Jonas & Associates Inc.

GROUNDWATER MONITORING REPORT
Sampling Rounds One Through Four

PACO PUMPS, INC.
9201 San Leandro Street
Oakland, California

April 15, 1994

Report Prepared for:

PACO PUMPS, INC.
9201 San Leandro Street
Oakland, California 94603-1237

GROUNDWATER MONITORING REPORT
Sampling Rounds One Through Four
PACO PUMPS, INC.
9201 San Leandro Street, Oakland, California

Jonas and Associates Inc. Job No. PCO-220

Prepared by:

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GROUNDWATER MONITORING REPORT
Sampling Rounds One Through Four

PACO PUMPS, INC.
9201 San Leandro Street
Oakland, California
April 15, 1994

1.0 INTRODUCTION

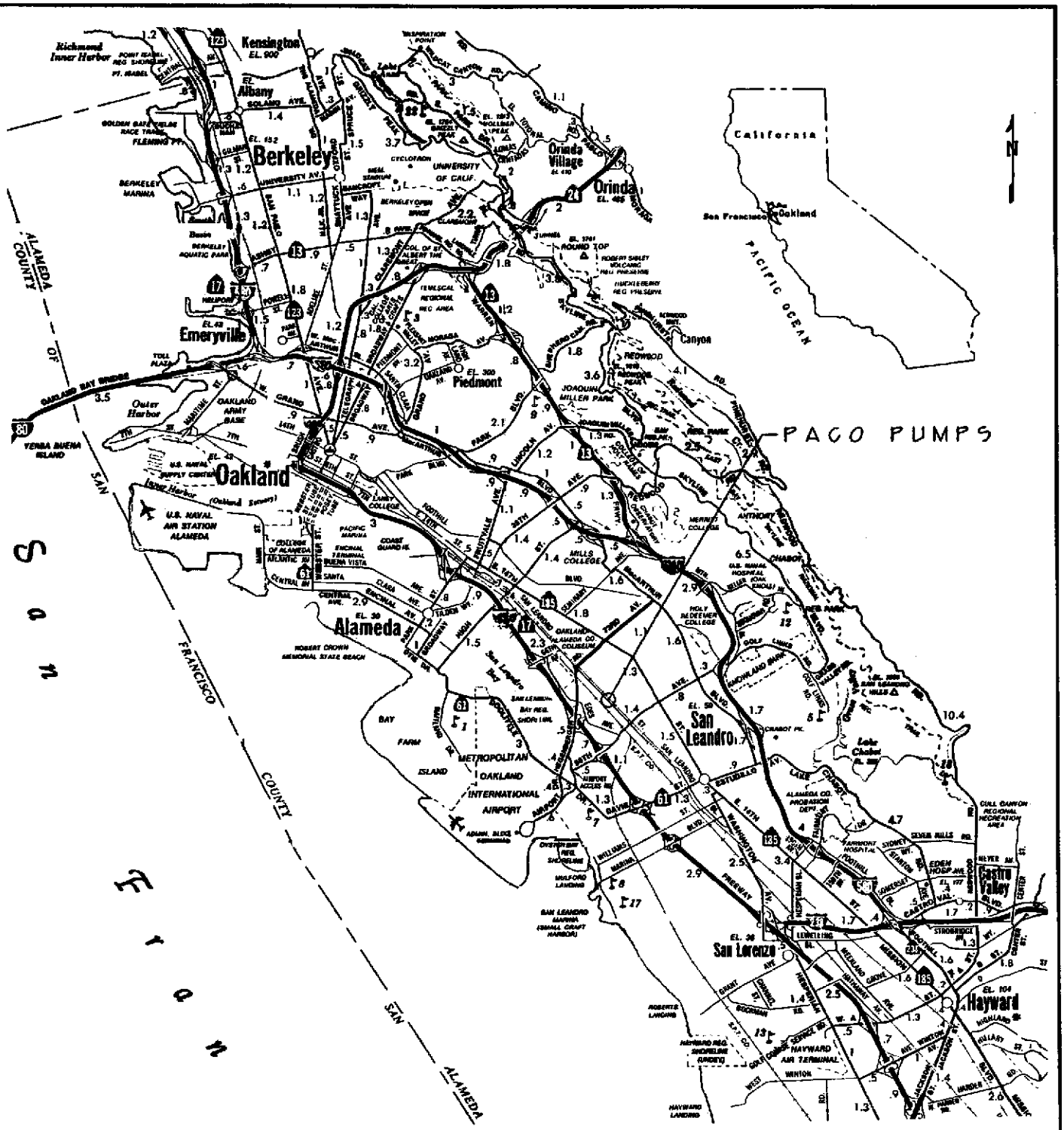
Jonas and Associates Inc. (J&A) has been retained by PACO Pumps Inc. (PACO or PACO Pumps) to perform an environmental site characterization of its property located at 9201 San Leandro Street, in Oakland, California 94603-1237. The results of an initial site characterization study for the facility was presented in the October 16, 1992, "Site Characterization Report and Work Plan - PACO Pumps Inc., 9201 San Leandro Street, Oakland, California". After the installation of four monitoring wells, groundwater samples were collected on November 15 and 16, 1992, and the results were presented in a February 24, 1993 document titled "First Quarterly Status Report". Two additional rounds of groundwater sampling and analyses were performed on March 9, 1993 and July 21, 1993. The results of all three groundwater sampling rounds were presented in the December 10, 1993 "Groundwater Monitoring Report, Sampling Rounds One, Two, and Three". A fourth round of groundwater sampling was performed in January 1994. These four sampling rounds represent fall, spring, summer, and winter conditions. The procedures and results of all four sampling rounds are presented in this "Groundwater Monitoring Report, Sampling Rounds One Through Four". This report also presents recommendations for proposed activities associated with the site.

PACO Pumps' environmental representative for this project is Mr. John Lilla {(415) 925-3100}. The lead agency for this project is the Alameda County Health Care Services Agency, Department of Environmental Health, Hazardous Division (Alameda County Health Services). The address of Alameda County Health Services is 80 Swan Way, Room 200, Oakland, California 94621. The agency representative is Ms. Eva Chu {(510) 271-4530}.

1.1 Site Description

The site is located at 9201 San Leandro Street, in Oakland, California. Prior to May 1992, PACO Pumps had an active facility at this location. The facility contained a manufacturing, engineering, and storage building, a purchasing and data processing building, a warehouse, a welding shop, employee parking, and outside storage. Apparently, the property also had two underground tanks used for the storage of gasoline. The property is isolated from the surrounding areas by a Cyclone fence and gates. PACO Pumps has closed this facility and removed its equipment. Currently, this property is leased to a local company which primarily uses it to warehouse glassware.

The regional location of the property is presented in Figure 1-1. The facility is located in Township 2 South, Range 3 West, Section 22, Mount Diablo Baseline and Meridian.



Regional Location

PACO PUMPS

Oakland, California

Prepared by

JONAS AND ASSOCIATES INC.

Drawn by	M.J.
Date	10-11-1991
Scale	as shown
Figure Number	Figure 1-1
Drawing Number	PC0217-10/91-1-1

Figure 1-1

Drawing Number PC0217-10/91-1-1

The land is essentially flat. Prior to vacating the facility, PACO Pumps' Environmental Protection Agency identification number for the facility was CAD088772629.

Adjacent to the PACO Pumps property is Saint Vincent DePaul Resale, where a previous investigation by Subsurface Consultants Inc. (1992) identified the presence of trichloroethene (TCE) in soil next to a "sump inlet". Other chemicals were also detected in soil on the property of Saint Vincent DePaul. Numerous drums were also previously stored on the Saint Vincent DePaul's property. A recent groundwater sample collected from a monitoring well on the PACO Pumps facility identified the presence of TCE in groundwater beneath the facility. From these results it appears that the contaminants detected on the Saint Vincent DePaul property may have migrated to the groundwater beneath the PACO Pumps' facility. Alameda County Health Care Services Agency is overseeing environmental investigation activities on the Saint Vincent DePaul property.

1.2 Scope of Report

This Groundwater Monitoring Report, Sampling Rounds One Through Four is presented in five sections and four appendices. Section 1, Introduction, provides a brief description of the site and the scope of the report. Section 2, Monitoring Wells and Hydrogeology, presents the well construction details for the four monitoring wells, the results of an elevation and location survey, a conceptual model of regional hydrogeology, and a local hydrogeologic cross-section. Section 3, Groundwater Sampling and Analysis, presents groundwater sampling procedures and results, and water level and free product measurements. Section 4, Recommendations, provides recommendations for future actions and identifies selected issues for discussion between PACO Pumps and the lead regulatory agency. Section 5, References, cites various references relevant to this report.

The appendices of the report include groundwater analysis summary tables, chain-of-custody records, laboratory data sheets, monitoring well lithologic logs, and the results of the Kier & Wright survey of the four monitoring wells.

2.0 MONITORING WELLS AND HYDROGEOLOGY

This section of the report presents a brief history and construction details of the four monitoring wells located at the PACO Pumps' 9201 San Leandro Street facility. In addition, a summary of the location and elevation survey performed by Kier & Wright is provided. Appendix D presents well and lithologic logs associated with the monitoring wells. A conceptual model of regional hydrogeology is presented including a brief discussion of the lithology penetrated by the monitoring wells. A local hydrogeologic cross-section is also provided using lithologic logs from on-site monitoring well boreholes.

2.1 Monitoring Wells

Four monitoring wells are located at the PACO Pumps' facility. These monitoring wells were drilled and installed during a period from November 3 through 9, 1992. The J&A February 1993 "First Quarterly Status Report, PACO Pumps, 9201 San Leandro Street" presents the installation details and the rational for locating and sampling each of the monitoring wells. All of the monitoring wells are screened in an apparently transmissive sandy clay found underneath the facility. Figure 2-1 presents the locations of the four monitoring wells and the analyses performed, the previous excavation site, suspected former underground storage tank locations, Saint Vincent DePaul, and other on-site structures.

2.1.1 Construction Details

All of the four monitoring wells are constructed in boreholes drilled to depths of 21 feet. One pilot borehole next to the borehole for monitoring well 9MW3 was drilled down to a depth of 30 feet to collect lithologic samples. Each of four monitoring wells have a fifteen foot well screen set between 5¼ to 20¼ feet below ground surface (bgs). All of the wells have a casing and screen diameter of four inches, placed in an 8½ inch borehole.

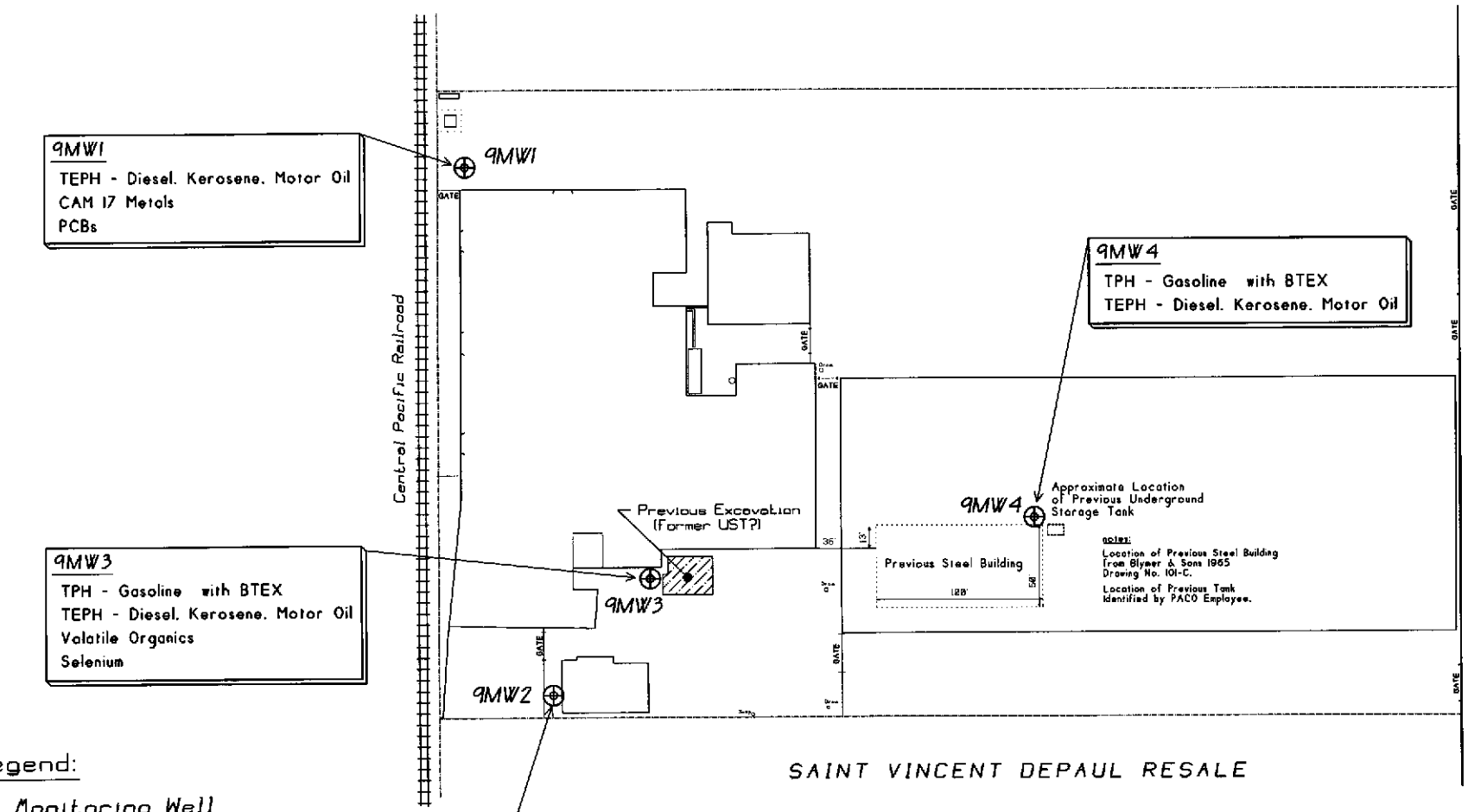
Monitoring well 9MW1 was constructed on November 4, 1992. The well was installed in a western corner of the facility adjacent to the former manufacturing building, and next to a transformer and the Central Pacific Railroad track. The lithology encountered during drilling ranged from an apparent fill, comprised of a silty gravel to a gravelly sand clay, to a sandy clay between 5 and 21 feet bgs. During drilling, first water was encountered at an approximate depth of 16 feet bgs. Measurement of first water is only approximate because of the difficulty in identifying water while drilling with a hollow stem auger. After the screen was installed, the well water level was measured at 9.74 feet bgs on November 15, 1992.

Monitoring well 9MW2 is located adjacent to the former welding shop. The well was installed on November 3, 1992. The lithology encountered during drilling was gravelly silty sand, probably a fill material, and a sandy clay located from 4 feet to the bottom of the borehole at 21 feet bgs. First water was not clearly identified. On November 16, 1992 water level in monitoring well 9MW2 was measured at 10.45 feet bgs.

Drawn by M.J. 2-16-1994

Drawning Number PCO220-2/94:F2-1

Figure 2-1



Legend:

⊕ Monitoring Well
With groundwater analyses performed during Round One, Two, Three, &/or Four.

TPH = Total Petroleum Hydrocarbons
TEPH = Total Extractable Petroleum Hydrocarbons
BTEX = Benzene, Toluene, Ethyl Benzene, Total Xylenes
PCBs = Polychlorinated biphenyls
UST = Underground Storage Tank

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
50 0 50 100 Feet

Monitoring Wells & Groundwater Analyses

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 2-16-1994
Locations Approx.

Figure 2-1

Drawing Number PCO220-2/94:F2-1

Monitoring well 9MW3 is located adjacent to a previous excavation where a former underground storage tank may have been present. No tank was found, but remains of a former tank were identified during the excavation. The tank was reportedly used to store gasoline. Excavation activities and results have been documented in the October 16, 1992 "Site Characterization Report and Work Plan, PACO Pumps, 9201 San Leandro Street, Oakland, California". The well was drilled and constructed on November 4, 1992. During drilling of the borehole for monitoring well 9MW3, the lithology encountered was an apparent fill composed of gravelly silty sand, with a sandy clay between 2 and 21 feet bgs. A pilot boring adjacent to 9MW3 also found sandy clay between 20 and 30 feet bgs. After the construction of monitoring well 9MW3, water level was measured at 10.64 bgs.

Monitoring well 9MW4 was constructed on November 9, 1992. The location of the well is apparently near a former UST, which was said by a PACO Pumps' employee to have been located below the floor of the current warehouse. Prior to drilling the borehole for the monitoring well, 1¼ feet of flooring and sub-base was cored with a diamond-studded core barrel. The flooring and sub-base appears to be 6" of concrete, 3" of rock, and 3" of asphalt. Below the flooring and sub-base was a sandy clay down to a depth of 21 feet. During drilling, first water was encountered at an approximate depth of 13.5 feet bgs. On November 16, 1992 well water was measured at 9.41 feet bgs.

