
			146.51						
				50.51					
3	323	14.32			21.35	1436		130.48	971.66
			97.66						
			97.65						
			97.62						
				14.38					
2	243	14.27			19.59	1441		129.96	972.18
			63.17						
			63.20						
			63.20						
				14.26					
1	140	14.27			20.09	1446		114.21	987.93
			25.34						
			25.39						
			25.36						
				14.26					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1764 Well Name: MW-14

Elevation of Datum(ft msl): 1173.47 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.14/22.54/1150 Finish: 14.13/20.82/1206

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	540	143.17			22.92	1155		187.37	986.10
			166.98						
			167.01						
			167.01						
				143.11					
4	456	106.58			22.48	1157		187.61	985.86
			130.51						
			130.45						
			130.48						
				106.61					
3	382	74.39			21.96	1159		187.73	985.74
			98.35						
			98.32						
			98.38						
				74.34					
2	277	28.65			21.35	1201		188.69	984.78
			52.43						
			52.40						
			52.42						
				28.62					
1	207	14.31			20.96	1202		189.53	983.94
			21.74						
			21.68						
			21.70						
				14.32					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1764 | Well Name: MW-17

Elevation of Datum(ft msl): 1191.21 | Range: 0 to 750 psia | Weather: 65 degre sunny, 65 deg F | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.25/16.79/0835 | Finish: 14.21/16.79/0856

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	726	172.99			18.75	842		236.43	954.78
			226.46						
			226.45						
			226.47						
				173.02					
4	582	110.54			19.40	847		233.14	958.07
			165.48						
			165.45						
			165.45						
				110.58					
3	468	61.05			18.27	850		244.72	946.49
			111.01						
			111.04						
			111.01						
				61.08					
2	370	18.40			17.61	851		233.87	957.34
			73.26						
			73.22						
			73.25						
				18.40					
1	250	14.37			17.03	853		236.09	955.12
			20.26						
			20.29						
			20.23						
				14.32					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1764 | Well Name: MW-18

Elevation of Datum(ft msl): 1225.41 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.13/16.90/0906 | Finish: 14.18/18.63/0921

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	684	149.65			19.58	909		276.01	949.40
			191.00						
			191.03						
			191.03						
				149.62					
4	564	97.48			20.87	911		271.49	953.92
			140.95						
			140.98						
			140.95						
				97.49					
3	424	36.72			20.31	914		267.63	957.78
			81.96						
			81.95						
			81.92						
				36.70					
2	330	14.33			19.56	916		281.88	943.53
			35.04						
			35.01						
			35.00						
				14.35					
1	270	14.33			18.80	919	No water over measurement port		
			14.41						
			14.41						
			14.44						
				14.31					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-19

Elevation of Datum(ft msl): 1142.94 | Range: 0 to 750 psia | Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast | Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.23/21.44/1014 | Finish: 14.24/19.19/1032

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	498	72.81			19.98	1020		182.26	960.68
			151.11						
			151.14						
			151.08						
				72.82					
4	444	49.33			19.16	1024		182.24	960.70
			127.70						
			127.73						
			127.70						
				49.31					
3	392	26.63			19.12	1026		181.47	961.47
			105.49						
			105.52						
			105.49						
				26.59					
2	314	14.32			19.33	1028		182.50	960.44
			71.23						
			71.26						
			71.23						
				14.38					
1	242	14.29			19.21	1030		181.76	961.18
			40.36						
			40.33						
			40.36						
				14.34					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-20

Elevation of Datum(ft msl): 1165.05 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.18/18.83/0935 Finish: 14.22/18.99/1002

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	900	267.01			24.50	949		218.82	946.23
			309.50						
			309.51						
			309.46						
				267.02					
4	700	180.19			24.02	952		223.44	941.61
			220.79						
			220.80						
			220.77						
				180.14					
3	562	120.23			23.06	955		219.06	945.99
			162.85						
			162.86						
			162.88						
				120.19					
2	392	46.35			20.48	958		222.20	942.85
			87.78						
			87.84						
			87.81						
				46.39					
1	230	14.34			19.32	1000		224.73	940.32
			16.46						
			16.48						
			16.51						
				14.38					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing | Probe Type: Westbay | Date: 2/12/98 | Job No.: 1572

Serial No.: 1455 | Well Name: MW-21

Elevation of Datum(ft msl): 1059.10 | Range: 0 to 750 psia | Weather: 65 degrees, Overcast | Client: Jet Propulsion Laboratory | Casing Size: 1.5-inch Westbay Casing | Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.23/22.76/1123 | Finish: 14.28/20.56/1137

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	372	122.30			22.12	1126		80.75	978.35
			140.50						
			140.53						
			140.50						
				122.33					
4	310	95.34			22.03	1128		80.65	978.45
			113.67						
			113.70						
			113.67						
				95.37					
3	240	65.30			21.66	1130		79.83	979.27
			83.67						
			83.70						
			83.70						
				65.34					
2	161	30.96			21.07	1132		80.37	978.73
			49.20						
			49.23						
			49.20						
				30.94					
1	90	14.28			20.70	1134		83.44	975.66
			17.08						
			17.11						
			17.11						
				14.26					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-22

Elevation of Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Datum(ft msl): 1176.98 Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.19/23.45/1334 Finish: 14.22/21.65/1348

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	588	167.49			23.20	1337		202.54	974.44
			181.28						
			181.31						
			181.31						
				167.52					
4	467	114.92			23.30	1339		199.65	977.33
			130.12						
			130.09						
			130.09						
				114.88					
3	389	81.03			22.82	1342		197.02	979.96
			97.41						
			97.44						
			97.44						
				81.03					
2	329	54.93			22.50	1344		197.36	979.62
			71.28						
			71.25						
			71.28						
				54.91					
1	245	17.90			22.03	1346		202.34	974.64
			32.72						
			32.69						
			32.69						
				17.91					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-23

Elevation of Datum(ft msl): 1108.84 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.13/21.41/1217 Finish: 14.21/21.34/1231

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	542	163.75			22.21	1221		135.89	972.95
			190.23						
			190.20						
			190.23						
				163.78					
4	445	121.58			22.54	1223		135.13	973.71
			148.48						
			148.51						
			148.51						
				121.61					
3	319	66.79			22.16	1225		132.47	976.37
			95.04						
			95.04						
			95.01						
				66.81					
2	254	38.54			21.87	1227		132.95	975.89
			66.62						
			66.66						
			66.65						
				38.51					
1	174	14.30			21.48	1229		135.36	973.48
			30.93						
			30.90						
			30.93						
				14.35					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing Probe Type: Westbay Date: 2/12/98 Job No.: 1572

Serial No.: 1455 Well Name: MW-24

Elevation of Datum(ft msl): 1200.94 Range: 0 to 750 psia Client: Jet Propulsion Laboratory