The following Table 2-1 present a summary of construction details for monitoring wells 9MW1, 9MW2, 9MW3, and 9MW4:

Table 2-1
Monitoring Well Construction Details
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Well Number	Date Completed	Casing Diameter	~Depth in feet bgs					Borehole Diameter
			Screen {0.020"}	Sand Pack {#3 Sand}	Bentonite Seal	Portland Cement[1]	Borehole	
9MW1	11/4/1992	4"	5¼ - 20¼	4¼ - 21	3¾ - 4¼	¼ - 3¾	21	8½"
9MW2	11/3/1992	4"	5¼ - 20¼	4¼ - 21	3¾ - 4¼	¼ - 3¾	21	8½"
9MW3	11/4/1992	4"	5¼ - 20¼	4¼ - 21	3¾ - 4¼	¼ - 3¾	21	8½"
9MW4	11/9/1992	4"	5¼ - 20¼	4¼ - 21	3¾ - 4¼	¼ - 3¾	21	8½"

notes: 1) Portland Cement mixed with ~5% bentonite for plasticity.
bgs = below ground surface

2.1.2 Monitoring Well Survey

During August 1993, monitoring wells 9MW1, 9MW2, 9MW3, and 9MW4 were surveyed by Kier & Wright Civil Engineers & Surveyors, Inc. The documentation associated with the results of the survey is presented in Appendix E of the December 10, 1993 "Groundwater Monitoring Report, Sampling Rounds One, Two, and Three". The locations of the wells were surveyed using the California State Coordinate System which identifies the well locations using Eastings and Northings, in feet. The monitoring wells were surveyed at a point representing the north side mark on top of the PVC casing. The survey was based on the City of Oakland Benchmark 721, located at 92nd Avenue and G Street. The following Table 2-2 presents the monitoring well survey results.

Table 2-2
Monitoring Well Survey Data
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Well	Easting	Northing	M.S.L. Elevation
9MW1	1512710.22	456699.01	Top PVC: 15.51'
9MW2	1512968.11	456507.34	Top PVC: 16.83'
9MW3	1512963.22	456602.8	Top PVC: 17.13'
9MW4	1513102.34	456789.38	Top PVC: 17.08'

Legend - M.S.L.: Mean Sea Level
Top PVC: Top north edge of PVC casing.

2.2 Regional Hydrogeology and Local Cross-Section

The following sections present a brief conceptual model of regional hydrogeology and a local hydrogeologic cross-section based on the borehole logs for the four on-site monitoring wells.

2.2.1 Regional Hydrogeology

The regional hydrogeology of the site is conceptually represented as a distal end of a gentle southwestward-sloping alluvial plain bordering estuarine marsh environments. The alluvial plain is probably Quaternary in age, representing relatively recent deposits. Generally, alluvial plains typically are comprised of consolidated to unconsolidated clays, silts, sands, and gravels. Estuarine deposits tend to contain organic-rich clays and silts, but also can contain sands and larger clastics. Bay muds may also be present associated with deposition in the current and pre-historic San Francisco Bay.

PACO Pumps' facility is located in the Alameda Bay Plain Groundwater Basin. Much of the groundwater present in this basin is generally not used due to low permeability, limited thickness of transmissive units, and salt water intrusion along the border of the bay. Within the general region of the site, two potential aquifers are apparently present.

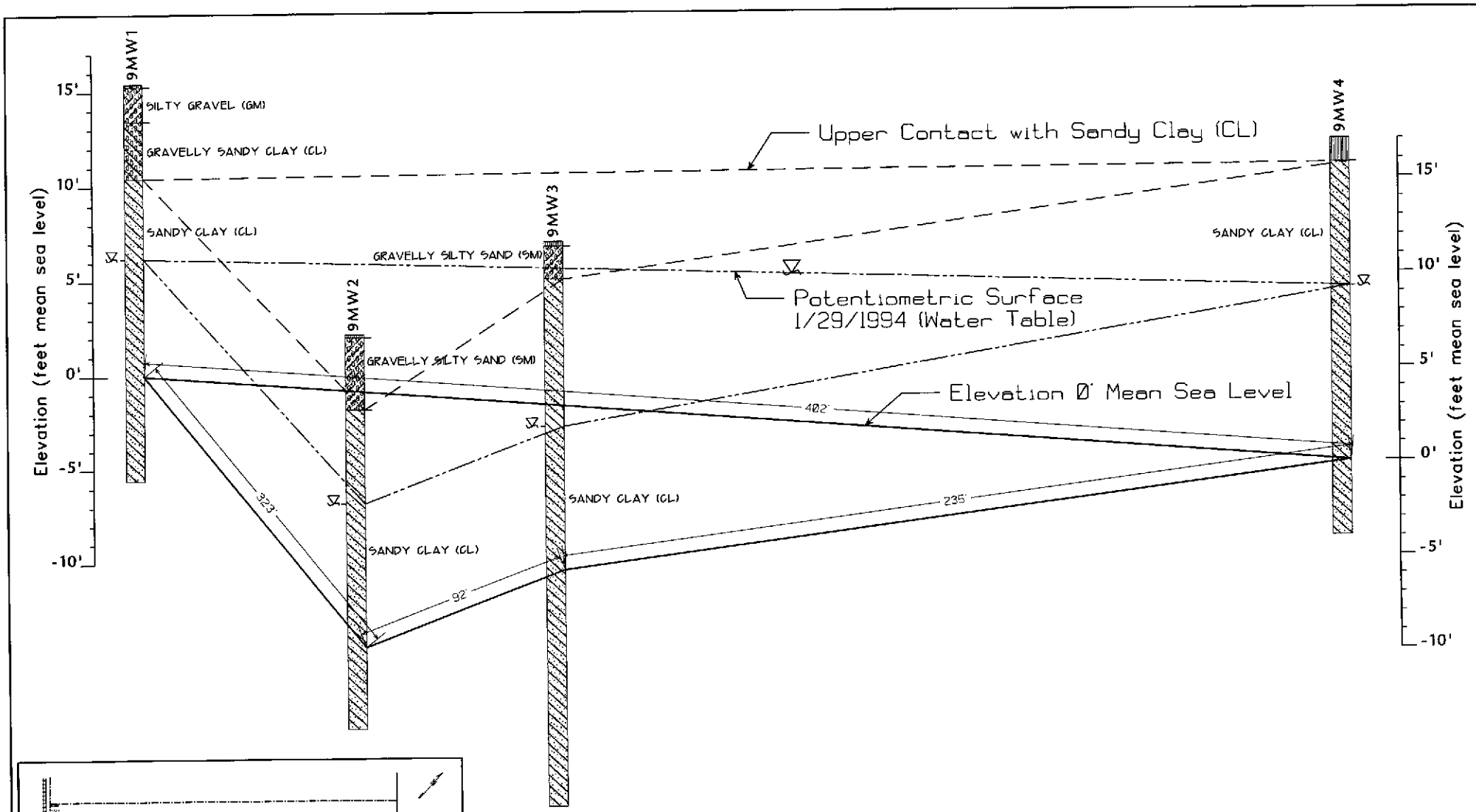
These are identified as the Merritt Sand and the Alameda Formation (California Department of Water Resources 1982). The Merritt Sand is reported to be composed of a fine-grained sand, silt, and clay. The Alameda Formation is said to be a marine deposit that commonly contains alternating layers of sandy clay and sand. Permeability of the Alameda Formation is moderate to low and it is used as a limited source of water within the Oakland area. Currently, it is undefined which unit is screened by the on-site monitoring wells, but because of the prominence of sandy clay in the borehole it is probably Alameda Formation.

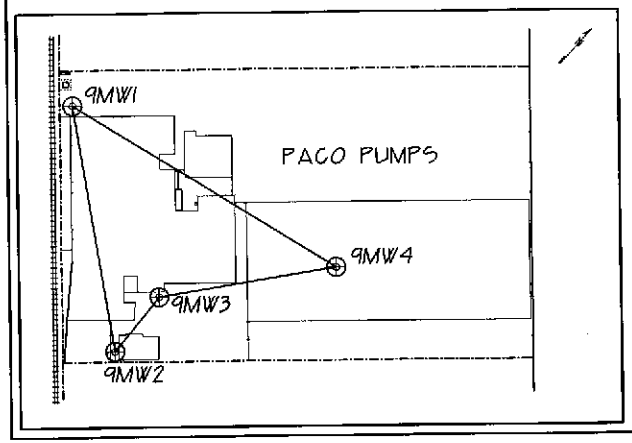
The hydrogeology in the flatlands of Oakland is considered to be influenced by alluvial recharge from upland drainages, infiltration, the San Leandro Creek, the saltwater tidal sloughs, and urbanization. Typically, recharge of alluvium occurs in the area of upland contact with underlying bedrock, which also typically would contain larger alluvial clastics. Infiltration can occur where water percolates through the soil, but aquifer recharge may be limited in the area around the site because of the low permeability of shallow clays and the large amount of paved and covered areas with drainage collection. It is unknown how San Leandro Creek actually influences the regional hydrogeology, but it is probably both influent and effluent in character with respect to groundwater levels and tidal waters.

Regional subsurface hydrology can be locally influenced by the salt-water sloughs. These sloughs, at the border of San Francisco Bay, may result in brackish groundwater and may produce tidal influences resulting in fluctuating groundwater levels. Even though regional hydrogeology may be influenced by the tidal sloughs, their potential tidal impact at the PACO Pumps site is undefined at this time. Groundwater found in the on-site monitoring wells is considered to be brackish and is probably impacted by salt-water.

2.2.2 Local Hydrogeologic Cross-Section

This section of the report presents geologic cross sections describing the hydrogeologic conditions of the site. Lithologic descriptions were previously identified for the boreholes associated with on-site monitoring wells 9MW1, 9MW2, 9MW3, and 9MW4. Figure 2-2 presents the hydrogeologic cross-section for relatively shallow lithology underlying the facility. Detailed lithologic descriptions for each borehole are presented in Appendix D. The monitoring well survey was performed by Kier & Wright to define borehole elevations. Groundwater levels presented on Figure 2-2 represent the initial groundwater sampling event conducted in November 1992.





5'
0'
Vertical Scale

Hydrogeologic Cross Section

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 2-16-1994 Locations Approx.	Figure 2-2	Drawing Number PCO220-2/94:F2-2

3.0 GROUNDWATER SAMPLING AND ANALYSIS

Following is a discussion of the procedures and results associated with sampling of monitoring wells 9MW1, 9MW2, 9MW3, and 9MW4, on November 15 and 16, 1992 (Round One), March 9, 1993 (Round Two), July 21, 1993 (Round Three) and January 28 and 29, 1994 (Round Four). These four rounds represent fall, spring, summer, and winter seasonal conditions, respectively. Also included are the water level and free product measurements for each well since the inception of on-site groundwater sampling activities.

A summary of all laboratory results for samples collected from the on-site monitoring wells is presented in Appendix A. The chain-of-custody records for the sampling events are presented in Appendix B. The laboratory data sheets associated with these sampling events are presented in Appendix C.

3.1 Groundwater Sampling Procedures

The general groundwater sampling procedures presented in the "Site Characterization Report and Work Plan" (J&A 1992) for the facility were followed. After samples were collected and labeled, they were placed into ice chests chilled with blue ice for transport to the Chromalab analytical laboratory. As a California-certified laboratory, Chromalab Inc. performed the analysis for all four sampling rounds. For each sampling round, a chain-of-custody record was completed and signed by a representative of Jonas & Associates Inc. and upon delivery, by a representative of Chromalab Inc. Chain-of-custody records for this sampling event are presented in Appendix B. The results of analysis of the groundwater samples collected during the three sampling rounds are presented in Section 3.2.

3.1.1 Round One Groundwater Sampling Procedures

The first sampling round was performed on November 15 and 16, 1992 and represents fall groundwater conditions.

On November 15, 1992 prior to purging the well, the depth to groundwater in monitoring well 9MW1 was measured at 9.74 feet bgs. The water level was measured with an electronic water level indicator on a stretch resistent measuring tape. After measuring the depth to groundwater, a clear bailer was placed into the well to collect a water sample for visual observations. No petroleum products were identified floating on groundwater in monitoring well 9MW1. After assessing for the presence of floating product, approximately 30 gallons of groundwater was removed from the well. Monitoring well 9MW1 appeared to recover well. A well volume was calculated to be approximately six gallons. Temperature, pH, and electric conductivity were measured after each five gallons of purging. These parameters appeared to stabilize and were recorded in the field log book for the project. Purged water was collected in dated and labeled 55-gallon drums for temporary storage. After purging the well, groundwater samples were collected with a clean bailer. The groundwater samples from monitoring well 9MW1, collected on November 15, 1992, were identified as GW9-MW1-Q1. Three

liters of sample were collected for analysis for Polychlorinated Biphenyls (PCBs) and Total Extractable Petroleum Hydrocarbons (TEPH) as -Diesel, -Kerosene, and -Motor Oil. One 250 ml bottle, with HNO_3 as preservative, was used to collect the sample for the CAM 17 metals. The water collected for metals analyses was filtered using a 0.45 micron filter prior to filling the sample bottles.

On November 16, 1992, prior to purging, the water level in monitoring well 9MW2 was measured at 10.45 feet bgs. A clean, clear bailer was then used to collect a sample from the surface of the groundwater. No floating products were identified. The well was then purged of 35 gallons of well water. During completion of the purging activities the temperature, pH, and electric conductivity appeared to stabilize. The well also appeared to recover well. Six bottles were collected for laboratory analysis: two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; two Volatile Organic Analysis containers (VOAs) with HCl for Method 624 Volatile Organic Compounds (VOCs); and two VOAs with HCl for Total Petroleum Hydrocarbons (TPH) as Gasoline and Benzene, Toluene, Ethyl Benzene, and Total Xylenes (BTEX). The samples collected on November 16, 1992 from monitoring well 9MW2 are identified as GW9-MW2-Q1.

On November 16, 1992, the water level in monitoring well 9MW3 was measured at 10.64 feet bgs. No floating petroleum products were identified. After approximately 30 gallons were purged from the well, four bottles were collected for laboratory analysis: two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; and two VOAs with HCl for the TPH as Gasoline and BTEX. For this event the samples were identified as GW9-MW3-Q1.

Also on November 16, 1992, the groundwater level in monitoring well 9MW4 was measured at 9.41 feet bgs. After not identifying any floating products, the well was purged of approximately 35 gallons. Eight bottles for laboratory analysis were collected: four liters for TEPH as -Diesel, -Kerosene, -Motor Oil; and four VOAs with HCl for TPH as Gasoline and BTEX. Two sets of groundwater samples were collected from this well: one set identified as GW9-MW4-Q1 and a duplicate identified as GW9-MW41-Q1 for quality control.

3.1.2 Round Two Groundwater Sampling Procedures

The second round of groundwater sampling occurred on March 9, 1993 and represents spring groundwater conditions.

Prior to purging monitoring well 9MW1, the depth to groundwater was measured at 8.90 feet bgs. Well water level from the top of the PVC casing was 8.50 feet in depth. The water level was measured with an electronic water level indicator on a stretch resistent measuring tape. After measuring the depth to groundwater, a clear bailer was placed into the well to collect a water sample for visual observations. Floating petroleum products were not observed. After assessing for the presence of floating product, approximately 18 gallons of groundwater was removed from the four-inch well. Temperature, pH, and electric conductivity were measured after each six gallons of purging. These parameters appeared to stabilize and were recorded. Purge water was collected in a 55-gallon drum

for proper disposal. After purging the well, groundwater was collected with a clean bailer and poured into sampling containers. The following sampling containers were used: two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; one liter for PCBs; and one 250 ml poly with HNO_3 preservative for analysis of CAM 17 metals. The groundwater sample collected for the CAM 17 metals used a Posi-Filter with a 0.45 micron filter. Samples from this well for this event were identified as GW9-MW1-Q2.

Monitoring well 9MW2 was sampled using the same procedures as described for 9MW1. Prior to purging, the well water level was measured at a depth of 9.61 bgs and 9.21 from the top of the PVC well casing. A thin "oily sheen" was observed in the first water drawn from the well. After purging approximately 18 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TPH as Gasoline and BTEX; two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; two VOAs with HCl preservative for VOCs; and one 250 ml poly with HNO_3 preservative for soluble selenium. These samples were identified as GW9-MW2-Q2.

Monitoring well 9MW3 was sampled using the same procedures as the other wells. Prior to purging, the well water level was measured at a depth of 9.48 bgs and 9.19 from the top of the PVC well casing. A thin "oily sheen" was observed. After purging approximately 18 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TPH as Gasoline and BTEX; and two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil. These samples were identified as GW9-MW3-Q2.