Weather: 65 degrees, Overcast Casing Size: 1.5-inch Westbay Casing

Operator: L.Darragh, J. Brenner

Ambient Reading (Pressure/Temperature/Time) Start: 14.08/23.05/1311 Finish: 14.16/21.92/1324

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	678	189.77			23.23	1314		231.47	969.47
			207.70						
			207.70						
			207.67						
				189.70					
4	554	138.89			23.27	1317		228.35	972.59
			155.30						
			155.30						
			155.27						
				138.90					
3	435	84.09			23.13	1319		226.21	974.73
			104.62						
			104.62						
			104.65						
				84.11					
2	373	57.13			23.05	1321		226.86	974.08
			77.49						
			77.45						
			77.48						
				57.12					
1	279	17.13			22.59	1322		232.49	968.45
			34.29						
			34.29						
			34.27						
				17.18					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 172 Date: 1/27/98

Well Name: MW-3 Sampling Zone No.: 1 Starting Time: 1010 Finishing Time: 1100

Technicians J. BRENNER, D. DARKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.19 (PS.A) (End of Session) 14.19 (PS.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.19	✓	1015	1020	✓	14.20	1.0	1ST RUN TO SCREEN #1; INITIAL PARAMETERS, NTU's 2.37
2	✓	✓	✓	✓	✓	✓	14.20	✓	1032	1037	✓	14.21	1.0	2ND RUN; COLLECT MW-981-078, 2-VOA, METALS, ANIONS, 40X. G.
3	✓	✓	✓	✓	✓	✓	14.17	✓	1053	1058	✓	14.19	1.0	3RD RUN; TETRACHLOROETHENE, TETRACHLOROETHENE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

F-2

Comments:

Total Volume: 3.0L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 252 Date: 1/26/98

Well Name: MW-3 Sampling Zone No.: 2 Starting Time: 0905 Finishing Time: 1005

Technicians J. BRENNER, [illegible] DIRICK, C. DARROUGH

Water Level Inside MP Casing (Beginning of Session) 14.29 (PSIA) (End of Session) 14.30 PSIA

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.29	✓	0914	0918	✓	14.31	1.0	1ST RUN, INITIAL PARAMETERS, NTUs = 2.25
2	✓	✓	✓	✓	✓	✓	14.27	✓	0931	0935	✓	14.29	1.0	2ND RUN, COLLECT MW-981-077 2 VOAs, METALS, ANIONS, HEX. Cr
3	✓	✓	✓	✓	✓	✓	14.29	✓	0954	0958	✓	14.30	1.0	3RD RUN, PERCHLORATE, PERCHLORATE SPLIT, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____ Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 346 Date: 1/27/98

Well Name: MW-3 Sampling Zone No.: 3 Starting Time: 0800 Finishing Time: 0900

Technicians J. BRENNER; D. DIZIK; L. DAZZIO

Water Level Inside MP Casing (Beginning of Session) 27.79 (PVC) (End of Session) 27.78 (STEEL)

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	27.79	✓	0824	0827	✓	27.76	1.0	1ST RUN; INITIAL PARAMETERS, NTUS = 9.0X1
2	✓	✓	✓	✓	✓	✓	27.79	✓	0827	0832	✓	27.78	1.0	2ND RUN; NTUS = 4.89; COLLECT MW 981-076; 2 VOAS METALS (HNO3/ICP)
3	✓	✓	✓	✓	✓	✓	27.78	✓	0850	0853	✓	27.78	1.0	SULFIDE, ANIONS, HEX. CR. PERCHLORATE PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 346 Date: 1·26·98

Well Name: MW-3 Sampling Zone No.: 3 Starting Time: 1351 Finishing Time: 1500

Technicians J. BRENNER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 28.01 (PSIA) (End of Session) 28.30 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	28.01	✓	1358	1401	✓	28.26	1	1st Run - Initial Parameters NTU's = 9.1
2	✓	✓	✓	✓	✓	✓	28.02	✓	1422	1425	✓	28.28	1	2nd Run, trying to Reduce Turbidity - NTU's = 8.5
3	✓	✓	✓	✓	✓	✓	28.00	✓	1442	1445	✓	28.30	1	3rd Run - ATTEMPTING TO REDUCE TURBIDITY; NTU'S = 10.5
4														*WILL RENUN TOMORROW - (1/27/98
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 550 Date: 1/26/98

Well Name: MW-3 Sampling Zone No.: 4 Starting Time: 1230 Finishing Time: 1355

Technicians J. BRENNER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 120.21 (PS.A) (End of Session) 120.16 (PS.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	120.21	✓	1241	1244	✓	120.24	1.0	1ST RUN; INITIAL PARAMETERS, NTU'S = 2.96
2	✓	✓	✓	✓	✓	✓	120.19	✓	1307	1310	✓	120.17	1.0	COLLECT MW-981-075; 2 VOAS, METAL ~~DISSOLVED~~ ANIONS, HEX. Cr
3	✓	✓	✓	✓	✓	✓	120.15	✓	1336	1339	✓	120.16	1.0	3RD RUN; PERCHLORATE; PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 653 Date: 1/26/98

Well Name: MW-3 Sampling Zone No.: 5 Starting Time: 1050 Finishing Time: 1225

Technicians J. BRENNER, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 161.53 (PSIA) (End of Session) 161.46 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	161.53	✓	1112	1114	✓	161.53	1.0	1ST RUN: INITIAL PARAMETERS; NTU'S = 2.23
2	✓	✓	✓	✓	✓	✓	161.51	✓	1140	1142	✓	161.52	1.0	COLLECT MW-98I-024; 2 VOAS, METALS, ANIONS HEX.CR
3	✓	✓	✓	✓	✓	✓	161.47	✓	1209	1212	✓	161.46	1.0	3RD RUN; PERCHLORATE, PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 150 Date: 1/28/98

Well Name: MW-4 Sampling Zone No.: 1 Starting Time: 1030 Finishing Time: 1115

Technicians T. BLANEY, L. DARRACH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 14.22 psia (End of Session) 14.24 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.22	✓	1030	1034	✓	14.28	1	1ST Run; Initial Parameters NTUs = 3.35; Ready to Sample
2	✓	✓	✓	✓	✓	✓	14.22	✓	1049	1055	✓	14.24	1	Sample MW-981-073; VOAs metals; Anions; Cr+6
3	✓	✓	✓	✓	✓	✓	14.22	✓	1106	1112	✓	14.24	1	Sample MW-981-073; ClO_4 + ClO_4 Split + Field Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 240 Date: 1/28/98