Monitoring well 9MW4 was sampled using the same procedures as described above. Prior to purging, the well water level was measured at a depth of 8.50 bgs and 7.96 from the top of the PVC well casing. A thin "oily sheen" was observed. After purging approximately 18 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TEPH as Gasoline and BTEX; and two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil. These samples were identified as GW9-MW4-Q2.

3.1.3 Round Three Groundwater Sampling Procedures

The third round of groundwater sampling occurred on July 21, 1993 and represents summer groundwater conditions.

Prior to purging monitoring well 9MW1, the depth to groundwater was measured at 9.40 feet bgs and 9.00 feet from the top of the PVC will casing. The water level was measured with an electronic water level indicator on a stretch resistent measuring tape. After measuring the depth to groundwater, a clear bailer was placed into the well to collect a water sample for visual observations. Floating petroleum products were not observed. After assessing for the presence of floating product, approximately 21 gallons of groundwater was removed from the four-inch well. Temperature, pH, and electric conductivity were measured after each seven gallons of purging. These parameters appeared to stabilize and were recorded. Purge water was collected in a 55-gallon drum for proper disposal. After purging the well, groundwater was collected with a clean bailer and poured into sample containers. The following sampling containers were used: two

liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; and one 250 ml poly with HNO_3 preservative for analysis of CAM 17 metals. The groundwater sample collected for the CAM 17 metals used a Posi-Filter with a 0.45 micron filter. The samples for this event were identified as GW9-MW1-Q3.

Monitoring well 9MW2 was sampled using the same procedures as described for 9MW1. Prior to purging, the well water level was measured at a depth of 10.12 bgs and 9.72 from the top of the PVC well casing. An "oily sheen" was also observed in the first water drawn from the well. After purging approximately 18 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TPH as Gasoline and BTEX; two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; and one 250 ml poly with HNO_3 preservative for soluble selenium. Samples for this event were identified as GW9-MW2-Q3.

Monitoring well 9MW3 was sampled using the same procedures as described above. Prior to purging, the well water level was measured at a depth of 11.36 bgs and 11.07 from the top of the PVC well casing. An "oily sheen" was observed. After purging approximately 15 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TPH as Gasoline and BTEX; two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; two VOAs with HCl preservative for VOCs; and one 250 ml poly with HNO_3 preservative for soluble selenium. These samples were identified as GW9-MW3-Q3.

During a quality control review of the data during August 1993, a sample labeling error was identified. It appears that a J&A engineer apparently labeled samples GW9-MW2-Q3 as GW9-MW3-Q3 and vise versa. This error appears also to exist in the field log book. The evidence for this apparent mislabeling was the laboratory reporting of BTEX for the GW9-MW2-Q3 sample. BTEX was not detected in the first two rounds of samples from this well. In addition, the sample erroneously labeled as GW9-MW3-Q3 did not contain any BTEX, contradicting the results of the two previous sampling rounds that showed significant concentrations of BTEX in 9MW3. The tables and figures presenting Round Three groundwater results for monitoring wells 9MW2 and 9MW3 are modified to reflect this error and are noted as "probably corrected". The legitimacy of this modification appears to be confirmed by the results of Round Four groundwater sampling.

Monitoring well 9MW4 was sampled using the same general procedures as described above. Prior to purging, the well water level was measured at a depth of 8.60 bgs and 8.06 from the top of the PVC well casing. No "oily sheen" was observed. After purging approximately 21 gallons of well water, the following water quality samples were collected: two VOAs with HCl for TPH as Gasoline and BTEX; and two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil. These samples were identified as GW9-MW4-Q3.

3.1.4 Round Four Groundwater Sampling Procedures

Sampling Round Four was performed on January 28 and 29, 1994, representing winter groundwater conditions.

During this sampling round, water level measurements were collected within a one hour and fifteen minute time period on January 28, 1994, while all water quality samples were collected on January 29, 1994. Prior to the collection of the water level measurements, each well was uncapped and allowed to equilibrate for approximately fifteen to twenty minutes. Water level was measured with an electronic water level indicator on a stretch resistent measuring tape. Each measurement was made from a northern mark on the PVC well casing. After measuring the depth to groundwater, a clear bailer was placed into the well to collect a water sample for visual observations of any sheen or floating product. Using this approach, the water level in monitoring well 9MW1 was measured at 8.41 feet below the top of the PVC casing. No sheen or floating product was observed. Monitoring well 9MW2 had water at 8.96 feet below the PVC casing. A slight "oily" sheen was observed in water from this well. The well water level in 9MW3 was measured at a depth of 9.40. A slight "oily" sheen was also observed in water from this well. Well water in 9MW4 was measured at a depth of 7.88 and no floating product or sheen was observed. The bailer used to collect free product observations was decontaminated after each measurement.

On January 29, 1994, water quality samples were collected from all of the four monitoring wells located at the facility. Prior to the collection of water quality samples, each monitoring well was purged of over three well volumes. Each well was purged of approximately 27 gallons. During purging, temperature, pH, electric conductivity, and total dissolved solids were measured after five gallons of purge volume. Prior to the collecting of water quality samples, these parameters appeared to stabilize. All purged water was collected in dated and labeled 55-gallon drums for temporary storage. After purging the well, groundwater samples were collected with a clean bailer. All equipment was decontaminated between the collection of samples at each well. After the samples were collected and labeled, they were placed into ice chests chilled with blue ice for transport to the Chromalab analytical laboratory.

The groundwater samples from monitoring well 9MW1 were identified as GW9-MW1-Q4. After purging groundwater from the monitoring well, two liter samples were collected for TEPH as -Diesel, -Kerosene, and -Motor oil. One 250 ml bottle with HNO_3 as preservative was used to collect the sample for the CAM 17 metals. The water collected for CAM 17 metals was filtered using a 0.45 micron Posi-Filter.

After decontamination of sampling equipment and purging of groundwater from monitoring well 9MW2, the following samples were collected: two liters for TEPH as -Diesel, -Kerosene, and -Motor Oil; two VOA containers with HCl for Method 624 Volatile Organic Compounds (VOCs); and two VOAs with HCl for Total Petroleum Hydrocarbons (TPH) as Gasoline and BTEX. In addition, a soluble selenium sample was collected in a 250 ml bottle with HNO_3, after using a 0.45 micron filter. This fourth round

groundwater samples collected from monitoring well 9MW2 were identified as GW9-MW2-Q4. The same suite of bottles used to collect samples at monitoring well 9MW2 were used for sampling groundwater from monitoring well 9MW3. In the chain-of-custody record, these were identified as GW9-MW3-Q4. Using the same sampling and decontamination procedures, groundwater from monitoring well 9MW4 was collected in two liter bottles for analysis of TEPH as -Diesel, -Kerosene, -Motor Oil and two VOAs with HCl for TPH as Gasoline and BTEX. These samples are identified as GW9-MW4-Q4 in the chain-of-custody record for the sampling event.

3.2 Groundwater Sampling Results

This section of the report presents the analytical results for Round One, Round Two, Round Three, and Round Four groundwater sampling events. Water level measurements and free product measurements for all sampling events are also presented.

3.2.1 Analytical Results

As stated previously, summary tables, chain-of-custody records, and laboratory data sheets for groundwater samples collected for all groundwater sampling rounds are presented in Appendix A, B, and C, respectively. The following Tables 3-1, 3-2, 3-3 and 3-4 present a summary of the analysis performed and the analytes detected during Round One, Two, Three, and Four sampling events, respectively. Figures 3-1, 3-2, 3-3, and 3-4 provide a graphical display of the analytical results from these sampling events.

Table 3-1
Round One Groundwater Sampling Results - November 1992
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Sample I.D.	Analysis	Detected
GW9-MW1-Q1	TEPH as Diesel, Kerosene, Motor Oil (3510/8015) PCBs (608 modified) CAM 17 Metals (3010/6010/7470)	Barium: 0.18 mg/L Beryllium: 0.002 mg/L Copper: 0.007 mg/L Selenium: 0.021 mg/L
GW9-MW2-Q1	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Volatile Organics (624)	TEPH as Kerosene: 0.590 mg/L TEPH as Motor Oil: 9.5 mg/L 1,1-Dichloroethane: 0.0026 mg/L
GW9-MW3-Q1	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 40.000 mg/L Benzene: 2.900 mg/L Toluene: 6.700 mg/L Ethyl Benzene: 0.550 mg/L Total Xylenes: 1.700 mg/L
GW9-MW4-Q1	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 0.560 mg/L Benzene: 0.066 mg/L Toluene: 0.073 mg/L Ethyl Benzene: 0.016 mg/L Total Xylenes: 0.140 mg/L
GW9-MW41-Q1 (duplicate)	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 0.520 mg/L Benzene: 0.063 mg/L Toluene: 0.067 mg/L Ethyl Benzene: 0.015 mg/L Total Xylenes: 0.130 mg/L

Legend - TPH: Total Petroleum Hydrocarbons; TEPH: Total Extractable Petroleum Hydrocarbons; BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes

Table 3-2
Round Two Groundwater Sampling Results - March 1993
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Sample I.D.	Analysis	Detected
GW9-MW1-Q2	TEPH as Diesel, Kerosene, Motor Oil (3510/8015) PCBs (608) CAM 17 Metals (3010/6010/7470)	TEPH as Diesel: 0.140 mg/L Antimony: 0.03 mg/L Barium: 0.19 mg/L Mercury: 0.003 mg/L Selenium: 0.04 mg/L Zinc: 0.03 mg/L
GW9-MW2-Q2	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Volatile Organics (624) Selenium (3010/6010)	TEPH as Kerosene: 0.210 mg/L TEPH as Diesel: 0.430 mg/L TEPH as Motor Oil: 4.3 mg/L Selenium: 0.08 mg/L
GW9-MW3-Q2	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 12.000 mg/L Benzene: 1.000 mg/L Toluene: 0.300 mg/L Ethyl Benzene: 0.110 mg/L Total Xylenes: 0.170 mg/L TEPH as Diesel: 0.290 mg/L
GW9-MW4-Q2	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 0.750 mg/L Benzene: 0.067 mg/L Toluene: 0.012 mg/L Ethyl Benzene: 0.029 mg/L Total Xylenes: 0.062 mg/L

Legend - TPH: Total Petroleum Hydrocarbons
TEPH: Total Extractable Petroleum Hydrocarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes

Table 3-3
Round Three Groundwater Sampling Results - July 1993
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Sample I.D.	Analysis	Detected
GW9-MW1-Q3	TEPH as Diesel, Kerosene, Motor Oil (3510/8015) CAM 17 Metals (3010/6010/7470)	Barium: 0.27 mg/L Copper: 0.007 mg/L Molybdenum: 0.010 mg/L Silver: 0.011 mg/L Zinc: 0.015 mg/L
GW9-MW2-Q3[1]	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Selenium (3010/6010)	TEPH as Motor Oil: 0.52 mg/L
GW9-MW3-Q3[1]	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Volatile Organics[1] (624) Selenium (3010/6010)	TPH as Gasoline: 3.400 mg/L Benzene: 0.420 mg/L (602 & 624) 0.450 mg/L Toluene: 0.063 mg/L (602 & 624) 0.050 mg/L Ethyl Benzene: 0.036 mg/L (602 & 624) 0.049 mg/L Total Xylenes: 0.037 mg/L (602 & 624) 0.047 mg/L 1,2-Dichloroethane: 0.330 mg/L Trichloroethene: 0.0024 mg/L
GW9-MW4-Q3	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 0.250 mg/L Benzene: 0.021 mg/L Toluene: 0.0042 mg/L Ethyl Benzene: 0.0084 mg/L Total Xylenes: 0.011 mg/L

Legend - [1] = probably corrected, apparently switched.

Table 3-4
Round Four Groundwater Sampling Results - January 1994
PACO PUMPS - 9201 San Leandro Street
Oakland, California

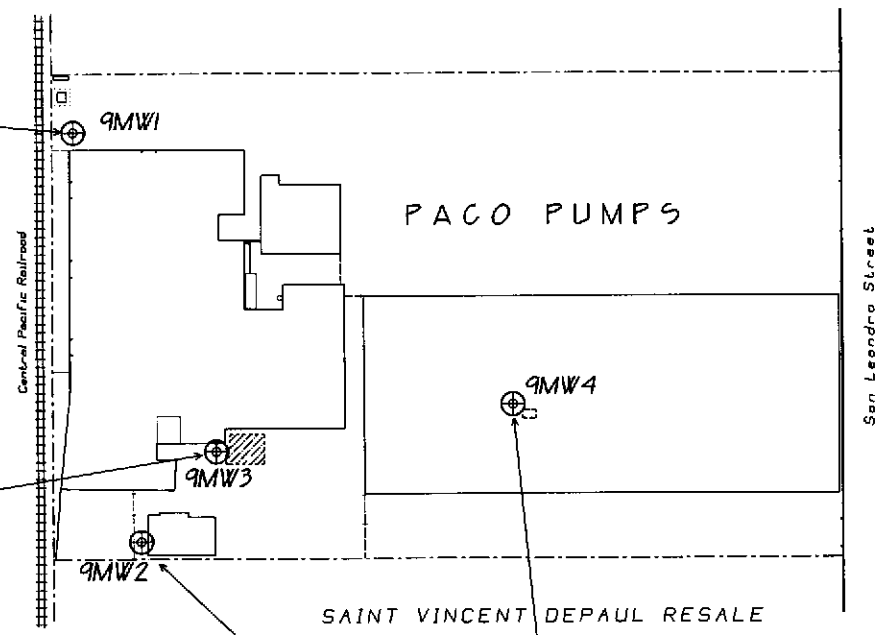
Sample I.D.	Analysis	Detected
GW9-MW1-Q4	TEPH as Diesel, Kerosene, Motor Oil (3510/8015) CAM 17 Metals (3010/6010/7470)	Barium: 0.12 mg/L Selenium: 0.018 mg/L Thallium: 0.12 mg/L Vanadium: 0.010 mg/L
GW9-MW2-Q4	TPH as Gasoline (5030/8015) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Volatile Organics (624) Selenium (3010/6010)	TEPH as Motor Oil: 0.68 mg/L Selenium: 0.026 mg/L
GW9-MW3-Q4	TPH as Gasoline (5030/8015) TEPH as Diesel, Kerosene, Motor Oil (3510/8015) Volatile Organics (624) Selenium (3010/6010)	TPH as Gasoline: 5,600 mg/L Benzene: 0.910 mg/L Toluene: 0.220 mg/L Ethyl Benzene: 0.047 mg/L Total Xylenes: 0.036 mg/L 1,2-Dichloroethane: 0.180 mg/L Selenium: 0.025 mg/L
GW9-MW4-Q4	TPH as Gasoline (5030/8015) BTEX (602) TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	TPH as Gasoline: 0.160 mg/L Benzene: 0.025 mg/L Toluene: 0.0022 mg/L Ethyl Benzene: 0.0062 mg/L Total Xylenes: 0.010 mg/L

Legend - TPH: Total Petroleum Hydrocarbons
TEPH: Total Extractable Petroleum Hydrocarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes

Drawn by M.J. 10-29-1993

Drawning Number PCO220-10/93:F3-1

Figure 3-1



9MW1 (Water Elev.: 6.17')

November 15, 1992 sampling results:

	(mg/L)		(mg/L)
TEPH-Diesel	ND(0.05)	Detected CAM 17 Metals:	
-Kerosene	ND(0.05)	Barium	0.18
-Motor Oil	ND(0.5)	Beryllium	0.002
PCBs	ND(0.05)	Copper	0.007
		Selenium	0.021

9MW3 (Water Elev.: 6.78')

November 16, 1992 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	40.000	Benzene	2.900
TEPH-Diesel	ND(0.05)	Toluene	6.700
-Kerosene	ND(0.05)	Ethyl Benzene	0.550
-Motor Oil	ND(0.5)	Total Xylenes	1.700

9MW2 (Water Elev.: 6.78')

November 16, 1992 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	ND(0.05)	Benzene	ND(0.0005)
TEPH-Diesel	ND(0.05)	Toluene	ND(0.0005)
-Kerosene	0.590	Ethyl Benzene	ND(0.0005)
-Motor Oil	9.5	Total Xylenes	ND(0.0015)

Detected Method 624 Volatile Organics: (mg/L)

1,1-Dichloroethane	0.0026

9MW4 (Water Elev.: 8.21')

November 16, 1992 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	0.560	Benzene	0.066
TEPH-Diesel	ND(0.05)	Toluene	0.073
-Kerosene	ND(0.05)	Ethyl Benzene	0.016
-Motor Oil	ND(0.5)	Total Xylenes	0.130

Legend:

⊕ Monitoring Well

TPH = Total Petroleum Hydrocarbons

TEPH = Total Extractable Petroleum Hydrocarbons

PCBs = Polychlorinated biphenyls

ND(0.05) = Not Detected above laboratory detection limit in parentheses.