Well Name: MW-4 Sampling Zone No.: 2 Starting Time: 0920 Finishing Time: 1027

Technicians T. BLANEY, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 14.29 psia (End of Session) 14.30 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.29	✓	0926	0930	✓	14.29	1	1ST RUN; INITIAL PARAMETERS. NTU's = 4.84; Ready to Sample
2	✓	✓	✓	✓	✓	✓	14.27	✓	0944	0947	✓	14.28	1	Sample MW-981-072 VOAs, METALS, ANIONS Sample MW-981-071 VOAs, metals
3	✓	✓	✓	✓	✓	✓	14.26	✓	1001	1003	✓	14.30	1	Sample MW-981-072 ANIONS, Cr^{+6}, ClO_4, SPLIT Sample MW-981-071 Cr^{+6}, ClO_4
4	✓	✓	✓	✓	✓	✓	14.28	✓	1016	1020	✓	14.30	1	Sample MW-981-072 ClO_4 + ClO_4 SPLIT Sample MW-981-071 ClO_4 Final Parameters
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 4.0 Liters F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 322 Date: 1/28/98

Well Name: MW-4 Sampling Zone No.: 3 Starting Time: 0820 Finishing Time: 0915

Technicians T. BLANEY, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 44.65 psia (End of Session) 44.78 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	44.65	✓	0827	0830	✓	44.67	1	1ST Run; FINITIAL PARAMETERS NTU's = 4.55; Ready to Sample
2	✓	✓	✓	✓	✓	✓	44.73	✓	0845	0848	✓	44.74	1	Sample MW-9BI-070; VOAs, metals, ANIONS, Cr+6
3	✓	✓	✓	✓	✓	✓	44.76	✓	0905	0908	✓	44.78	1	Sample MW-9BI-070; ClO_4 + Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: mw-4 Depth: 392 Date: 1-27-98

Well Name: mw-4 Sampling Zone No.: 4 Starting Time: 1320 Finishing Time: 1435

Technicians L. Dacca, J. Brenner, D. Dirkin

Water Level Inside MP Casing (Beginning of Session) 75.36 (PSIA) (End of Session) 75.29 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	75.36	✓	1326	1329	✓	75.38	1	1st Run screened, ~~Initial Parameters~~ NTU's = 4.73
2	✓	✓	✓	✓	✓	✓	75.34	✓	1353	1355	✓	75.31	1	2nd Run, collect mw-98-069 VOAs MS/MSD, metals, anions
3	✓	✓	✓	✓	✓	✓	75.31	✓	1423	1426	✓	75.29	1	3rd Run, collect Iron, Cl, Perchlorate & final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3 C'L

149.02

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPC Location: MW-4 Depth: 513 Date: 1-27-98

Well Name: MW-4 Sampling Zone No.: 5 Starting Time: 1145 Finishing Time: 1305

Technicians L. Dazzaq, J Brenner, D. Dirkin

Water Level Inside MP Casing (Beginning of Session) 128.11 (End of Session) 128.33

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	128.11	✓	1157	1159	✓	128.45	1	1st Run to Screen 5, Initial Parameters, NTU's = 4.47
2	✓	✓	✓	✓	✓	✓	128.12	✓	1223	1227	✓	128.43	1	2nd Run, Collect MW-981-068 VOA's, Metals, Anions,
3	✓	✓	✓	✓	✓	✓	128.06	✓	1250	1253	✓	128.33	1	3rd Run, Hexcy, Perchlorate Perchlorate spl. + Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

25.45

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 149 Date: 1/29/98

Well Name: _____ Sampling Zone No.: 1 Starting Time: 1105 Finishing Time: 1200

Technicians J. BIZZONER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 14.20 (PSIA) (End of Session) 14.24 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.20 ~~25.45~~	✓	1110	1122	✓	14.22	1	1st Run screen #1, Initial Parameters, NTU's = 1.03
2	✓	✓	✓	✓	✓	✓	14.15	✓	1136	1141	✓	14.21	1	2nd Run, Collect MW-781-D40 VOA's, Metals, Anions,
3	✓	✓	✓	✓	✓	✓	14.16	✓	1155	1157	✓	14.24	.5	3rd Run, Hex Cr, CLO4, Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: 2.5L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPC Location: MW-11 Depth: 259 Date: 1/29/98

Well Name: MW-11 Sampling Zone No.: 2 Starting Time: 1005 Finishing Time: 1100

Technicians J. BRENNER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 14.17 (PSIA) (End of Session) 14.22 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.17	✓	1010	1014	✓	14.18	1.0	1ST RUN TO SCREEN # 2 INITIAL PARAMETERS, ANION'S=2.37
2	✓	✓	✓	✓	✓	✓	14.15	✓	1030	1034	✓	14.16	1.0	2ND RUN, COLLECT MW 5181-059 2 VOAS, METALS, ANIONS, HEX Cr
3	✓	✓	✓	✓	✓	✓	14.21	✓	1049	1053	✓	14.22	1.0	3RD RUN: PERCHLORATE, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPC Location: MW-11 Depth: 429 Date: 1/29/98

Well Name: MW-11 Sampling Zone No.: 3 Starting Time: 0845 Finishing Time: 1000

Technicians J. BRANNER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 69.88 (PSIA) (End of Session) 69.87 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	69.88	✓	0855	0858	✓	69.87	1.0	1ST RUN; INITIAL PARAMETERS NTU's = 1.39
2	✓	✓	✓	✓	✓	✓	69.89	✓	0918	0921	✓	69.88	1.0	2ND RUN; COLLECT MW-98I-058 2 VOAS, METALS ANIONS, MS/MSD VOAS
3	✓	✓	✓	✓	✓	✓	69.87	✓	0944	0947	✓	69.87	1.0	3RD RUN; HEX. Cr, PERCHLORATE, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 524 Date: 1/28/98

Well Name: MW-11 Sampling Zone No.: 4 Starting Time: 1345 Finishing Time: 1440

Technicians T. BLANEY, J. BRENNER, L. DARRAGH, D. DICKIN

Water Level Inside MP Casing (Beginning of Session) 110.84 (PS.A) (End of Session) 110.82 (PS, A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	110.84	✓	1344	1346	✓	110.89	1.0	1ST RUN; INITIAL PARAMETERS, NTU'S = 3.43
2	✓	✓	✓	✓	✓	✓	110.84	✓	1405	1407	✓	110.86	1.0	2ND RUN; COLLECT MW-98-057 2 VOAS, METALS, ANIONS, HEX. C.
3	✓	✓	✓	✓	✓	✓	110.87	✓	1428	1430	✓	110.82	1.0	3RD RUN; PERCHLORATE, PERCHLORATE SPLIT; FN4C PARAM.
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 639 Date: 1/28/98

Well Name: MW-11 Sampling Zone No.: 5 Starting Time: 1200 Finishing Time: 1335

Technicians T. BLANEY, J. BREMNER, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 160.19 psia (End of Session) 160.22 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	160.19	✓	1208	1210	✓	160.18	1	1ST Run; INITIAL PARAMETERS NTUs = 1.23 · Ready to Sample
2	✓	✓	✓	✓	✓	✓	160.08	✓	1234	1236	✓	160.10	1	SAMPLE MW-981-056, VOAs METALS +MS/MSD ~~FOR MS/MSD~~
3	✓	✓	✓	✓	✓	✓	160.08	✓	1259	1301	✓	160.08	1	SAMPLE MW-981-056; ANIONS, CrVI, ClO_4 + ClO_4 SPLIT ~~+ MS/MSD~~
4	✓	✓	✓	✓	✓	✓	160.19	✓	1326	1328	✓	160.22	1	FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 4.0 liters

21.40

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW12 Depth: 140 Date: 1.30.98

Well Name: MW-12 Sampling Zone No.: 1 Starting Time: 1040 Finishing Time: 1145

Technicians L. Darkey, T Brenner

Water Level Inside MP Casing (Beginning of Session) 14.19 (PSIA) (End of Session) 14.22 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.19	✓	1044	1050	✓	14.19	1	1st Run to screen #1, Initial Parameters, NTU's = 2.63
2	✓	✓	✓	✓	✓	✓	14.20	✓	1104	1109	✓	14.22	1	2nd Run Collect MW-981-055 2 VOA's (Metals ms/msd) Anions 1/2
3	✓	✓	✓	✓	✓	✓	14.17	✓	1124	1129	✓	14.22	1	3rd Run collect Rest of Anions, (Perchl, CLO4, Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 243 Date: 1/30/98

Well Name: MW-12 Sampling Zone No.: 2 Starting Time: 0920 Finishing Time: 1035

Technicians J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.23 (PSIA) (End of Session) 14.27 PSIA

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.23	✓	0925	0928	✓	14.28	1	1st Run to screen #2 - Initial Parameters NTU's: 4.41
2	✓	✓	✓	✓	✓	✓	14.26	✓	0943	0946	✓	14.30	1	2nd Run - Collect MW-98-054 8 VOA's, 2 metals, MS/MSD VOA's
3	✓	✓	✓	✓	✓	✓	14.26	✓	1003	1007	✓	14.31	1	3rd Run - Collect Anions, 2 HexCr, 1 CLO4
4	✓	✓	✓	✓	✓	✓	14.23	✓	1023	1026	✓	14.27	1	4th Run - Collect 2nd CLO4 & DHS split, Final Parameters
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 4 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 323 Date: 1/30/98

Well Name: MW-12 Sampling Zone No.: 3 Starting Time: 0810 Finishing Time: 0915

Technicians J. BIZENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.22 (PSIA) (End of Session) 14.29 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.22	✓	0819	0822	✓	14.23	1.0	1ST RUN; INITIAL PARAMETERS NTU'S = 2.79
2	✓	✓	✓	✓	✓	✓	14.28	✓	0839	0842	✓	14.27	1.0	2ND RUN; COLLECT MW-12I-052; ZVOAS, METALS, ANIONS, HEX CR.
3	✓	✓	✓	✓	✓	✓	14.26	✓	0900	0903	✓	14.29	1.0	3RD RUN; PERCHLORATE, PERCHLORATE SPLIT, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 436 Date: 1/29/99

Well Name: MW-12 Sampling Zone No.: 4 Starting Time: 1405 Finishing Time: 1530

Technicians: J. Brenner, L. Darragh, D. Diersin

Water Level Inside MP Casing (Beginning of Session) 50.73 (PSIA) (End of Session) 50.72 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	50.73	✓	1424	1427	✓	50.73	1.0	1st run - Initial Parameters. NTU= 3.57
2	✓	✓	✓	✓	✓	✓	50.70	✓	1453	1455	✓	50.72	1.0	2nd run, collect MW-901-051 VOCs, metals, Anions
3	✓	✓	✓	✓	✓	✓	50.70	✓	1519	1520	✓	50.72	1.0	3rd run, $CrVI$ and ClO_4 - Final Parameters. NTU= 3.19
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L [1-2]

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 548 Date: 1/29/98

Well Name: MW-12 Sampling Zone No.: 5 Starting Time: 12:30 Finishing Time: 1400

Technicians J. BRENNER, D. DIRKIN, L. DAUGHERTY

Water Level Inside MP Casing (Beginning of Session) 99.55 (PSIA) (End of Session) 99.44 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	99.55	✓	1249	1251	✓	99.58	1.0	NTU's = 1st Run, Initial Parameters 203
2	✓	✓	✓	✓	✓	✓	99.47	✓	1321	1322	✓	99.47	1.0	2nd run, Collect MW-281-030, 2 vials, metals, anions & Hex chrome
3	✓	✓	✓	✓	✓	✓	99.47	✓	1347	1352	✓	99.44	1.0	Collect MW-281-032, Decontaminate unit 3rd run final Parameters.
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 l. F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 207 Date: 11/23/98

Well Name: MW-14 Sampling Zone No.: 1 Starting Time: 1405 Finishing Time: 1510

Technicians J. BRENNER, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.20 (FB, A) (End of Session) 14.23 (FB, A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.20	✓	1411	1416	✓	14.21	1.0	1ST RUN; INITIAL PARAMETERS NTU's = 7.96
2	✓	✓	✓	✓	✓	✓	14.23	✓	1433	1438	✓	14.21	1.0	2ND RUN; COLLECT MW-98-017 2 VOAS, METALS, ANIONS
3	✓	✓	✓	✓	✓	✓	14.25	✓	1454	1459	✓	14.23	1.0	3RD RUN; HEX. Cr; PERCHLORATE, PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 277 Date: 1/23/98

Well Name: MW-14 Sampling Zone No.: 2 Starting Time: 1250 Finishing Time: 1400

Technicians J. BRENNER, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 30.78 (TOIA) (End of Session) 30.74 (PMA)

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	30.78	✓	1256	1259	✓	30.77	1.0	1ST RUN; INITIAL PARAMETERS, NTUs = 4.8
2	✓	✓	✓	✓	✓	✓	30.78	✓	1316	1318	✓	30.79	~~2.0~~	WATER NOT RECOVERED * VALVE NOT OPENED
3	✓	✓	✓	✓	✓	✓	30.75	✓	1333	1336	✓	30.76	1.0	3RD RUN; COLLECT MW-98I-046 2 VOAS, METALS, ANIONS
4	✓	✓	✓	✓	✓	✓	30.75	✓	1351	1355	✓	30.74	1.0	4TH RUN, MEK, CC, PERCHLORATE, PERCHLORATE SPLIT, FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 F-2 ✓

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 382 Date: 1/23/98

Well Name: MW-14 Sampling Zone No.: [redacted]3 Starting Time: 1245 Finishing Time: 1245

Technicians J. BRENNER, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 76.58 (PSIA) (End of Session) 75.56 (PSIA)

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	76.58	✓	1153	1155	✓	76.56	1.0	1ST RUN, INITIAL PARAMETERS NTUS = 2.14
2	✓	✓	✓	✓	✓	✓	76.56	✓	1212	1215	✓	75.58	1.0	2ND RUN, COLLECT MW-9B1-060 2VOAS, METALS, ANIONS, HEX. Cr.
3	✓	✓	✓	✓	✓	✓	76.53	✓	1233	1235	✓	75.56	1.0	3RD RUN; PERCHLORATE; PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 456 Date: 1/23/98