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale

75 0 75 150 Feet

Round One Groundwater Sampling Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

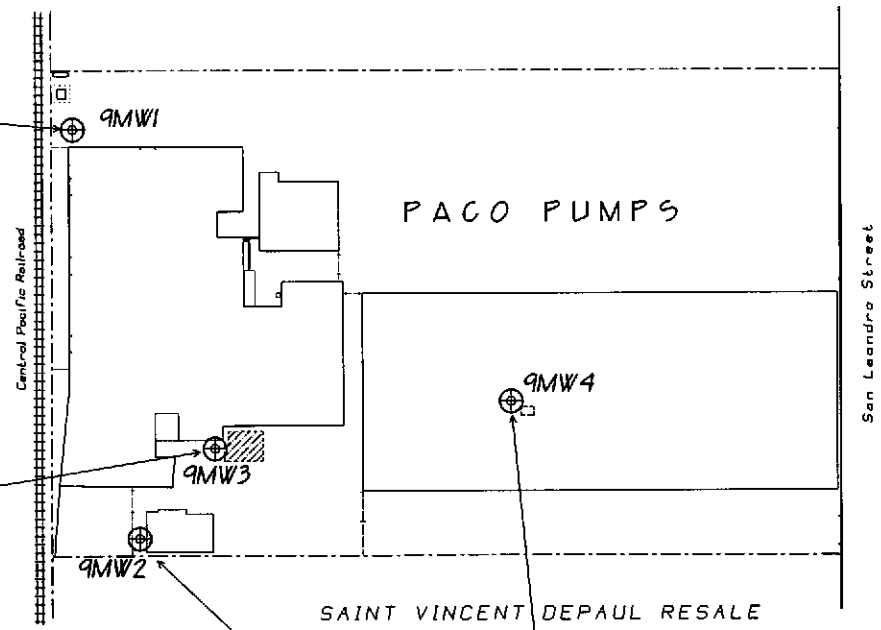
Figure 3-1

Drawing Number PCO220-10/93:F3-1

Drawn by M.J. 10-29-1993

Drawing Number PCO220-10/93:F3-2

Figure 3-2



9MW1 (Water Elev.: 7.01')

March 9, 1993 sampling results:

(mg/L)		(mg/L)	
TEPH-Diesel	0.140	Detected CAM 17 Metals:	
-Kerosene	ND(0.05)	Antimony	0.03
-Motor Oil	ND(0.5)	Barium	0.19
PCBs	ND(0.0005)	Mercury	0.003
		Selenium	0.04
		Zinc	0.03

9MW3 (Water Elev.: 7.94')

March 9, 1993 sampling results:

(mg/L)		(mg/L)	
TPH-Gasoline	12.000	Benzene	1.000
TEPH-Diesel	0.290	Toluene	0.300
-Kerosene	ND(0.05)	Ethyl Benzene	0.110
-Motor Oil	ND(0.5)	Total Xylenes	0.170

9MW2 (Water Elev.: 7.62')

March 9, 1993 sampling results:

(mg/L)		(mg/L)	
TPH-Gasoline	ND(0.05)	Benzene	ND(0.0005)
TEPH-Diesel	0.430	Toluene	ND(0.0005)
-Kerosene	0.210	Ethyl Benzene	ND(0.0005)
-Motor Oil	4.3	Total Xylenes	ND(0.0015)
Selenium	0.08		

Method 624 Volatile Organics:
none detected

9MW4 (Water Elev.: 9.12')

March 9, 1993 sampling results:

(mg/L)		(mg/L)	
TPH-Gasoline	0.750	Benzene	0.067
TEPH-Diesel	ND(0.05)	Toluene	0.012
-Kerosene	ND(0.05)	Ethyl Benzene	0.029
-Motor Oil	ND(0.5)	Total Xylenes	0.062

Legend:

⊕ Monitoring Well

TPH = Total Petroleum Hydrocarbons

TEPH = Total Extractable Petroleum Hydrocarbons

PCBs = Polychlorinated biphenyls

ND(0.05) = Not Detected above laboratory detection limit in parentheses.

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale

75 0 75 150 Feet

Round Two Groundwater Sampling Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

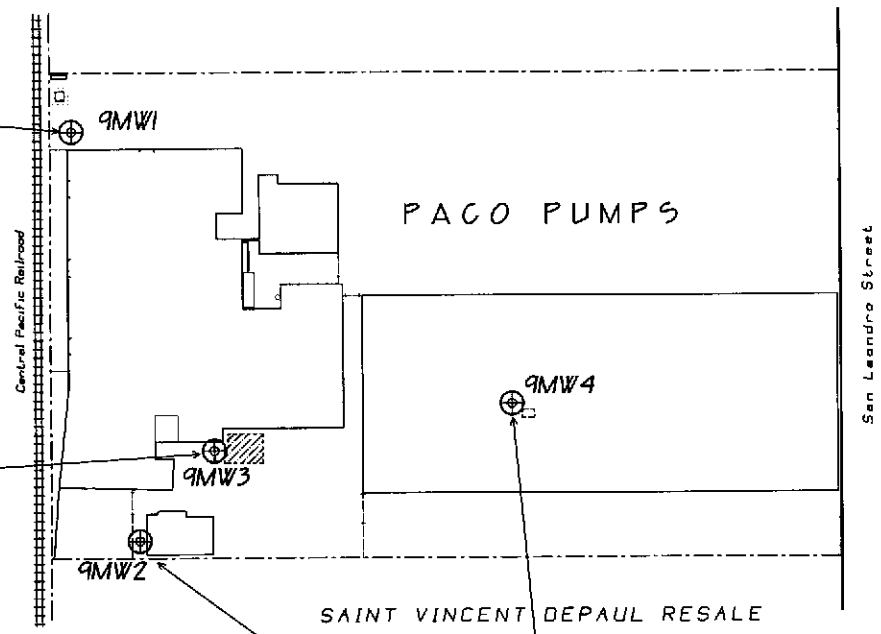
Figure 3-2

Drawing Number PCO220-10/93:F3-2

Drawn by M.J. 10-29-1993

Drawing Number PCO220-10/93:F3-3

Figure 3-3



9MW1 (Water Elev.: 6.51')

July 21, 1993 sampling results:

	(mg/L)		(mg/L)
TEPH-Diesel	ND(0.05)	Detected CAM 17 Metals:	
-Kerosene	ND(0.05)	Barium	0.27
-Motor Oil	ND(0.5)	Copper	0.007
		Molybdenum	0.010
		Silver	0.011
		Zinc	0.015

9MW3 [1] (Water Elev.: 6.06')

July 21, 1993 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	3.400	Benzene	0.420
TEPH-Diesel	ND(0.050)	Toluene	0.063
-Kerosene	ND(0.050)	Ethyl Benzene	0.036
-Motor Oil	ND(0.5)	Total Xylenes	0.037
Selenium	ND(0.01)		

Detected Method 624 Volatile Organics:

	(mg/L)		(mg/L)
1,2-Dichloroethane	0.330	Trichloroethene	0.0024

9MW2 [1] (Water Elev.: 7.11')

July 21, 1993 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	ND(0.05)	Benzene	ND(0.0005)
TEPH-Diesel	ND(0.05)	Toluene	ND(0.0005)
-Kerosene	ND(0.05)	Ethyl Benzene	ND(0.0005)
-Motor Oil	0.52	Total Xylenes	ND(0.0005)
Selenium	ND(0.01)		

9MW4 (Water Elev.: 9.02')

July 21, 1993 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	0.250	Benzene	0.021
TEPH-Diesel	ND(0.05)	Toluene	0.0042
-Kerosene	ND(0.05)	Ethyl Benzene	0.0084
-Motor Oil	ND(0.5)	Total Xylenes	0.011

Legend:

⊕ *Monitoring Well*

TPH = Total Petroleum Hydrocarbons

TEPH = Total Extractable Petroleum Hydrocarbons

PCBs = Polychlorinated biphenyls

ND(0.05) = Not Detected above laboratory detection limit in parentheses.

1 = Probably corrected. Apparently 9MW2 samples were labeled as 9MW3 and vise versa.

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale

75 0 75 150 Feet

Round Three Groundwater Sampling Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by

JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

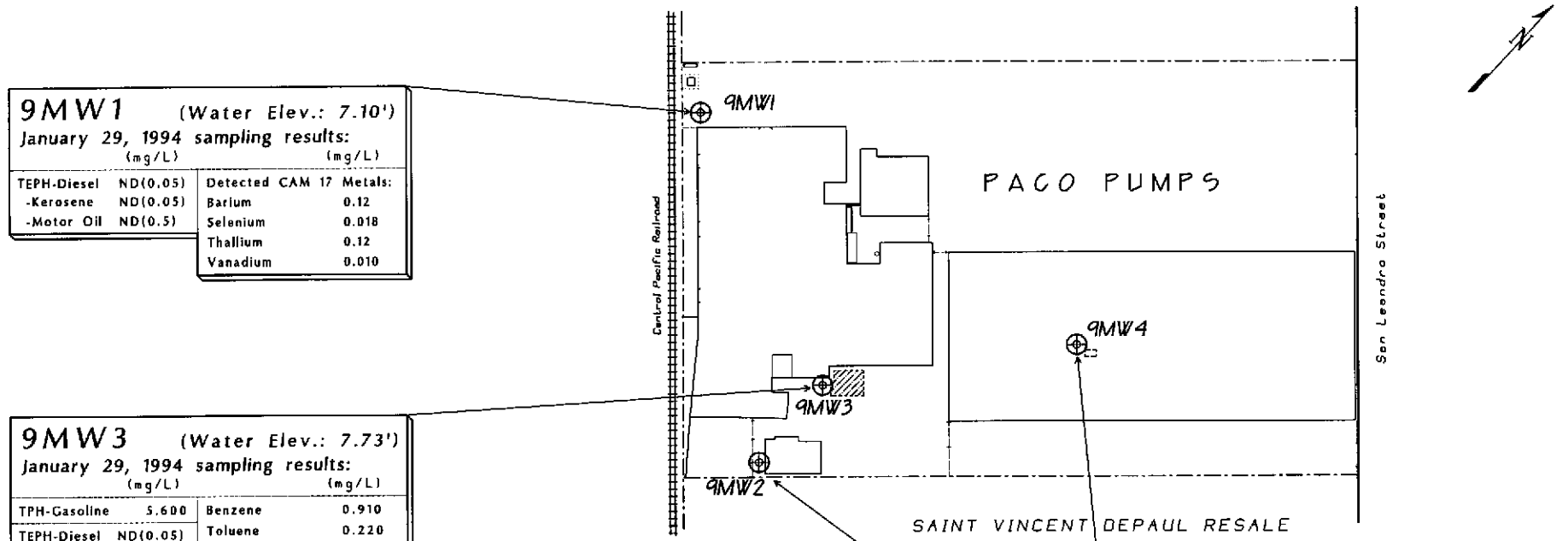
Figure 3-3

Drawing Number PCO220-10/93:F3-3

Drawn by M.J. 2-16-1994

Drawning Number PCO220-2/94:F3-4

Figure 3-4



9MW1 (Water Elev.: 7.10')
January 29, 1994 sampling results:

	(mg/L)		(mg/L)
TEPH-Diesel	ND(0.05)	Detected CAM 17 Metals:	
-Kerosene	ND(0.05)	Barium	0.12
-Motor Oil	ND(0.5)	Selenium	0.018
		Thallium	0.12
		Vanadium	0.010

9MW3 (Water Elev.: 7.73')
January 29, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	5.600	Benzene	0.910
TEPH-Diesel	ND(0.05)	Toluene	0.220
-Kerosene	ND(0.05)	Ethyl Benzene	0.047
-Motor Oil	ND(0.5)	Total Xylenes	0.036
Selenium	0.025		

Detected Method 624 Volatile Organics: (mg/L)
1,2-Dichloroethane 0.180

9MW2 (Water Elev.: 7.87')
January 29, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	ND(0.05)	Benzene	ND(0.002)
TEPH-Diesel	ND(0.05)	Toluene	ND(0.002)
-Kerosene	ND(0.05)	Ethyl Benzene	ND(0.002)
-Motor Oil	0.68	Total Xylenes	ND(0.002)
Selenium	0.026		

9MW4 (Water Elev.: 9.20')
January 29, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	0.180	Benzene	0.028
TEPH-Diesel	ND(0.05)	Toluene	0.0022
-Kerosene	ND(0.05)	Ethyl Benzene	0.0062
-Motor Oil	ND(0.5)	Total Xylenes	0.010

Legend:

⊕ Monitoring Well

TPH = Total Petroleum Hydrocarbons
TEPH = Total Extractable Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
ND(0.05) = Not Detected above laboratory detection limit in parentheses.

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
75 0 75 150 Feet

Round Four Groundwater Sampling Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 2-16-1994
Locations Approx.

Figure 3-4

Drawing Number PCO220-2/94:F3-4

3.2.2 Results of Water Level and Free Product Measurements

As previously stated, water levels were recorded each time water quality samples were collected. In addition, a determination was made with respect to the presence or absence of floating product.

The following Table 3-5 provides a summary of groundwater levels and free product measurements. Water level elevations were calculated using the results of the Kier & Wright survey.

Table 3-5
Groundwater Levels and Free Product Measurements
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Date	Well ID	Water Level from Lid/Pavement:		Pavement vs. Casing Top	Water Level from Top of Casing:		Free Product
		Depth	Elevation	Δ	Depth	Elevation	
11/15/1992	9MW1	9.74'	+6.17'	0.40'	9.34'	+6.17'	no free product
11/16/1992	9MW2	10.45'	+6.78'	0.40'	10.05'	+6.78'	"oily" sheen
"	9MW3	10.64'	+6.78'	0.29'	10.35'	+6.78'	no free product
"	9MW4	9.41'	+8.21'	0.54'	8.87'	+8.21'	no free product
3/9/1993	9MW1	8.90'	+7.01'	0.40'	8.50'	+7.01'	no free product
"	9MW2	9.61'	+7.62'	0.40'	9.21'	+7.62'	"oily" sheen
"	9MW3	9.48'	+7.94'	0.29'	9.19'	+7.94'	slight "oily" sheen
"	9MW4	8.50'	+9.12'	0.54'	7.96'	+9.12'	slight "oily" sheen
7/21/1993	9MW1	9.40'	+6.51'	0.40'	9.00'	+6.51'	no free product
"	9MW2[1]	10.12'	+7.11'	0.40'	9.72'	+7.11'	"oily" sheen
"	9MW3[1]	11.36'	+6.06'	0.29'	11.07'	+6.06'	"oily" sheen
"	9MW4	8.60'	+9.02'	0.54'	8.06'	+9.02'	no free product
1/29/1994	9MW1	8.81'	+7.10'	0.40'	8.41'	+7.10'	no floating product
"	9MW2	9.36'	+7.87'	0.40'	8.96'	+7.87'	slight "oily" sheen
"	9MW3	9.69'	+7.73'	0.29'	9.40'	+7.73'	slight "oily" sheen
"	9MW4	8.42'	+9.20'	0.54'	7.88'	+9.20'	no floating product

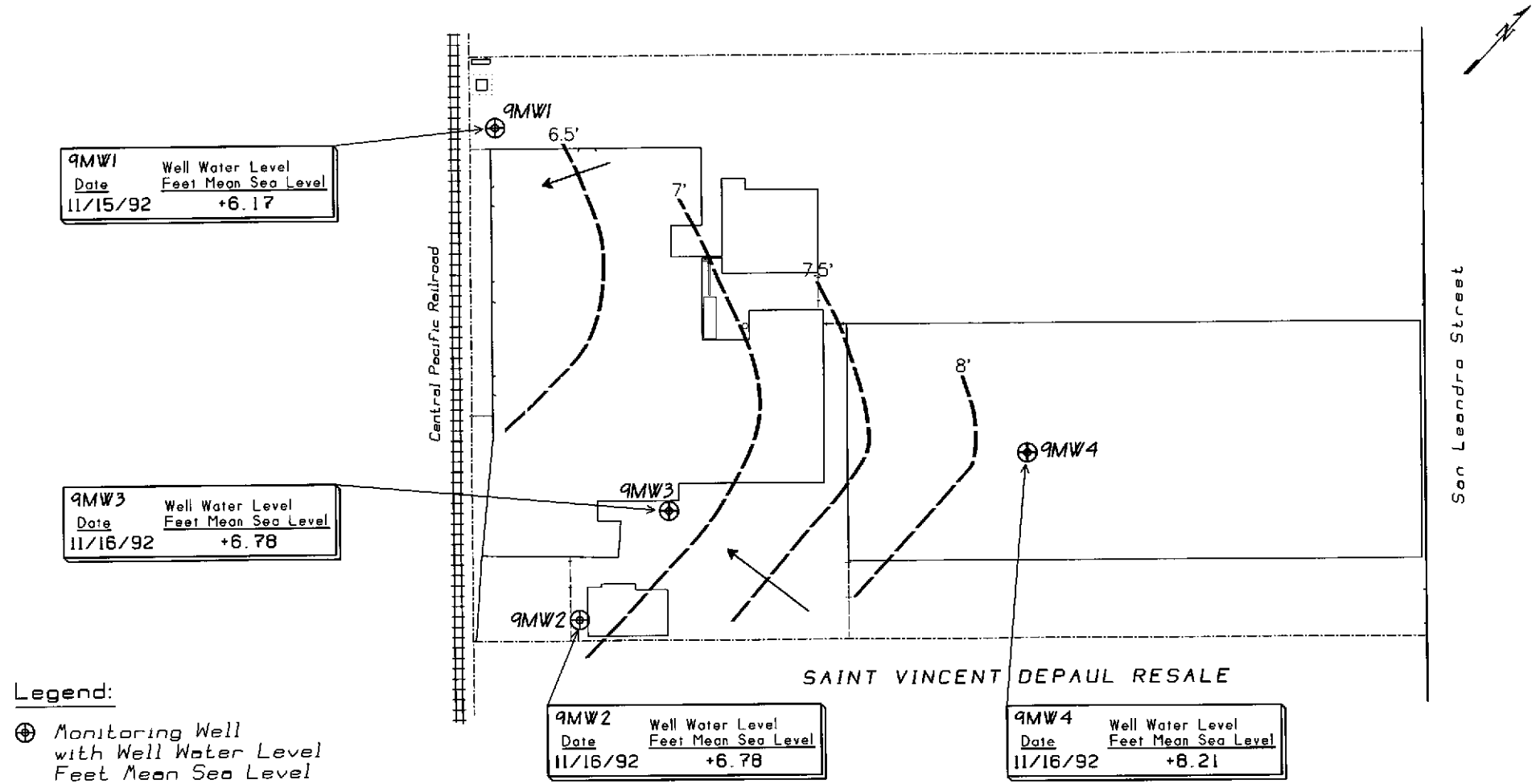
Notes - » [1] = probably corrected, apparently switched.
» Elevation with respect to Mean Sea Level (MSL) and Kier & Wright survey.