Well Name: MW-14 Sampling Zone No.: 4 Starting Time: 1030 Finishing Time: 1240

Technicians: J. BRAINERD, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 108.85 (PSEA) (End of Session) 108.81 (PSEA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	V	V	V	V	V	V	108.95	V	1042	1045	V	108.83	1.0	2ST RUN, INITIAL PARAMETERS, NTU's = 2.69
2	V	V	V	V	V	V	108.83	V	1107	1110	V	108.80	1.0	2ND RUN, COLLECT MW-981-044 VOA's, METALS, ANIONS, HEX CR
3	V	V	V	V	V	V	108.85	V	1130	1133	V	108.84	1.0	3RD RUN, PERCHLORATE, PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 30L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 510 Date: 1/23/98

Well Name: MW-14 Sampling Zone No.: 5 Starting Time: 0845 Finishing Time: 1025

Technicians J. BRENNER, D. DIRKIN, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 145.42 (TR.A) (End of Session) 145.38 (TR.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	145.42	✓	0908	0910	✓	145.38	1.0	1ST RUN; INITIAL PARAMETERS NTU'S = 4.65
2	✓	✓	✓	✓	✓	✓	145.38	✓	0940	0942	✓	145.51	1.0	2ND RUN; COLLECT MW-961-043 2 VOAS, METALS (MS/MSD), ANIONS
3	✓	✓	✓	✓	✓	✓	145.38	✓	1009	1011	✓	145.38	1.0	3RD RUN; PERCHLORATE, PERCHLORATE SPLIT, HEX. Cr, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 250 Date: 1/16/98

Well Name: MW-17 Sampling Zone No.: 1 Starting Time: 1115 Finishing Time: 1240

Technicians J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.21 (PS.A) (End of Session) 14.21 (PS.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.21	✓	1123	1131	✓	14.27	0.5	1ST RUN TO SCREEN #1, INITIAL PARAMETERS: NTU'S = 4.98
2	✓	✓	✓	✓	✓	✓	14.23	✓	1145	1153	✓	14.20	1.0	2ND RUN, COLLECT MW-98I-040, VOAS, METALS, ANIONS
3	✓	✓	✓	✓	✓	✓	14.23	✓	1207	1215	✓	14.23	0.0	NO WATER, RECOVERED, RETURN
4	✓	✓	✓	✓	✓	✓	14.21	✓	1226	1234	✓	14.21	1.0	4TH RUN, HEX Cr, PERCHLORATE, PERCHLORATE S.R.T, FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 2.5 L

F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 370 Date: 1/15/98

Well Name: MW-17 Sampling Zone No.: 2 Starting Time: 1420 Finishing Time: 1530

Technicians J. BRANAL / L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 20.51 (PS.A) (End of Session) 20.48 (P-1A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	20.51	✓	1434	1438	✓	20.52	1.0	1ST RUN TO SCREEN # 2, INITIAL PARAMETERS, NTU'S = 0.77
2	✓	✓	✓	✓	✓	✓	20.48	✓	1456	1459	✓	20.49	1.0	2ND RUN, 2 VOAS, METALS, ANIONS, 1/2 HEX CR.
3	✓	✓	✓	✓	✓	✓	20.47	✓	1513	1516	✓	20.48	1.0	3RD RUN, 1/2 HEX CR., PERCHLORATE, PARCH. SPLIT, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 468 Date: 1/16/98

Well Name: MW-17 Sampling Zone No.: 3 Starting Time: 1000 Finishing Time: 1110

Technicians J BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 63.10 (PSIA) (End of Session) 63.06 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	63.10	✓	1007	1010	✓	63.10	1.0	1ST RUN TO SCREEN #3, INITIAL PARAMETERS
2	✓	✓	✓	✓	✓	✓	63.08	✓	1030	1033	✓	63.07	1.0	2ND RUN, MW-98-05S COLLECTED 2 VOAS, 2 VOAS MS, 2 VOAS MSD, METALS, ANIONS
3	✓	✓	✓	✓	✓	✓	63.07	✓	1055	1058	✓	63.06	1.0	3RD RUN; HEX. Cr, PERCHLORATE, PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L [F2]

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 582 Date: 1/19/93

Well Name: MW-17 Sampling Zone No.: 4 Starting Time: 1350 Finishing Time: 1410

Technicians J. BRENNER / L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 112.80 (PSIA) (End of Session) 112.81

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	112.80	✓	1357	1400	✓	112.81	1.0	1ST RUN AT SCREEN #4; INITIAL PARAMETERS; NTUs = 25.1
2														* WILL RETURN TO SCREEN #4 LATER
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: Total Volume: 1.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 582 Date: 1/16/98

Well Name: MW-17 Sampling Zone No.: 4 Starting Time: 0830 Finishing Time: 0955

Technicians J. BRENNER L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 112.72 (PSIA) (End of Session) 112.71 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	112.72	✓	0844	0846	✓	112.73	1.0	1ST RUN, INITIAL PARAMETERS NTU'S = 3.94
2	✓	✓	✓	✓	✓	✓	112.79	✓	0911	0914	✓	112.77	1.0	2ND RUN, ~~EVOS~~ COLLECT MW-98-037 2 VOAS, METALS, ANIONS 1/2 HEX. C.
3	✓	✓	✓	✓	✓	✓	112.72	✓	0940	0943	✓	112.71	1.0	3RD RUN, 1/2 HEX, PERCHLORATE, PERCHLORATE SPLIT, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 726 Date: 1/15/98

Well Name: MW-17 Sampling Zone No.: 5 Starting Time: 1145 Finishing Time: 1345

Technicians J. BRENNER / L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 175.38 (PSIA) (End of Session) 175.32 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	175.38	✓	1155	1158	✓	175.38	1.0	1ST RUN AT SCREEN # 5, INITIAL PARAMETERS; NTU'S = 11.0
2	✓	✓	✓	✓	✓	✓	175.33	✓	1233	1236	✓	175.36	1.0	2ND RUN TO SCREEN # 5, ATTEMPTING TO REDUCE TURBIDITY; NTU'S = 17.0
3	✓	✓	✓	✓	✓	✓	175.33	✓	1315	1319	✓	175.32	1.0	3RD RUN TO SCREEN #5, ATTEMPTING TO REDUCE TURBIDITY, NTU'S = 20.0
4														* WILL RTN TO SCREEN #5 LATER
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 726 Date: 11/6/98

Well Name: MW-17 Sampling Zone No.: 5 Starting Time: 1245 Finishing Time: 1415

Technicians J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 175.09 (TOC) (End of Session) 175.02 (TOC)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	175.09	✓	1257	1300	✓	175.05	1.0	1ST RUN; INITIAL PARAMETERS NTUS = 4.75
2	✓	✓	✓	✓	✓	✓	175.02	✓	1328	1331	✓	175.03	1.0	2ND RUN; MW-18B - 036 COLLECTED VOAS, METALS, METALS (MS/MSD)
3	✓	✓	✓	✓	✓	✓	175.02	✓	1400	1403	✓	175.02	1.0	3RD RUN; ANIONS, HEX. CR, PERCHLORATE PERCHLORATE SPLIT; FINAL PARAMS.
4														
5														
6														
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9														
10														
11														
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Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 270 Date: 1/15/98

Well Name: MW-18 Sampling Zone No.: 1 Starting Time: 1035 Finishing Time: 1100

Technicians J. BRENNER / L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.25 (TOIA) (End of Session) _____

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.25	✓	—	—	—	—	—	NO WATER ABOVE SCREEN #1
2														
3														
4														
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Comments: _____ Total Volume: Ø

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 330. Date: 1/15/98

Well Name: MW-18 Sampling Zone No.: 2 Starting Time: 0915 Finishing Time: 1030

Technicians J. BRENNER / L. PARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.25 (TRANS) (End of Session) 14.34 (TRANS)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	~~14.25~~ ✓	14.25	✓	0928	0932	✓	14.29	1.0	1ST RUN TO SCREEN #2; INITIAL PIEZOMETERS; NMS = 3.6(x)
2	✓	✓	✓	✓	✓	✓	14.29	✓	0955	0959	✓	14.35	1.0	2ND RUN; 2 VOAs, METALS, ANIONS
3	✓	✓	✓	✓	✓	✓	14.29	✓	1017	1021	✓	14.34	1.0	3RD RUN; HEX. Cr, PERCHLORATE; PERCHLORATE SPLIT; FINAL PARAM.
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10														
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Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 424 Date: 1/14/98

Well Name: MW-18 Sampling Zone No.: 3 Starting Time: 1505 Finishing Time: 1625

Technicians J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 38.70 (PSIA) (End of Session) 38.65 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	38.70	✓	1520	1523	✓	38.67	1.0	1ST RUN, INITIAL PARAMETERS NTUS = 0.58
2	✓	✓	✓	✓	✓	✓	38.68	✓	1543	1546	✓	38.68	1.0	2ND RUN, VOA'S, METALS, ANIONS, HEX. Cr.
3	✓	✓	✓	✓	✓	✓	38.65	✓	1605	1608	✓	38.65	1.0	3RD RUN, PERCHLORATE, PERCHLORATE SPLIT FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 584 Date: 1/14/98

Well Name: MW-18 Sampling Zone No.: 4 Starting Time: 1340 Finishing Time: 1455

Technicians J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 99.67 (PSIA) (End of Session) 99.52 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	99.67	✓	1351	1351	✓	99.61	1.0	1ST RUN, INITIAL PARAMETERS NTU'S = 2.23
2	✓	✓	✓	✓	✓	✓	99.57	✓	1420	1424	✓	99.56	1.0	2ND RUN; 2 VOAS, METALS, ANIONS, HEX. CR.
3	✓	✓	✓	✓	✓	✓	99.58	✓	1447	1450	✓	99.52	1.0	3RD RUN, 2 PERCHLORATE, FINAL PARAMETERS
4														
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7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 68.4 Date: 1/14/98

Well Name: MW-18 Sampling Zone No.: 5 Starting Time: 1115 Finishing Time: 1330

Technicians: J. BRENNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 151.94 (PSIA) (End of Session) 150.70 (PSIA)

Run No.	Surface Function Checks: Activate (SIDE)	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	151.94	✓	1131	1134	✓	151.97	1.0	1ST RUN; INITIAL PARAMETERS, NTU'S = 1.63
2	✓	✓	✓	✓	✓	✓	151.91	✓	1208	1211	✓	151.94	1.0	2ND RUN; 6 VOAS, 3 METALS
3	✓	✓	✓	✓	✓	✓	151.82	✓	1248	1251	✓	151.82	1.0	3RD RUN; 1 ANIONS, 1 CN, 1 NITRATE
4	✓	✓	✓	✓	✓	✓	150.73	✓	1318	1320	✓	150.70	0.5	4TH RUN, 1 PERCHLORATE, FINAL PARAMETERS
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Comments:

Total Volume: 3.5L

F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 242 Date: 1/21/98

Well Name: MW-19 Sampling Zone No.: 1 Starting Time: 1255 Finishing Time: 1345

Technicians T. BLANEY, L. DARRACH, D. DAKIN

Water Level Inside MP Casing (Beginning of Session) 14.22 psia (End of Session) 14.28 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.22	✓	1300	1303	✓	14.29	1	1ST Run; INITIAL PARAMETERS pH=4.7; Ready to Sample
2	✓	✓	✓	✓	✓	✓	14.21	✓	1316	1321	✓	14.26	1	SAMPLE MW-981-030; VOAs metals ANIONS, CrH6
3	✓	✓	✓	✓	✓	✓	14.19	✓	1335	1339	✓	14.28	1	SAMPLE MW-981-050, ClO4 ClO4 SPLIT + FIELD PARAMETERS
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10														
11														
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Comments:

Total Volume: 3.0 Liters F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 314 Date: 1/21/98

Well Name: MW-19 Sampling Zone No.: 2 Starting Time: 1155 Finishing Time: 1250

Technicians T. BLANEY, L. DARRACH, D. PIRKIN

Water Level Inside MP Casing (Beginning of Session) 14.25 psia (End of Session) 14.27 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.25	✓	1159	1202	✓	14.25	1	1ST RUN; INITIAL Parameters NTU's = 4.72; Ready to Sample
2	✓	✓	✓	✓	✓	✓	14.25	✓	1218	1222	✓	14.27	1	Sample MW-961-029; VOAs, metals, ANIONS; Cr+6
3	✓	✓	✓	✓	✓	✓	14.24	✓	1238	1242	✓	14.27	1	Sample MW-961-024; C104 C104 split; Final Parameters
4														
5														
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9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 392 Date: 1/21/98

Well Name: MW-19 Sampling Zone No.: 3 Starting Time: 1050 Finishing Time: 1145

Technicians T. BLANEY, L. DAGGAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 28.10 psia (End of Session) 28.09 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	28.10	✓	1057	1059	✓	28.11	1	1st Run; Initial Parameters; NTUs = 4.1; Ready to Sample
2	✓	✓	✓	✓	✓	✓	28.11	✓	1114	1116	✓	28.13	1	Sample MW-981-028; VOAs metals metals ms/msd; ANIONS
3	✓	✓	✓	✓	✓	✓	28.07	✓	1135	1137	✓	28.09	1	Sample MW-981-028; Cr+6, ClO_4 + ClO_4 Split + Final Parameters
4														
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9														
10														
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12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 444 Date: 1/28/98