Figures 3-5, 3-6, 3-7, and 3-8 graphically present the results of the well water level collected during Round One, Two, Three, and Four sampling events, respectively. As identified in Figures 3-5, 3-7, and 3-8, based upon groundwater elevation data from monitoring wells 9MW2, 9MW3, and 9MW4, the direction of groundwater flow in November (Fall), July (Summer), and January (Winter) is in a westerly direction from the Saint Vincent DePaul facility to PACO Pumps' property.

Drawn by M.J. 10-29-1993

Drawing Number PCO220-10/93:F3-5

Figure 3-5



9MW1	Well Water Level
Date	Feet Mean Sea Level
11/15/92	+6.17

9MW3	Well Water Level
Date	Feet Mean Sea Level
11/16/92	+6.78

9MW2	Well Water Level
Date	Feet Mean Sea Level
11/16/92	+6.78

9MW4	Well Water Level
Date	Feet Mean Sea Level
11/16/92	+8.21

Legend:

⊕ Monitoring Well with Well Water Level Feet Mean Sea Level

11/15-16/92 Equipotential Line

Assumed Groundwater Flow Direction

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale

50 0 50 100 Feet

November 1992 - Fall Season Potentiometric/Water Table Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

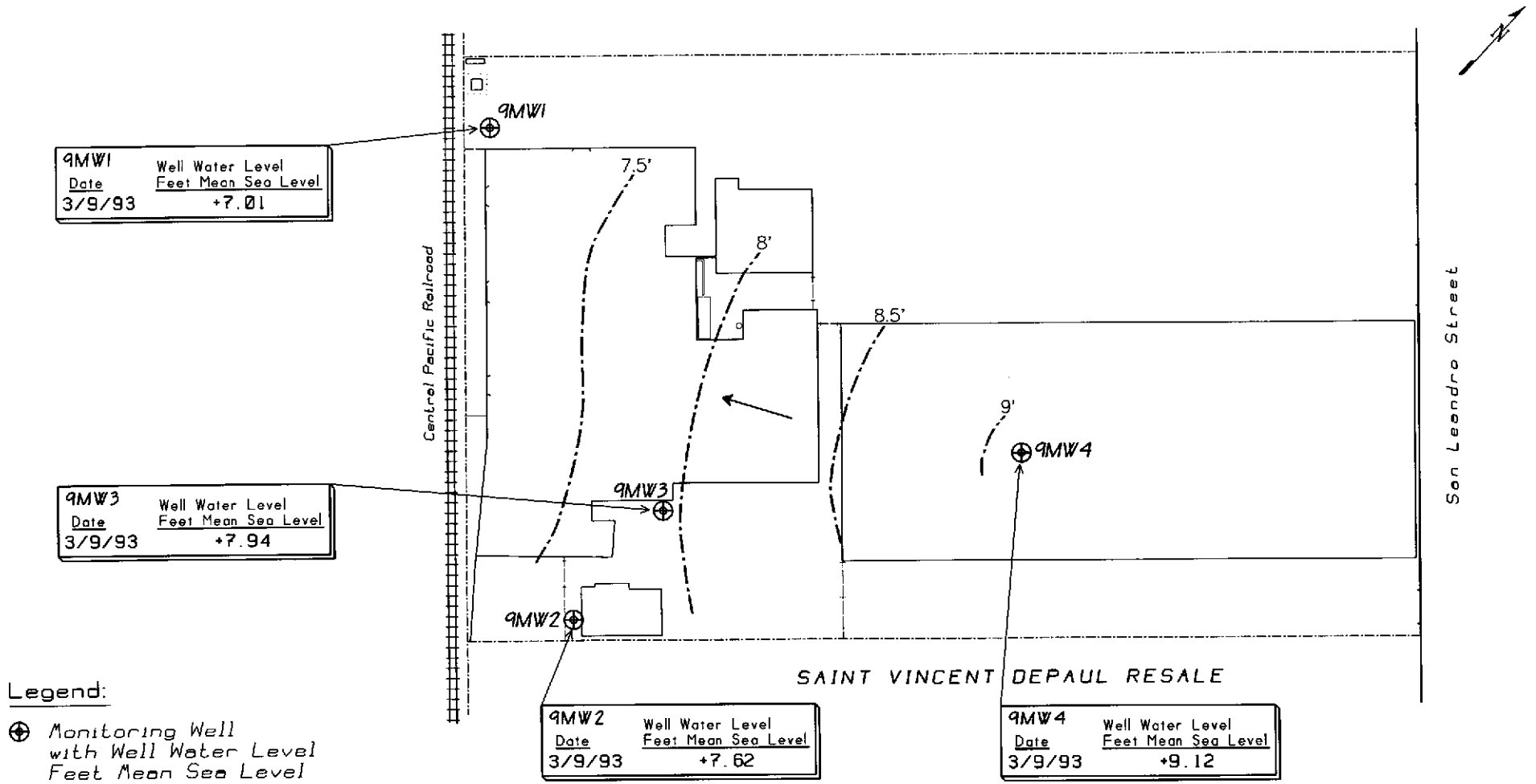
Figure 3-5

Drawing Number PCO220-10/93:F3-5

Drawn by M.J. 10-29-1993

Drawing Number PCO220-10/93:F3-6

Figure 3-6



Legend:

⊕ Monitoring Well with Well Water Level Feet Mean Sea Level

3/9/93 Equipotential Line

Assumed Groundwater Flow Direction

Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale

50 0 50 100 Feet

March 1993 - Spring Season Potentiometric/Water Table Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

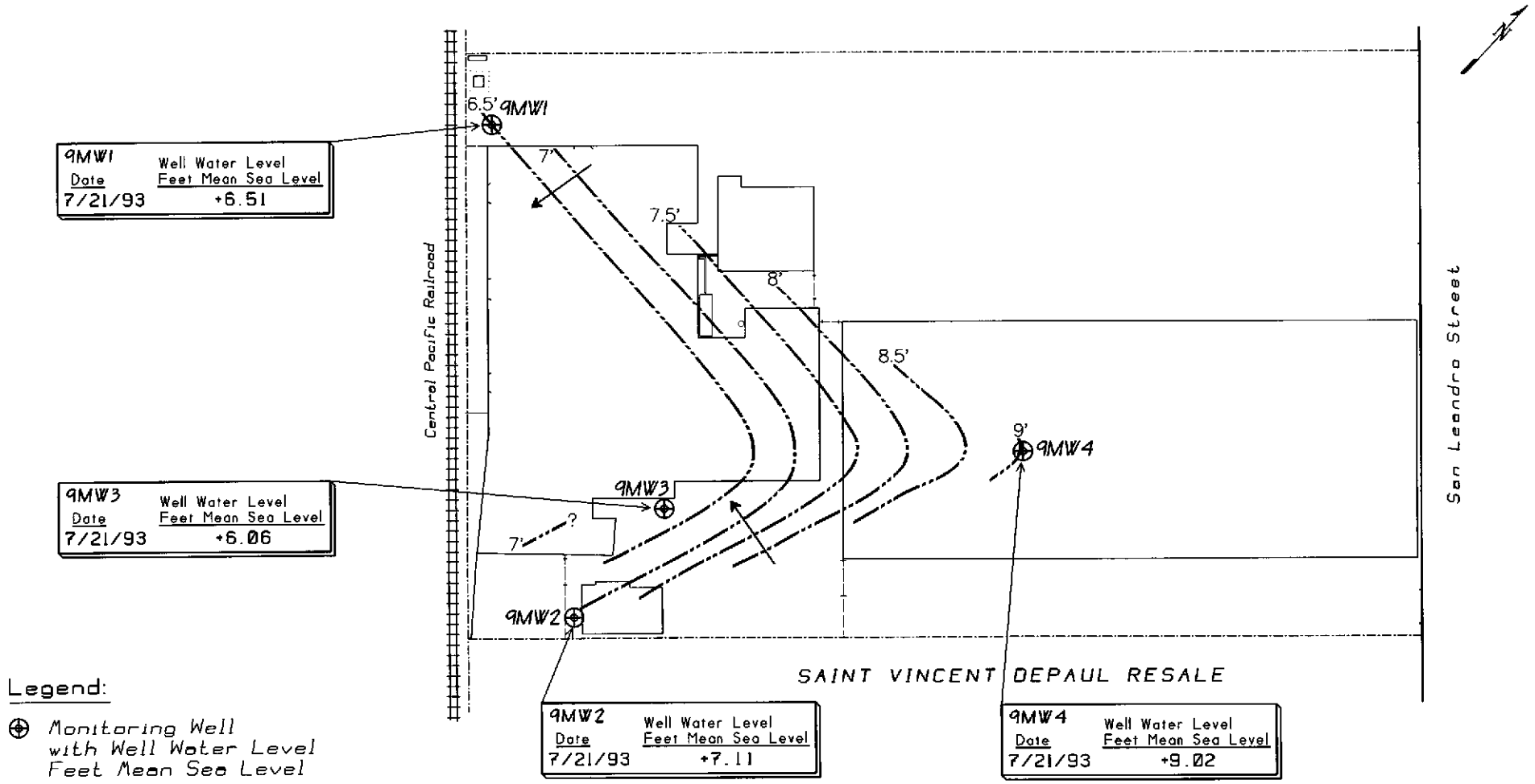
Figure 3-6

Drawing Number PCO220-10/93:F3-6

Drawn by M.J. 10-29-1993

Drawing Number PCO220-10/93:F3-7

Figure 3-7



Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
50 0 50 100 Feet

July 1993 - Summer Season Potentiometric/Water Table Results

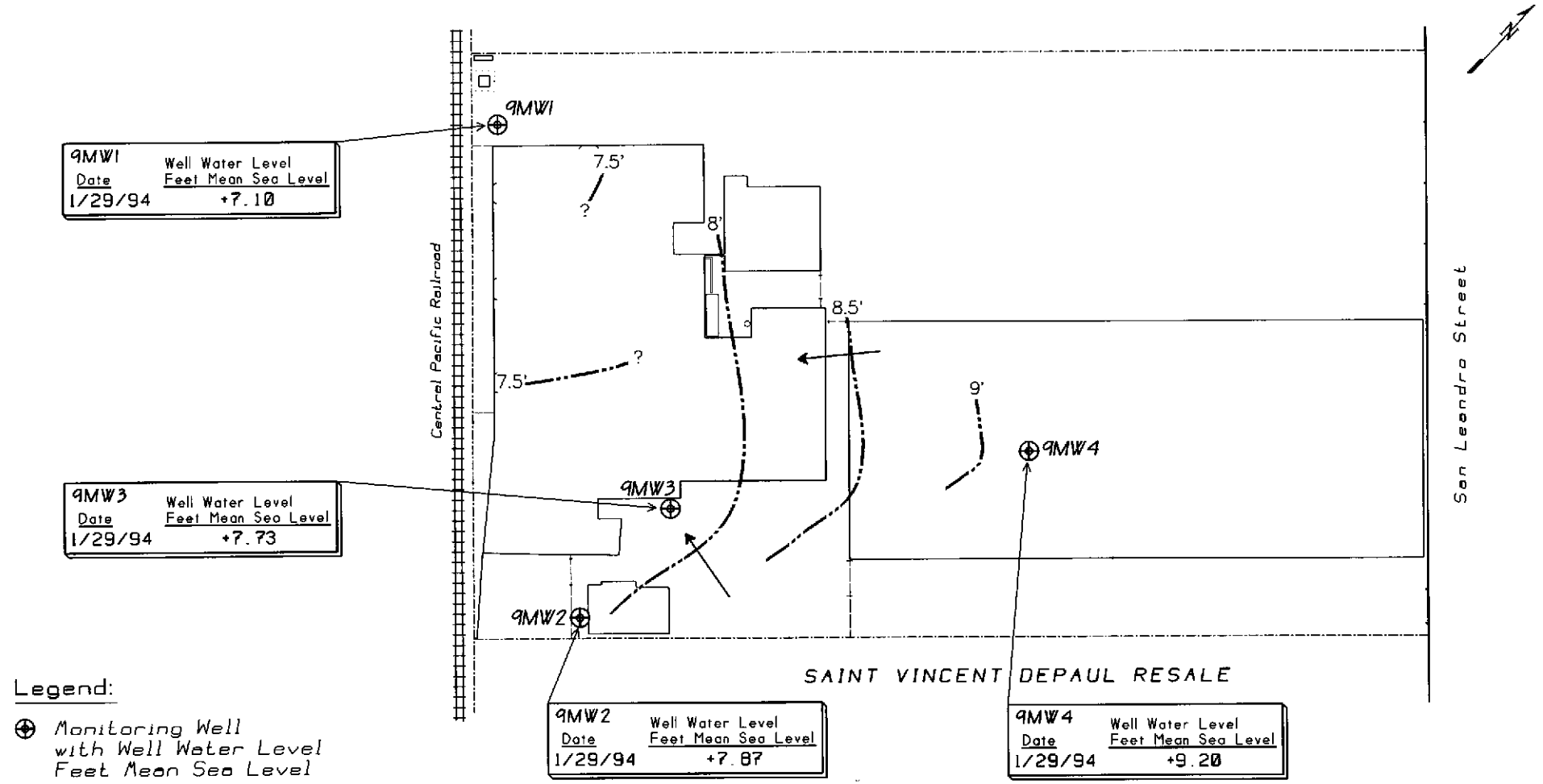
PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 10-29-1993
Locations Approx.

Figure 3-7

Drawing Number PCO220-10/93:F3-7



Well	Date Installed	Total Depth	Casing Diameter	Borehole Diameter	Screen Depth	Sand Pack Depth
9MW1	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW2	11-3-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW3	11-4-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'
9MW4	11-9-1992	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
50 0 50 100 Feet

January 1994 - Winter Season Potentiometric/Water Table Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 2-16-1994
Locations Approx.

Figure 3-8

Drawing Number PCO220-2/94:F3-8

Drawn by M.J. 2-16-1994

Drawing Number PCO220-2/94:F3-8

Figure 3-8

4.0 RECOMMENDATIONS

To date, at the PACO Pumps' facility at 9201 San Leandro Street, twenty-six soil samples have been collected and analyzed for various metals, petroleum products, and volatile organics; excavation activities have been performed at a suspected former underground storage tank and fourteen additional soil samples were collected and analyzed; and four rounds of groundwater sampling and analysis have been performed. The first two activities were documented in the October 16, 1992 "Site Characterization Report and Work Plan". The procedures and results of the groundwater sampling and analysis rounds were documented in the February 24, 1993 "First Quarterly Status Report", the December 10, 1993 "Groundwater Monitoring Report - Sampling Rounds One, Two, and Three", and the report presented herein. Based upon these investigations, following are recommendations for future actions:

1/ Continue quarterly groundwater sampling and analysis for one additional year, as follows:

- » Sample and analyze all wells for TPH as Gasoline (EPA Methods 5030/8015); and BTEX (EPA Method 602); and Volatile Organic Purgeable Halocarbons (EPA Method 8010).
- » Sample and analyze monitoring wells 9MW2 and 9MW3 for TEPH as Diesel, Kerosene, and Motor Oil (EPA Method 3510/8015).

2/ Request that Alameda County Health Care Services Agency direct Saint Vincent DePaul to install a minimum three groundwater monitoring wells on their facility and analyze groundwater samples from these wells for TPH as Gasoline (EPA Methods 5030/8015); and BTEX (EPA Method 602); TEPH as Diesel, Kerosene, and Motor Oil (EPA Method 3510/8015); Total Oil & Grease (EPA Method 5520 E&F); and Volatile Organics Purgeable Halocarbons (EPA Method 8010). These analyses should be performed in addition to any other sampling and analysis currently conducted at their facility.

3/ After Saint Vincent DePaul has conducted at least three rounds of groundwater sampling and analysis at their facility, PACO Pumps' will present an evaluation of at least one of the following alternatives for groundwater at the PACO Pumps' facility: 1/ No-Action Alternative; 2/ Alternative Points of Compliance for Groundwater Cleanup; or 3/ groundwater extraction and treatment.

4/ Meet with the representative of Alameda County Health Care Services Agency to discuss the recommendations presented in this document and reach a consensus on future actions.

5.0 REFERENCES

California Department of Water Resources, 1982. "Phase I Water Well Survey, Proposed Oakland Inner Harbor Deepening Project, Central District", September 1982.

California Regional Water Quality Control Board - San Francisco Bay Region, 1993. Internal Memo "Alternative Points of Compliance For Groundwater Cleanup", April 21, 1993.

California Regional Water Quality Control Board - San Francisco Bay Region, 1994. Draft Memo "Non-Attainment of Ground Water Cleanup Levels", February 17, 1994.

Jonas & Associates Inc., 1992. "Site Characterization Report and Work Plan, PACO Pumps, 9201 San Leandro Street, Oakland, California", October 16, 1992.

_____, 1993. "First Quarterly Status Report, PACO Pumps, 9201 San Leandro Street, Oakland, California", February 24, 1993.

_____, 1993. "Groundwater Monitoring Report, Sampling Round One, Two, and Three, PACO Pumps, 9201 San Leandro Street, Oakland, California", December 10, 1993.

Subsurface Consultants Inc., 1992. "Soil Contamination Assessment Drum Storage Areas, St. Vincent DePaul Distribution Center, 9234 San Leandro Street, Oakland, California", December 16, 1992.

Appendix A

Summary Tables of Laboratory Results

Table A/GW1

TPH-GASOLINE & BTEX GROUNDWATER RESULTS
PACO PUMPS - 9201 SAN LEANDRO STREET

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	TPH-Gasoline (5030/8015) (mg/L)	Benzene (602) (mg/L)	Toluene (602) (mg/L)	Ethyl Benzene (602) (mg/L)	Total Xylenes (602) (mg/L)
Monitoring Well 9MW2									
GW9-MW2-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0015)
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW2-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
Monitoring Well 9MW3									
GW9-MW3-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	40.000	2.900	6.700	0.550	1.700
GW9-MW3-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	12.000	1.000	0.300	0.110	0.170
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	3.400	0.420	0.063	0.036	0.037
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	5.600	0.910	0.220	0.047	0.036
Monitoring Well 9MW4									
GW9-MW4-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	0.560	0.066	0.073	0.016	0.130
GW9-MW41-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	0.520	0.063	0.067	0.015	0.140
GW9-MW4-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	0.750	0.067	0.012	0.029	0.062
GW9-MW4-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	0.250	0.021	0.0042	0.0084	0.011
GW9-MW4-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	0.180	0.028	0.0022	0.0062	0.010

notes: TPH: Total Petroleum Hydrocarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes
CrLab: Chromalab, Inc. (San Ramon, California)
[1] = probably corrected, apparently switched.
ND(0.1) = Not Detected above the laboratory detection limit in parentheses.

Table A/GW2

TEPH & PCB GROUNDWATER RESULTS
PACO PUMPS - 9201 SAN LEANDRO STREET

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	TEPH-Diesel (3510/8015) (mg/L)	TEPH-Kerosene (3510/8015) (mg/L)	TEPH-Motor Oil (3510/8015) (mg/L)	PCBs (608 mod.) (mg/L)
Monitoring Well 9MW1								
GW9-MW1-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	ND(0.05)
GW9-MW1-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	0.140	ND(0.050)	ND(0.5)	ND(0.0005)
GW9-MW1-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW1-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
Monitoring Well 9MW2								
GW9-MW2-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	0.590	9.5	-
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	0.430	0.210	4.3	-
GW9-MW2-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	0.52	-
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	0.68	-
Monitoring Well 9MW3								
GW9-MW3-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW3-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	0.290	ND(0.050)	ND(0.5)	-
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
Monitoring Well 9MW4								
GW9-MW4-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW41-Q1	11/16/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW4-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW4-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW4-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-

notes: TEPH: Total Extractable Petroleum Hydrocarbons
PCBs: Polychlorinated Biphenyls
CrLab: Chromalab, Inc. (San Ramon, California)
[1] = probably corrected, apparently switched.
ND(0.004) = Not Detected above the laboratory detection limit in parentheses.

Table A/GW3

VOLATILE ORGANIC COMPOUND GROUNDWATER RESULTS
PACO PUMPS - 9201 SAN LEANDRO STREET
{mg/L}

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Acetone	Benzene	Bromodichloro-methane	Bromoform	Bromo-methane	Carbon Tetrachloride	Chloro-benzene	Chloro-ethane	2-Chloroethyl Vinyl Ether	Chloroform	Chloro-methane
Monitoring Well 9MW2															
GW9-MW2-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.005)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
Monitoring Well 9MW3															
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	0.450	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	0.910	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Dibromo-chloromethane	1,2-Dichloro-benzene	1,3-Dichloro-benzene	1,4-Dichloro-benzene	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis 1,2-Dichloroethene	trans 1,2-Dichloroethene	1,2-Dichloro-propane	cis-1,3-Di-chloropropene
Monitoring Well 9MW2															
GW9-MW2-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	0.0026	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	-	-	-	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
Monitoring Well 9MW3															
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	0.330	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	-	-	-	ND(0.002)	0.180	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	trans-1,3-Di-chloropropene	Ethyl-Benzene	2-Hexanone	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methylene Chloride	Styrene	1,1,2,2-Tetra-chloroethane	Tetra-chloroethene	Toluene	1,1,1-Tri-chloroethane
Monitoring Well 9MW2															
GW9-MW2-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.005)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
Monitoring Well 9MW3															
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	0.049	-	ND(0.002)	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)	0.050	ND(0.002)
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	0.047	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.005)	ND(0.002)	ND(0.002)	ND(0.002)	0.220	ND(0.002)

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	1,1,2-Tri-chloroethane	Tri-chloroethene	Trichlorofluoro-methane	Vinyl Acetate	Vinyl Chloride	Total Xylenes
Monitoring Well 9MW2										
GW9-MW2-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	-	ND(0.002)	ND(0.002)
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)
Monitoring Well 9MW3										
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	0.0024	ND(0.002)	-	ND(0.002)	0.047
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	0.036

notes: CrLab: Chromalab Inc.
[1] = probably corrected, apparently not GW9-MW2-Q3.
ND(0.002) = Not Detected above the laboratory detection limit in parentheses.

Table A/GW4

METALS GROUNDWATER RESULTS
PACO PUMPS - 9201 SAN LEANDRO STREET
{mg/L}

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Ag Silver	As Arsenic	Ba Barium	Be Beryllium	Cd Cadmium	Co Cobalt	Cr Chromium	Cu Copper	Hg Mercury	Mo Molybdenum	Ni Nickel
Monitoring Well 9MW1															
GW9-MW1-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.005)	ND(0.005)	0.18	0.002	ND(0.001)	ND(0.01)	ND(0.01)	0.007	ND(0.001)	ND(0.005)	ND(0.020)
GW9-MW1-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.005)	ND(0.005)	0.19	ND(0.001)	ND(0.001)	ND(0.01)	ND(0.01)	ND(0.005)	0.003	ND(0.005)	ND(0.020)
GW9-MW1-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	0.011	ND(0.005)	0.27	ND(0.001)	ND(0.001)	ND(0.01)	ND(0.01)	0.007	ND(0.001)	0.010	ND(0.020)
GW9-MW1-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.005)	ND(0.005)	0.12	ND(0.001)	ND(0.001)	ND(0.01)	ND(0.01)	ND(0.005)	ND(0.001)	ND(0.005)	ND(0.02)

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Pb Lead	Sb Antimony	Se Selenium	Tl Thallium	V Vanadium	Zn Zinc
Monitoring Well 9MW1										
GW9-MW1-Q1	11/15/92	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.010)	ND(0.020)	0.021	ND(0.01)	ND(0.01)	ND(0.005)
GW9-MW1-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.010)	0.03	0.04	ND(0.01)	ND(0.01)	0.03
GW9-MW1-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.010)	ND(0.020)	ND(0.01)	ND(0.01)	ND(0.01)	0.015
GW9-MW1-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.01)	ND(0.02)	0.018	0.12	0.010	ND(0.005)
Monitoring Well 9MW2										
GW9-MW2-Q2	3/9/93	5¼'-20¼'$_{screen}$	water	CrLab			0.08			
GW9-MW2-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab			ND(0.01)			
GW9-MW2-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab			0.026			
Monitoring Well 9MW3										
GW9-MW3-Q3	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab			ND(0.01)			
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab			0.025			

notes: CrLab: Chromalab Inc.
ND(0.25) = Not Detected above the laboratory detection limit in parentheses.

Appendix B

Chain-of-Custody Records

CHROMALAB, INC.

SUBM #: 9401298
CLIENT: JONAS
DUE: 02/04/94
REF: 14966

83

order # 14966

Chain of Custody

DATE 1/29/94 PAGE 1 OF 1

PROJ. MGR. M.L. Jonas/V.G. Wright, P.E.
COMPANY JONAS & ASSOCIATES INC.
ADDRESS 1056 Dale Place
Concord, California 94518

SAMPLERS (SIGNATURE) (PHONE NO.)
Jonas & Associates Inc. (510) 676-8554

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602,8020)	TPH - Diesel, -K, -MO (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	soluble selenium	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS
GW9-MW1-Q4	1/29/94	1530	GW				X											X							3
GW9-MW2-Q4	1/29/94	1405	GW			X	X			X						X									7
GW9-MW3-Q4	1/29/94	1230	GW			X	X			X						X									7
GW9-MW4-Q4	1/29/94	1000	GW			X	X																		4
						2 VOA w/HCL	2 L			2 VOA w/HCL						1-250ml poly w/HNO_3		1-250ml poly w/HNO_3							

PROJECT INFORMATION

PROJECT NAME: 9201 PACO Pumps
PROJECT NUMBER: PCO-220
SHIPPING ID. NO.
VIA: hand-to-hand

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	21
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
Please do not run BTEX w/ TPH-G for samples GW9-MW2-Q4 and GW9-MW3-Q4

Posi-Filter w/0.45 micron filter used for metal(s) samples. 5 days

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) Mark Jonas (TIME) 1655	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) Mark L. Jonas (DATE) 1/29/94	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY) Jonas & Associates Inc.	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) J. Martesi 16:55 (TIME) 1/29
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(LAB) Chromalab, Inc.

CHROMALAB, INC.

2239 O

SDG#: 9307232
CLIENT: JONAS
DUE: 07/29/93
REF: 12934

Order # 232/10939 12934/1074

Chain of Custody

DATE July 21, 1993 PAGE 1 OF 1

PROJ. MGR. Mark Jonas/Jeff Sullivan, R.G.
COMPANY Jonas & Associates Inc.
ADDRESS 1056 Dale Place
Concord, California 94518

SAMPLERS (SIGNATURE) (PHONE NO.)
JOnas & Associates Inc. (510) 676-8554

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602.8020)	TPH - Diesel, Ker, MO (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	soluble Selenium	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)				NUMBER OF CONTAINERS
GW9-MW1-Q3	7/21/93	10:25	gw				X											X						3
GW9-MW2-Q3	7/21/93	4:30	gw			X	X			X						X								7
GW9-MW3-Q3	7/21/93	2:30	gw			X	X									X								5
GW9-MW4-Q3	7/21/93	12:20	gw			X	X																	4
						2 VOA w/HCL	2 L			2 VOA w/HCL						1-250ml poly w/HNO3		1-250ml poly w/HNO3						

PROJECT INFORMATION

PROJECT NAME: 9201 PACO Pumps
PROJECT NUMBER: PCO-220-09
SHIPPING ID. NO.
VIA: hand-to-hand

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS
CHAIN OF CUSTODY SEALS
REC'D GOOD CONDITION/COLD
CONFORMS TO RECORD
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:

Posi-Filter w/0.45 micro filter
used for metal(s) samples.

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) (TIME) 1420	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Mark L. Jonas 7/21/93		
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Jonas & Associates Inc.		
(COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME) 14:36
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE) R. Morrow 7/22/93
(COMPANY)	(COMPANY)	(LAB) Chromalab

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94
510/831-1788 • Facsimile 510/831-8798

ORDER # 10765

DATE March 9,1993 PAGE 1 OF 1

PROJ. MGR. Mark Jonas/Jeff Sullivan, R.G.
COMPANY JONAS & ASSOCIATES INC.
ADDRESS 1056 Dale Place
Concord, California 94518
SAMPLERS (SIGNATURE) (PHONE NO.)
Jonas & Associates Inc. (510) 676-8554

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602,8020)	TPH - Diesel ,Ker,MO (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	soluble Selenium	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS
GW9-MW1-Q2	3/9/93	1320	gw				X						X					X							4
GW9-MW2-Q2	3/9/93	1450	gw			X	X			X						X									7
GW9-MW3-Q2	3/9/93	1600	gw			X	X																		4
GW9-MW4-Q2	3/9/93	1720	gw			X	X																		4

PROJECT INFORMATION

PROJECT NAME: 9201 PACO Pumps
PROJECT NUMBER: PCO-220-02
SHIPPING ID. NO.
VIA: hand-to-hand

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	19
CHAIN OF CUSTODY SEALS	–
REC'D GOOD CONDITION/COLD	✓
CONFORMS TO RECORD	✓
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

Posi-Filter w/ 0.45 micron filter
used for metal(s) samples.

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) (TIME) 17:15	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Mark L. Jonas 3/9/93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Jonas & Associates Inc. (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3**
(SIGNATURE) (TIME) 17:15	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Gary Cook 3/10/93 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Chroma Lab (COMPANY)	(COMPANY)	Chromalab, Inc. (LAB)

CHROMALAB, INC.

2239 Ome
51(

CHROMALAB FILE # 1192132
ORDER # 8532

Chain of Custody

DATE 11/16/92 PAGE 1 OF 1

PROJ. MGR. Mark L. Jonas
COMPANY JONAS & ASSOCIATES INC.
ADDRESS 1056 Dale Place
Concord, California 94518
SAMPLERS (SIGNATURE) (PHONE NO.)
Jonas & Associates Inc. (510) 676-8554

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602/8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 624.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608, 8080) PCBs	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	TEPH-Diesel,Kero., Motor O.(3510/8020	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS
GW9-MW1-Q1	11/15/92	1230	water										X			X		X							5
GW9-MW2-Q1	11/16/92	1010	water			X				X						X									6
GW9-MW3-Q1	11/16/92	1355	water			X										X									4
GW9-MW4-Q1	11/16/92	1525	water			X										X									4
GW9-MW41-Q1	11/16/92	1425	water			X										X									4

PROJECT INFORMATION

PROJECT NAME: 9201 PACO Pumps
PROJECT NUMBER: PCO-220-02-REM
SHIPPING ID. NO.
VIA: hand-to-hand

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
Mark Jonas 1635 (SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Mark Jonas 11/16/92 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
Jonas & Associates Inc. (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	Gary Cook 16:40 (SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	Gary Cook 11/16/92 (PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	Chromalab, Inc. (LAB)

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 2, 1994 ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas/V.G. Wright

Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994

re: 2 samples for Gasoline analysis.

Matrix: WATER
Sampled on: January 29, 1994 *Analyzed on:* February 1, 1994
Method: EPA 5030/8015 *Run#:* 2163

LAB #	CLIENT SAMPLE ID	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
42464	GW9-MW2-Q4	N.D.	50	N.D.	83
42465	GW9-MW3-Q4	5600	50	N.D.	83

ChromaLab, Inc.

Jack Kelly
Chemist

Eric Tam
Laboratory Director

LIMS

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 2, 1994 ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas/V.G. Wright

Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994

re: 1 sample for Gasoline and BTEX analysis.

Matrix: WATER
Sampled on: January 29, 1994 *Analyzed on:* February 1, 1994
Method: EPA 5030/8015/602 *Run#:* 2163

Lab # SAMPLE ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
42466 GW9-MW4-Q4	180	28	2.2	6.2	10
DETECTION LIMITS	50	0.5	0.5	0.5	0.5
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK SPIKE RECOVERY(%)	83	93	92	96	92

ChromaLab, Inc.