Well Name: MW-19 Sampling Zone No.: 4 Starting Time: 0930 Finishing Time: 1035

Technicians T. BLANEY, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 50.70 psia (End of Session) 50.70 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	50.70	✓	0940	0943	✓	50.70	1	1ST RUN, INITIAL PARAMETERS. NTU's - 4.57; READY TO SAMPLE
2	✓	✓	✓	✓	✓	✓	50.70	✓	1003	1006	✓	50.72	1	SAMPLE MW-981-027; VOA's, METALS, ANIONS, CR+6
3	✓	✓	✓	✓	✓	✓	50.69	✓	1024	1027	✓	50.70	1	SAMPLE MW-981-027; ClO_4 + ClO_4 SPLIT + FIELD PARAMETERS
4														
5														
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7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 498 Date: 1/21/98

Well Name: MW-19 Sampling Zone No.: 5 Starting Time: 0815 Finishing Time: 0925

Technicians T. BLANEY, L. DARRAGH, D. DICKIN

Water Level Inside MP Casing (Beginning of Session) 74.17 psia (End of Session) 74.22 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	74.17	✓	0826	0829	✓	74.17	1	1ST Run; INITIAL PARAMETERS NTU's = 3.98. READY TO SAMPLE
2	✓	✓	✓	✓	✓	✓	74.19	✓	0850	0853	✓	74.20	1	SAMPLE MW-981-026; VOAS MS/MSD; METALS; ANIONS
3	✓	✓	✓	✓	✓	✓	74.21	✓	0915	0917	✓	74.22	1	SAMPLE MW-981-026; Cr+6 Clay + Final Parameters + SAMP
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5														
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7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L[F2] Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 23' Date: 1/20/98

Well Name: MW-20 Sampling Zone No.: 1 Starting Time: 1345 Finishing Time: 1435

Technicians: J. BRENNER, T. BLANEY

Water Level Inside MP Casing (Beginning of Session) 14.09 (B.A) (End of Session) 14.20 (B.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.09	✓	1349	1351	✓	14.08	1.0	1ST RUN, INITIAL PARAMETERS NTU's =
2	✓	✓	✓	✓	✓	✓	14.10	✓	1405	1415	✓	14.11	1.0	2ND RUN, COLLECT MW-5931-025 2 VOA'S METALS, ANIONS, HEX. C-
3	✓	✓	✓	✓	✓	✓	14.11	✓	1426	1432	✓	14.20	1.0	3RD RUN PERCHLORATE, PERCHLORATE SPLIT, FINAL PARAMETERS
4														
5														
6														
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8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 37.2 Date: 1/20/98

Well Name: MW-20 Sampling Zone No.: 2 Starting Time: 1210 Finishing Time: 1310

Technicians J. BRUNNER, T. BLANEY

Water Level Inside MP Casing (Beginning of Session) 48.15 (PS.A) (End of Session) 48.15 (PS.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	48.15	✓	1249	1252	✓	48.13	1.0	1ST RUN; INITIAL PARAMETERS NTUS = 0.44
2	✓	✓	✓	✓	✓	✓	48.16	✓	1308	1311	✓	48.12	1.0	2ND RUN; COLLECT MW-98I-024 RUSH METALS ANIONS HEX. Cr
3	✓	✓	✓	✓	✓	✓	48.05	✓	1330	1333	✓	48.15	1.0	3RD RUN; PERCHLORATE, PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
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8														
9														
10														
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12														

Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 52.2 Date: 1/26/98

Well Name: MW-20 Sampling Zone No.: 3 Starting Time: 1115 Finishing Time: 1235

Technicians: J. BRENNER, T. BLANEY

Water Level Inside MP Casing (Beginning of Session) 122.12 (PSI.A) (End of Session) 122.07 (PSI.D)

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	122.12	✓	1133	1135	✓	122.15	1.0	1ST RUN; INITIAL PARAMETERS NTU'S = 2.16
2	✓	✓	✓	✓	✓	✓	122.08	✓	1158	1200	✓	122.09	1.0	2ND RUN; COLLECT MW-981-023 ZVOAS METALS ANIONS, HEX.Cr.
3	✓	✓	✓	✓	✓	✓	122.11	✓	1226	1228	✓	122.07	1.0	3RD RUN; PERCHLORATE PERCHLORATE SPLIT; FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 700 Date: 1/20/98.

Well Name: MW-20 Sampling Zone No.: 4 Starting Time: 0950 Finishing Time: 1110

Technicians J. BRENNER, T. BLANEY

Water Level Inside MP Casing (Beginning of Session) 182.10 (P.A) (End of Session) 182.09 (P.A)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	182.10	✓	1005	1007	✓	182.11	1.0	1ST RUN; INITIAL PARAMETERS
2	✓	✓	✓	✓	✓	✓	182.11	✓	1033	1035	✓	182.11	1.0	2ND RUN, COLLECT MW-98I-021 24 VOAS, METALS, ANIONS, HEX. C.
3	✓	✓	✓	✓	✓	✓	182.07	✓	1102	1104	✓	182.09	1.0	3RD RUN; PERCHLORATE/TECHLORATE SPLIT; FINAL PARAMETERS
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5														
6														
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8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 700 Date: 1/20/95

Well Name: MW-20 Sampling Zone No.: 5 Starting Time: 0830 Finishing Time: 0945

Technicians J. BRENNER, T. BLANEY

Water Level Inside MP Casing (Beginning of Session) 269.06 (PSIA) (End of Session) 269.09 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	269.06	✓	0835	0837	✓	269.20	1.0	1ST RUN; INITIAL PARAMETERS NTU'S = 0.1'S
2	✓	✓	✓	✓	✓	✓	269.08	✓	0906	0908	✓	269.14	1.0	2ND RUN; COLLECT MW-951-021 2 VOAS, METALS, ANIONS, ALK, CL
3	✓	✓	✓	✓	✓	✓	269.07	✓	0930	0932	✓	269.09	1.0	3RD RUN; REDUCTIVE, PERCHLORATE SPLIT, FINAL PARAMETERS
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F-2

Comments:

Total Volume: 3.0 L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 90 Date: 2/11/98

Well Name: MW-21 Sampling Zone No.: 1 Starting Time: 1405 Finishing Time: 1505

Technicians J. BIRSNER, L. DARRAGH

Water Level Inside MP Casing (Beginning of Session) 14.24 (PSIA) (End of Session) 14.30 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.24	✓	1409	1417	✓	14.31	1.0	1ST RUN TO SCREEN #1, INITIAL PARAMETERS, NNS=079
2	✓	✓	✓	✓	✓	✓	14.25	✓	1429	1437	✓	14.26	1.0	2ND RUN, COLLECT MW-981-029 2VOA, METALS, ANIONS
3	✓	✓	✓	✓	✓	✓	14.28	✓	1449	1458	✓	14.30	1.0	3RD RUN, HEX. CR, PERCHLORATE, TRIPLICATE SPLIT, ENVS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 90 Date: 1/27/98

Well Name: MW-21 Sampling Zone No.: 1 Starting Time: 1340 Finishing Time: 1350

Technicians: T. Blaney, L. Darrach, D. Dickin

Water Level Inside MP Casing (Beginning of Session) 14.15 psia (End of Session) 14.24 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.15	✓	1343	1345	✓	14.24	0	No water over port cannot sample
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 0

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 161 Date: 1/22/98

Well Name: MW-21 Sampling Zone No.: 2 Starting Time: ~~1245~~ 1240 Finishing Time: 1330

Technicians T. BLANEY, L. DARRAGH, D. DILKIN

Water Level Inside MP Casing (Beginning of Session) 32.87 (PSIA) (End of Session) 32.88 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	~~32~~.87	✓	1249	1249	✓	32.85	1	1st Run Initial Parameters
2	✓	✓	✓	✓	✓	✓	32.89	✓	1302	1305	✓	32.87	1	Sample MW-981-019 VOA's MS/MSD, metals, ANIONS
3	✓	✓	✓	✓	✓	✓	32.87	✓	1322	1325	✓	32.88	1	Sample MW-981-019 CLO4, CLO4 SPLIT + DUP CV, Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 240 Date: 1/22/98

Well Name: MW-21 Sampling Zone No.: 3 Starting Time: 1145 Finishing Time: 1233

Technicians T. BLANEY, L. DRAGACH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 67.38 psia (End of Session) 67.35 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	67.38	✓	1151	1154	✓	67.38	1	1ST Run; INITIAL PARAMETERS NTU's = 4.79; Ready to Sample
2	✓	✓	✓	✓	✓	✓	67.38	✓	1208	1212	✓	67.38	1	Sample MW-981-018, VOAs metals, ANIONS, Cr+6
3	✓	✓	✓	✓	✓	✓	67.35	✓	1223	1226	✓	67.35	1	Sample MW-981-018; ClO_4 + ClO_4 SPLIT + FINAL Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 Liters (IF-2)

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 310 Date: 1/22/98

Well Name: MW-21 Sampling Zone No.: 4 Starting Time: 1045 Finishing Time: 1140

Technicians T. BLANEY, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 97.46 psia (End of Session) 97.43 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	97.46	✓	1051	1054	✓	97.48	1	ISE Run; INITIAL PARAMETERS NTU's = 1.1; Ready to Sample
2	✓	✓	✓	✓	✓	✓	97.49	✓	1110	1114	✓	97.49	1	Sample MW-961-017; VOAs metals; ANIONS; Cr+6
3	✓	✓	✓	✓	✓	✓	97.42	✓	1129	1133	✓	97.43	1	Sample MW-961-017; ClO_4; ClO_4 split + Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0 L (F2 Keys)

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 372 Date: 1/22/98

Well Name: MW-21 Sampling Zone No.: 5 Starting Time: 0820 Finishing Time: 1038

Technicians T. BLANEY, L. DARRAGH, D. DIRKIN

Water Level Inside MP Casing (Beginning of Session) 124.34 psia (End of Session) 124.42 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	124.34	✓	0826	0829	✓	124.42	1	1ST Run; INITIAL PARAMETERS NTU'S = 14.8; Reducing TURBIDITY
2	✓	✓	✓	✓	✓	✓	124.42	✓	0847	0850	✓	124.54	1	2ND Run; NTU'S = 12.5 Reducing TURBIDITY
3	✓	✓	✓	✓	✓	✓	124.51	✓	0907	0910	✓	124.54	1	3RD Run; NTU'S = 17.0 Reducing TURBIDITY
4	✓	✓	✓	✓	✓	✓	124.51	✓	0927	0930	✓	124.53	1	4TH Run; NTU'S = 15.1 Reducing TURBIDITY
5	✓	✓	✓	✓	✓	✓	124.48	✓	0947	0950	✓	124.49	1	5TH Run; NTU'S = 4.94; Ready to Sample
6	✓	✓	✓	✓	✓	✓	124.42	✓	1007	1011	✓	124.45	1	Sample MW-981-016; VOAs, metals ANIONS, Cr6
7	✓	✓	✓	✓	✓	✓	124.40	✓	1026	1032	✓	124.42	1	Sample MW-981-016; cTCN + ClO4 SPLIT + Final Parameters
8														
9														
10														
11														
12														

Comments:

Total Volume: 7.0 Liters (F2)

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 245 Date: 2/5/98

Well Name: MW-22 Sampling Zone No.: 1 Starting Time: 0952 Finishing Time: 1600

Technicians L. DARRAGH, J. BRENNER

Water Level Inside MP Casing (Beginning of Session) 14.28 (FS, A) (End of Session) 14.23 (FS, A)

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	14.28	✓	0953	0958	✓	14.25	1.0	1ST RUN TO SCREEN / INITIAL PARAMETERS; NTUS = 39.6
2	✓	✓	✓	✓	✓	✓	14.30	✓	1015	1021	✓	14.29	1.0	2ND RUN; ATTEMPTING TO REDUCE TURBIDITY; NTUS = 41.7
3	✓	✓	✓	✓	✓	✓	14.25	✓	1036	1043	✓	14.23	1.0	3RD RUN; ATTEMPTING TO REDUCE TURBIDITY; NTUS = 40.1
4														
5	✓	✓	✓	✓	✓	✓	14.26	✓	1116	1121	✓	14.24	1.0	4TH RUN; AFTER PURGING; ATTEMPTING TO REDUCE TURBIDITY; NTUS = 40.0
6														
7	✓	✓	✓	✓	✓	✓	21.28	✓	1329	1334	✓	21.31	1.0	5TH RUN; CONTINUE TO TRY TO REDUCE TURBIDITY; NTUS = 22.4
8														
9	✓	✓	✓	✓	✓	✓	14.27	✓	1542	1545	✓	14.23	1.0	6TH RUN; FOLLOWING PURGING OF APPROX. 6.5 GALS, NTUS = 30.9
10														
11														
12														

Comments:

Total Volume: 6.0 L

F-2

31.14

Continue

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 245 Date: 2-6-95

Well Name: MW-22 Sampling Zone No.: 1 Starting Time: 1117 Finishing Time: 1220

Technicians: C. Dacca Q, J Brenner, D. Dirken

Water Level Inside MP Casing (Beginning of Session) 19.51 (PSIA) (End of Session) 19.52 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	19.51	✓	1120	1125	✓	19.55	1	Set Pump to screen #1 - Initial Parameters, NTU's = 4.50
2	✓	✓	✓	✓	✓	✓	19.50	✓	1141	1147	✓	19.50	1	Collect sample #MW-95I-015 2 VOA's Metals, Anions
3	✓	✓	✓	✓	✓	✓	19.51	✓	1203	1209	✓	19.52	1	3rd Pump, collect MW-95I-015, Hexcr, Cl04, Final Parameters.
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments:

Total Volume: 3.0L

F-2