Jack Kelly
Chemist

Eric Tam
Laboratory Director

LIMS

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 4, 1994 ChromaLab File No.: 9401298

JONAS & ASSOCIATES, INC.

Attn: M.L. Jonas/V.G. Wright

RE: Four water samples for TEPH analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220
Date Sampled: January 29, 1994 Date Submitted: January 29, 1994
Date Extracted: February 1, 1994 Date Analyzed: February 1, 1994

RESULTS:

Sample I.D.	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
GW9-MW1-Q4	N.D.	N.D.	N.D.
GW9-MW2-Q4	N.D.	N.D.	0.68
GW9-MW3-Q4	N.D.	N.D.	N.D.
GW9-MW4-Q4	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	---	87%	---
DUP SPIKE RECOVERY	---	85%	---
DETECTION LIMIT	50	50	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab, Inc.

Alex Tam
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 4, 1994 ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas/V.G. Wright
Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994
re: One sample for Volatile Organic Compounds analysis.

Sample: **GW9-MW2-Q4** *Matrix:* WATER
Lab #: 42464-2187 *Sampled:* January 29, 1994 *Analyzed:* January 31, 1994
Method: EPA 624

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
ACETONE	N.D.	5	N.D.	--
BENZENE	N.D.	2	N.D.	--
BROMODICHLOROMETHANE	N.D.	2	N.D.	--
BROMOFORM	N.D.	2	N.D.	--
BROMOMETHANE	N.D.	2	N.D.	--
METHYL ETHYL KETONE	N.D.	2	N.D.	--
CARBON TETRACHLORIDE	N.D.	2	N.D.	--
CHLOROBENZENE	N.D.	2	N.D.	--
CHLOROETHANE	N.D.	2	N.D.	--
2-CHLOROETHYLVINYL ETHER	N.D.	2	N.D.	--
CHLOROFORM	N.D.	2	N.D.	--
CHLOROMETHANE	N.D.	2	N.D.	--
DIBROMOCHLOROMETHANE	N.D.	2	N.D.	--
1,1-DICHLOROETHANE	N.D.	2	N.D.	92
1,2-DICHLOROETHANE	N.D.	2	N.D.	--
1,1-DICHLOROETHENE	N.D.	2	N.D.	--
CIS-1,2-DICHLOROETHENE	N.D.	2	N.D.	--
TRANS-1,2-DICHLOROETHENE	N.D.	2	N.D.	--
1,2-DICHLOROPROPANE	N.D.	2	N.D.	--
CIS-1,3-DICHLOROPROPENE	N.D.	2	N.D.	--
TRANS-1,3-DICHLOROPROPENE	N.D.	2	N.D.	--
ETHYLBENZENE	N.D.	2	N.D.	--
2-HEXANONE	N.D.	2	N.D.	--
METHYLENE CHLORIDE	N.D.	5	N.D.	--
METHYL ISOBUTYL KETONE	N.D.	2	N.D.	--
STYRENE	N.D.	2	N.D.	--
1,1,2,2-TETRACHLOROETHANE	N.D.	2	N.D.	87
TETRACHLOROETHENE	N.D.	2	N.D.	97
TOLUENE	N.D.	2	N.D.	--
1,1,1-TRICHLOROETHANE	N.D.	2	N.D.	--
1,1,2-TRICHLOROETHANE	N.D.	2	N.D.	--
TRICHLOROETHENE	N.D.	2	N.D.	90
TRICHLOROFLUOROMETHANE	N.D.	2	N.D.	--
VINYL ACETATE	N.D.	2	N.D.	--
VINYL CHLORIDE	N.D.	2	N.D.	--
XYLENES	N.D.	2	N.D.	--

ChromaLab, Inc.

David Wintergrass
Chemist

Eric Tam
Laboratory Director

LIMS

2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 4, 1994 ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas/V.G. Wright
Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994
re: One sample for Volatile Organic Compounds analysis.

Sample: **GW9-MW3-Q4** *Matrix:* WATER
Lab #: 42465-2187 *Sampled:* January 29, 1994 *Analyzed:* January 31, 1994
Method: EPA 624

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
ACETONE	N.D.	5	N.D.	--
BENZENE	910	2	N.D.	--
BROMODICHLOROMETHANE	N.D.	2	N.D.	--
BROMOFORM	N.D.	2	N.D.	--
BROMOMETHANE	N.D.	2	N.D.	--
METHYL ETHYL KETONE	N.D.	2	N.D.	--
CARBON TETRACHLORIDE	N.D.	2	N.D.	--
CHLOROBENZENE	N.D.	2	N.D.	--
CHLOROETHANE	N.D.	2	N.D.	--
2-CHLOROETHYLVINYL ETHER	N.D.	2	N.D.	--
CHLOROFORM	N.D.	2	N.D.	--
CHLOROMETHANE	N.D.	2	N.D.	--
DIBROMOCHLOROMETHANE	N.D.	2	N.D.	--
1,1-DICHLOROETHANE	N.D.	2	N.D.	92
1,2-DICHLOROETHANE	180	2	N.D.	--
1,1-DICHLOROETHENE	N.D.	2	N.D.	--
CIS-1,2-DICHLOROETHENE	N.D.	2	N.D.	--
TRANS-1,2-DICHLOROETHENE	N.D.	2	N.D.	--
1,2-DICHLOROPROPANE	N.D.	2	N.D.	--
CIS-1,3-DICHLOROPROPENE	N.D.	2	N.D.	--
TRANS-1,3-DICHLOROPROPENE	N.D.	2	N.D.	--
ETHYLBENZENE	47	2	N.D.	--
2-HEXANONE	N.D.	2	N.D.	--
METHYLENE CHLORIDE	N.D.	5	N.D.	--
METHYL ISOBUTYL KETONE	N.D.	2	N.D.	--
STYRENE	N.D.	2	N.D.	--
1,1,2,2-TETRACHLOROETHANE	N.D.	2	N.D.	87
TETRACHLOROETHENE	N.D.	2	N.D.	97
TOLUENE	220	2	N.D.	--
1,1,1-TRICHLOROETHANE	N.D.	2	N.D.	--
1,1,2-TRICHLOROETHANE	N.D.	2	N.D.	--
TRICHLOROETHENE	N.D.	2	N.D.	90
TRICHLOROFLUOROMETHANE	N.D.	2	N.D.	--
VINYL ACETATE	N.D.	2	N.D.	--
VINYL CHLORIDE	N.D.	2	N.D.	--
XYLENES	36	2	N.D.	--

ChromaLab, Inc.

David Wintergrass
Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 2, 1994 ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas/V.G. Wright

Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994

re: 2 samples for Selenium (Se) analysis.

Matrix: WATER *Extracted:* January 31, 1994
Sampled on: January 29, 1994 *Analyzed on:* February 1, 1994
Method: EPA 3010/6010 *Run#:* 2165

LAB #	CLIENT SAMPLE ID	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
42464	GW9-MW2-Q4	0.026	0.010	N.D.	79
42465	GW9-MW3-Q4	0.025	0.010	N.D.	79

ChromaLab, Inc.

Charles Woolley
Chemist

Refaat Mankarious
Inorganics Supervisor

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

February 2, 1994

ChromaLab File#: 9401298

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas/V.G. Wright

Project: 9201 PACO PUMPS **Project#:** PCO-220
Submitted: January 29, 1994

re: One sample for CAM 17 Metals analysis.

Sample: **GW9-MW1-Q4** *Matrix:* WATER *Extracted:* January 31, 1994
Lab #: 42463-2165 *Sampled:* January 29, 1994 *Analyzed:* February 1, 1994
Method: EPA 3010/6010/7470

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
ANTIMONY	N.D.	0.02	N.D.	86
ARSENIC	N.D.	0.005	N.D.	90
BARIUM	0.12	0.005	N.D.	85
BERYLLIUM	N.D.	0.001	N.D.	79
CADMIUM	N.D.	0.001	N.D.	78
CHROMIUM	N.D.	0.01	N.D.	81
COBALT	N.D.	0.01	N.D.	86
COPPER	N.D.	0.005	N.D.	78
LEAD	N.D.	0.01	0.01	80
MOLYBDENUM	N.D.	0.005	N.D.	--
NICKEL	N.D.	0.02	N.D.	81
SELENIUM	0.018	0.01	N.D.	79
SILVER	N.D.	0.005	N.D.	80
THALLIUM	0.12	0.01	0.01	81
VANADIUM	0.010	0.01	N.D.	77
ZINC	N.D.	0.005	N.D.	82
MERCURY	N.D.	0.001	N.D.	103

ChromaLab, Inc.

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 29, 1993

ChromaLab File No.: 9307232
Submission #: 9307000232

JONAS & ASSOCIATES, INC.

Attn: M. Jonas/J. Sullivan

RE: Three water samples for Gasoline and BTEX analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-0
Date Sampled: July 21, 1993
Date Analyzed: July 28, 1993

Date Submitted: July 22, 1993

RESULTS:

Sample I.D.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
GW9-MW3-Q3	3400	420	63	36	37
GW9-MW2-Q3	N.D.	N.D.	N.D.	N.D.	N.D.
GW9-MW4-Q3	250	21	4.2	8.4	11
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	103%	82%	94%	94%	95%
DUP SPIKE RECOVERY	---	86%	94%	96%	95%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 29, 1993

ChromaLab File No.: 9307232
Submission #: 9307000232

JONAS & ASSOCIATES, INC.

Attn: M. Jonas/J. Sullivan

RE: Four water samples for TEPH analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-0
Date Sampled: July 21, 1993
Date Extracted: July 27, 1993

Date Submitted: July 22, 1993
Date Analyzed: July 28, 1993

RESULTS:

Sample I.D.	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
GW9-MW1-Q3	N.D.	N.D.	N.D.
GW9-MW2-Q3	N.D.	N.D.	N.D.
GW9-MW3-Q3	N.D.	N.D.	0.52
GW9-MW4-Q3	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	---	79%	---
DUP SPIKE RECOVERY	---	84%	---
DETECTION LIMIT	50	50	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab, Inc.

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Eric Tam
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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 29, 1993

JONAS & ASSOCIATES, INC.

Project Name: 9201 PACO PUMPS
Date Sampled: July 21, 1993
Date Submitted: July 22, 1993
Date of Analysis: July 28, 1993
Sample I.D.: GW9-MW3-Q3

ChromaLab File # 9307232
Submission #: 9307000232
Attn: M. Jonas/J. Sullivan

Project No: PCO-220-0
Method of Analysis: EPA 624
Matrix: Water
Reporting Limit: 2.0 µg/L
Dilution Factor: None

COMPOUND NAME	µg/L	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	83% 80%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TRANS)	N.D.	---
1,2-DICHLOROETHENE (CIS)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	330	---
BENZENE	450	---
TRICHLOROETHENE	2.4	106% 110%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	50	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	110% 114%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
ETHYL BENZENE	49	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	107% 107%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	47	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

ChromaLab, Inc.

David Wintergrass
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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 29, 1993

ChromaLab File No.: 9307232
Submission #: 9307000232

JONAS & ASSOCIATES, INC.

Attn: M. Jonas/J. Sullivan

RE: Two water samples for Soluble Selenium analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-0
Date Sampled: July 21, 1993
Date Analyzed: July 28, 1993

Date Submitted: July 22, 1993

RESULTS:

Sample I.D.	Selenium (mg/L)
GW9-MW2-Q3	N.D.
GW9-MW3-Q3	N.D.
BLANK	N.D.
DETECTION LIMIT	0.01
METHOD OF ANALYSIS	3010/6010

ChromaLab, Inc.

Charles Woolley
Analytical Chemist

Refaat A. Mankarious
Inorganic Supervisor

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

July 29, 1993

ChromaLab File No.: 9307232
Submission #: 9307000232

JONAS & ASSOCIATES, INC.

Attn: M. Jonas/J. Sullivan

RE: One water sample for Total CAM 17 Metals analyses (CA Title 22)

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-0
Date Sampled: July 21, 1993
Date Submitted: July 22, 1993
Date Analyzed: July 28, 1993

RESULTS: Sample I.D.: GW9-MW1-Q3

Metals	Concentration (mg/L)	Detection Limit (mg/L)
Antimony (Sb)	N.D.	0.020
Arsenic (As)	N.D.	0.005
Barium (Ba)	0.27	0.005
Beryllium (Be)	N.D.	0.001
Cadmium (Cd)	N.D.	0.001
Cobalt (Co)	N.D.	0.01
Chromium (Cr)	N.D.	0.01
Copper (Cu)	0.007	0.005
Lead (Pb)	N.D.	0.010
Mercury (Hg)	N.D.	0.001
Molybdenum (Mo)	0.010	0.005
Nickel (Ni)	N.D.	0.020
Selenium (Se)	N.D.	0.01
Silver (Ag)	0.011	0.005
Thallium (Tl)	N.D.	0.01
Vanadium (V)	N.D.	0.01
Zinc (Zn)	0.015	0.005

Method of Analysis: 3010/6010/7470

ChromaLab, Inc.

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 17, 1993

ChromaLab File No.: 0393129
REVISED April 16, 1993

JONAS & ASSOCIATES, INC.

Attn: Mark Jonas / Jeff Sullivan, R.G.

RE: Three water samples for Gasoline and BTEX analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02
Date Sampled: Mar. 9, 1993
Date Submitted: Mar. 10, 1993
Date Analyzed: Mar. 16, 1993

RESULTS:

Sample I.D.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
GW9-MW2-Q2	N.D.	N.D.	N.D.	N.D.	N.D.
GW9-MW3-Q2	12000	1000	300	110	170
GW9-MW4-Q2	750	67	12	29	62
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	88%	100%	105%	101%	101%
DUP SPIKE RECOVERY	----	100%	101%	97%	97%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 18, 1993 ChromaLab File No.: 0393129

JONAS & ASSOCIATES, INC.

Attn: Mark Jonas / Jeff Sullivan, R.G.

RE: Four water samples for TEPH analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02
Date Sampled: Mar. 9, 1993 Date Submitted: Mar. 10, 1993
Date Extracted: Mar. 16, 1993 Date Analyzed: Mar. 17, 1993

RESULTS:

Sample I.D.	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
GW9-MW1-Q2	N.D.	140	N.D.
GW9-MW2-Q2	210	430	4.3
GW9-MW3-Q2	N.D.	290	N.D.
GW9-MW4-Q2	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	108%	----
DUP SPIKE RECOVERY	----	91%	----
DETECTION LIMIT	50	50	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab, Inc.

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Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 16, 1993 ChromaLab File # 0393129

JONAS & ASSOCIATES, INC. Attn: Mark Jonas / Jeff Sullivan, R.G.

Project Name: 9201 PACO PUMPS
Date Sampled: Mar. 9, 1993
Date Submitted: Mar. 10, 1993
Date of Analysis: March 17, 1993
Sample I.D.: GW9-MW2-Q2

Project No: PCO-220-02
Method of Analysis: EPA 624
Matrix: Water
Reporting Limit: 2.0 µg/L
Dilution Factor: None

COMPOUND NAME	µg/L	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	103% 100%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TRANS)	N.D.	---
1,2-DICHLOROETHENE (CIS)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	---
TRICHLOROETHENE	N.D.	104% 100%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	102% 98%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	109% 108%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	N.D.	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

ChromaLab, Inc.

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Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 16, 1993 ChromaLab File No.: 0393129

Jonas & Associates, Inc.

Attn: Mark Jonas / Jeff Sullivan, R.G.

RE: One water sample for chlorinated pesticides analysis by EPA 608 method.

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02
Date Sampled: Mar. 9, 1993
Date Extracted: Mar. 15, 1993

Date Submitted: Mar. 10, 1993
Date Analyzed: Mar. 15, 1993
Dilution Factor: None

Sample I.D.: GW9-MW1-Q2

CHLORINATED PESTICIDE ANALYSIS

Compounds	Concentration (µg/L)	Reporting Detection Limit (µg/L)
ALDRIN	N.D.	.10
DIELDRIN	N.D.	.10
ENDRIN ALDEHYDE	N.D.	.50
ENDRIN	N.D.	.10
HEPTACHLOR	N.D.	.10
HEPTACHLOR EPOXIDE	N.D.	.10
p,p' - DDT	N.D.	.50
p,p' - DDE	N.D.	.10
p,p' - DDD	N.D.	.50
ENDOSULFAN I	N.D.	.50
ENDOSULFAN II	N.D.	.50
α - BHC	N.D.	.10
β - BHC	N.D.	.10
γ - BHC (LINDANE)	N.D.	.10
δ - BHC	N.D.	.10
ENDOSULFAN SULFATE	N.D.	.50
p,p' - METHOXYCHLOR	N.D.	.50
TOXAPHENE	N.D.	.50
PCB'S	N.D.	.50
CHLORDANE	N.D.	.50

ChromaLab, Inc.

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 17, 1993 ChromaLab File No.: 0393129

JONAS & ASSOCIATES, INC.

Attn: Mark Jonas / Jeff Sullivan, R.G.

RE: One water sample for Selenium analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02
Date Sampled: Mar. 9, 1993 Date Submitted: Mar. 10, 1993
Date Analyzed: Mar. 16, 1993

RESULTS:

Sample I.D.	Selenium (mg/L)
GW9-MW2-02	0.08
BLANK	N.D.
DETECTION LIMIT	0.005
METHOD OF ANALYSIS	3010/6010

ChromaLab, Inc.

Refaat A.Mankarious
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Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

March 17, 1993 ChromaLab File No.: 0393129

JONAS & ASSOCIATES, INC.

Attn: Mark Jonas / Jeff Sullivan, R.G.

RE: One water sample for Total CAM 17 Metals analyses (CA Title 22)

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02
Date Sampled: Mar. 9, 1993 Date Submitted: Mar. 10, 1993
Date Analyzed: Mar. 16, 1993

RESULTS: Sample I.D.: GW9-MW1-Q2

Metals	Concentration (mg/L)	Detection Limit (mg/L)
Antimony (Sb)	0.03	0.020
Arsenic (As)	N.D.	0.005
Barium (Ba)	0.19	0.005
Beryllium (Be)	N.D.	0.001
Cadmium (Cd)	N.D.	0.001
Cobalt (Co)	N.D.	0.01
Chromium (Cr)	N.D.	0.01
Copper (Cu)	N.D.	0.005
Lead (Pb)	N.D.	0.010
Mercury (Hg)	0.003	0.001
Molybdenum (Mo)	N.D.	0.005
Nickel (Ni)	N.D.	0.02
Selenium (Se)	0.04	0.01
Silver (Ag)	N.D.	0.005
Thallium (Tl)	N.D.	0.01
Vanadium (V)	N.D.	0.01
Zinc (Zn)	0.03	0.005

Method of Analysis: 3010/6010/7470

ChromaLab, Inc.

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

November 24, 1992 ChromaLab File No.: 1192132

JONAS & ASSOCIATES, INC.

Attn: Mark L. Jonas

RE: Four water samples for Gasoline and BTEX analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02-REM
Date Sampled: Nov. 16, 1992 Date Submitted: Nov. 16, 1992
Date Analyzed: Nov. 20, 1992

RESULTS:

Sample I.D.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
GW9-MW2-Q1	N.D.	N.D.	N.D.	N.D.	N.D.
GW9-MW3-Q1	40000	2900	6700	550	1700
GW9-MW41-Q1	520	63	67	15	130
GW9-MW4-Q1	560	66	73	16	140
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	91%	95%	95%	95%	93%
DUP SPIKE RECOVERY	----	94%	97%	94%	92%
DETECTION LIMIT	50	0.5	0.5	0.5	1.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

November 23, 1992 ChromaLab File No.: 1192132

JONAS & ASSOCIATES, INC.

Attn: Mark L. Jonas

RE: Five water samples for TEPH analysis

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02-REM
Date Sampled: Nov. 15-16, 1992 Date Submitted: Nov. 16, 1992
Date Extracted: Nov. 18, 1992 Date Analyzed: Nov. 18, 1992

RESULTS:

Sample I.D.	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
GW9-MW1-Q1	N.D.	N.D.	N.D.
GW9-MW2-Q1	590	N.D.	9.5
GW9-MW3-Q1	N.D.	N.D.	N.D.
GW9-MW4-Q1	N.D.	N.D.	N.D.
GW9-MW41-Q1	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	109%	----
DUP SPIKE RECOVERY	----	105%	----
DETECTION LIMIT	50.0	50.0	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab Inc.,

Yiu Tam
Analytical Chemist

Eric Tam
Laboratory Director

cc

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

November 24, 1992

ChromaLab File # 1192132
REVISED May 5, 1993

JONAS & ASSOCIATES, INC.

Attn: Mark L. Jonas

Project Name: 9201 PACO PUMPS
Date Sampled: Nov. 16, 1992
Date Submitted: Nov. 16, 1992
Date of Analysis: Nov. 20, 1992
Sample I.D.: GW9-MW2-Q1

Project No: PCO-220-02-REM
Method of Analysis: EPA 624
Matrix: Water
Reporting Limit: 2.0 µg/L
Dilution Factor: None

COMPOUND NAME	µg/L	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	118% 120%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TRANS)	N.D.	---
1,2-DICHLOROETHENE (CIS)	N.D.	---
1,1-DICHLOROETHANE	2.6	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	---
TRICHLOROETHENE	N.D.	104% 107%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	101% 101%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	102% 121%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	N.D.	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

ChromaLab, Inc.

Mary Cappelli
Analytical Chemist

Eric Tam
Lab Director

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

November 21, 1992

ChromaLab File No.:1192132

Jonas & Associates, Inc.

Attn: Mark Jonas

RE: One water sample for PCB analysis.

Project Name: 9201 PACO Pumps
Project No.: PCO-220-02-REM
Date Sampled: Nov. 15, 1992
Date Submitted: Nov. 16, 1992
Date Analyzed: Nov. 20, 1992

RESULTS:

SAMPLE I.D.	PCB (mg/L)
MW-1	N.D.
BLANK	N.D.
SPIKE RECOVERY	98%
DUPLICATE SPIKE RECOVERY	103%
DETECTION LIMIT	0.05
METHOD OF ANALYSIS	608

ChromaLab, Inc.

Yiu Tam
Analytical Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

November 23, 1992

ChromaLab File No.: 1192132
REVISED May 5, 1993

JONAS & ASSOCIATES, INC.

Attn: Mark L. Jonas

RE: One water sample for Total CAM 17 Metals analyses (CA Title 22)

Project Name: 9201 PACO PUMPS
Project Number: PCO-220-02-REM
Date Sampled: Nov. 15, 1992 Date Submitted: Nov. 16, 1992
Date Analyzed: Nov. 18, 1992

RESULTS: Sample I.D.: GW9-MW1-Q1

Metals	Concentration (mg/L)	Detection Limit (mg/L)
Antimony (Sb)	N.D.	0.020
Arsenic (As)	N.D.	0.005
Barium (Ba)	0.18	0.005
Beryllium (Be)	0.002	0.001
Cadmium (Cd)	N.D.	0.001
Cobalt (Co)	N.D.	0.01
Chromium (Cr)	N.D.	0.01
Copper (Cu)	0.007	0.005
Lead (Pb)	N.D.	0.010
Mercury (Hg)	N.D.	0.001
Molybdenum (Mo)	N.D.	0.005
Nickel (Ni)	N.D.	0.020
Selenium (Se)	0.021	0.01
Silver (Ag)	N.D.	0.005
Thallium (Tl)	N.D.	0.01
Vanadium (V)	N.D.	0.01
Zinc (Zn)	N.D.	0.005

Method of Analysis: 3010/6010/7470

ChromaLab, Inc.

Jack Kelly
Analytical Chemist

Refaat Mankarious
Inorganic Supervisor

cc

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Appendix D

Monitoring Well Documentation

Table D-1
Monitoring Well Survey Data
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Well	Easting	Northing	M.S.L. Elevation
9MW1	1512710.22	456699.01	Top PVC: 15.51'
9MW2	1512968.11	456507.34	Top PVC: 16.83'
9MW3	1512963.22	456602.8	Top PVC: 17.13'
9MW4	1513102.34	456789.38	Top PVC: 17.08'

Legend - M.S.L.: Mean Sea Level
Top PVC: Top north edge of PVC casing.

Table D-2
Groundwater Levels and Free Product Measurements
PACO PUMPS - 9201 San Leandro Street
Oakland, California

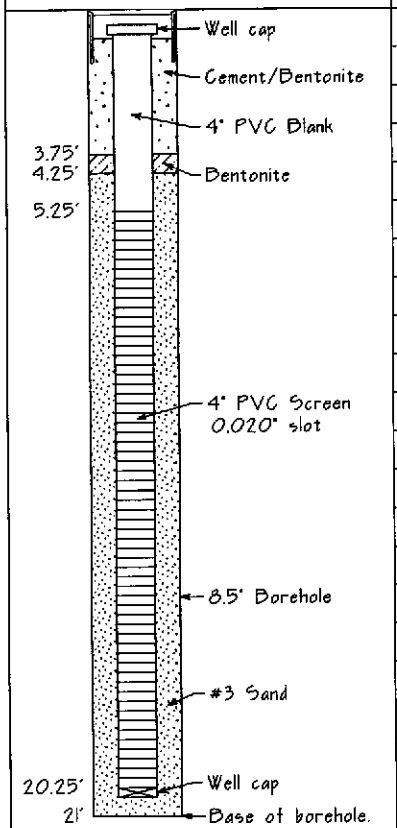
Date	Well ID	Water Level from Lid/Pavement:		Pavement vs. Casing Top	Water Level from Top of Casing:		Free Product
		Depth	Elevation	Δ	Depth	Elevation	
11/15/1992	9MW1	9.74'	+6.17'	0.40'	9.34'	+6.17'	no free product
11/16/1992	9MW2	10.45'	+6.78'	0.40'	10.05'	+6.78'	"oily" sheen
"	9MW3	10.64'	+6.78'	0.29'	10.35'	+6.78'	no free product
"	9MW4	9.41'	+8.21'	0.54'	8.87'	+8.21'	no free product
3/9/1993	9MW1	8.90'	+7.01'	0.40'	8.50'	+7.01'	no free product
"	9MW2	9.61'	+7.62'	0.40'	9.21'	+7.62'	"oily" sheen
"	9MW3	9.48'	+7.94'	0.29'	9.19'	+7.94'	slight "oily" sheen
"	9MW4	8.50'	+9.12'	0.54'	7.96'	+9.12'	slight "oily" sheen
7/21/1993	9MW1	9.40'	+6.51'	0.40'	9.00'	+6.51'	no free product
"	9MW2[1]	10.12'	+7.11'	0.40'	9.72'	+7.11'	"oily" sheen
"	9MW3[1]	11.36'	+6.06'	0.29'	11.07'	+6.06'	"oily" sheen
"	9MW4	8.60'	+9.02'	0.54'	8.06'	+9.02'	no free product
1/29/1994	9MW1	8.81'	+7.10'	0.40'	8.41'	+7.10'	no floating product
"	9MW2	9.36'	+7.87'	0.40'	8.96'	+7.87'	slight "oily" sheen
"	9MW3	9.69'	+7.73'	0.29'	9.40'	+7.73'	slight "oily" sheen
"	9MW4	8.42'	+9.20'	0.54'	7.88'	+9.20'	no floating product

Notes - » [1] = probably corrected, apparently switched.
» Elevation with respect to Mean Sea Level (MSL) and Kier & Wright survey.

DRILLING & CONSTRUCTION WELL LOG

Well #: 9 M W 1
Site: PACO Pumps
9201 San Leandro St.
Sheet: 1 of 1

Driller: Advance Drilling Co. Inc. Rig: CME-75 Method: Hollow Stem Auger
Started: November 4, 1992 Finished: November 4, 1992 Location: N. of Mnft. Blg.
Elevation: Top PVC:15.51'; Lid/PVT:15.91' Boring Depth: 21 feet bgs Screen Depth: 5.25'-20.25'bgs
Field Supervisor: Mark Jonas Supervising Engineer/Geologist: Dr. Jeff Sullivan, R.G.
Note:



Depth Below Surface (ft.)	Sample Depth Interval (ft.)	Lab. Sample I.D. #	G.W. Depth ⧖ drilling ⧗ w/casing	Graphic Log	Soil Description & Classification	Notes
		-0.5'			2'-2': SILTY GRAVEL (GM): ~20% grayish brown (5YR 3/2) silt; ~80% subangular/subrounded gravels.	0-2': Surfacing. 2'-2': fill.
		-1.5'			2'-5': GRAVELLY SANDY CLAY (CL): ~15% subangular/subrounded gravels; ~35% sand; ~50% dusky yellowish brown (10YR 2/2) clay.	2'-5': probably fill.
5'		-5'			5'-9': SANDY CLAY (CL): ~20% subangular/subrounded sand; ~80% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
10'		-10'	⧗			9.74': Well water level on 11/15/92.
15'		-15'	⧖		9'-21': SANDY CLAY (CL): ~20% subangular/subrounded sand; 80% moderately plastic dark yellowish brown (10YR 4/2) clay.	~16': First Water on 11/4/92.
20'		B-MW1-			Base of borehole.	
25'						
30'						
35'						

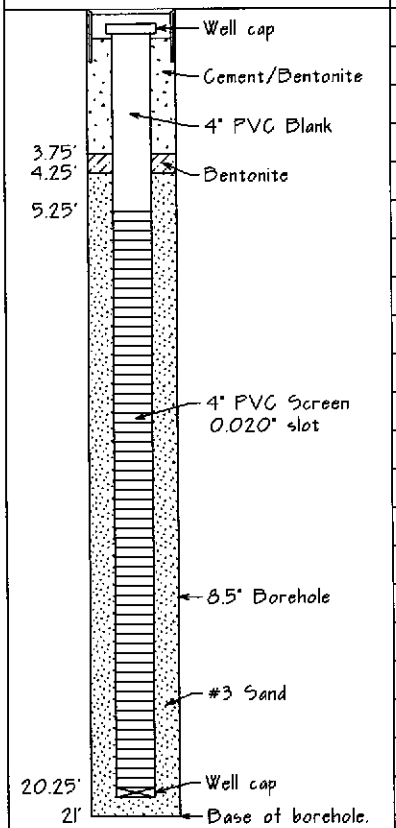
9MW1 Well Log

Figure D-1

DRILLING & CONSTRUCTION WELL LOG

Well #: 9 M W 2
Site: PACO Pumps
9201 San Leandro St.
Sheet: 1 of 1

Driller: Advance Drilling Co. Inc. Rig: CME-75 Method: Hollow Stem Auger
Started: November 3, 1992 Finished: November 3, 1992 Location: Welding Shop
Elevation: Top PVC:16.83'; Lid/PVT:17.23' Boring Depth: 21 feet bgs Screen Depth: 5.25'-20.25'bgs
Field Supervisor: Mark Jonas Supervising Engineer/Geologist: Dr. Jeff Sullivan, R.G.
Note:



Depth Below Surface (ft.)	Sample Depth Interval (ft.)	Lab. Sample I.D. #	G.W. Depth ▽ drilling ▼ w/casing	Graphic Log	Soil Description & Classification	Notes
		-0.5'			2'-4': GRAVELLY SILTY SAND (SM): <5% gravel; ~25% dusky yellowish brown (10YR 2/2) silt; ~70% subangular/subrounded sand.	0-2': Surfacing. 2'-4': possibly fill.
5'		-5'			4'-12': SANDY CLAY (CL): ~15 subrounded/subangular sand; ~85% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
10'		-10'	▼			10.45': Well water level on 11/16/92.
15'		-15' B-MW2-			12'-21': SANDY CLAY (CL): ~25 subrounded/subangular sand; ~75% moderately plastic dark yellowish brown (10YR 4/2) clay.	
20'					Base of borehole.	
25'						
30'						
35'						

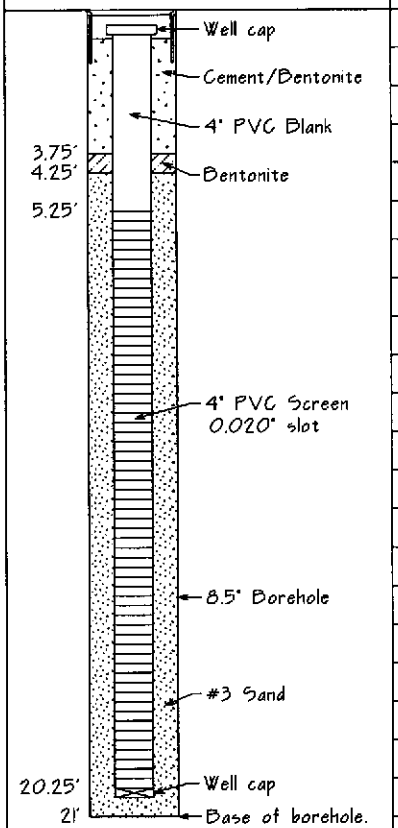
9MW2 Well Log

Figure D-2

DRILLING & CONSTRUCTION WELL LOG

Well #: 9 M W 3
Site: PACO Pumps
9201 San Leandro St.
Sheet: 1 of 1

Driller: Advance Drilling Co. Inc. Rig: CME-75 Method: Hollow Stem Auger
Started: November 4, 1992 Finished: November 4, 1992 Location: Former Excavation
Elevation: Top PVC:17.13'; Lid/PVT:17.42' Boring Depth: 21 feet bgs Screen Depth: 5.25'-20.25'bgs
Field Supervisor: Mark Jonas Supervising Engineer/Geologist: Dr. Jeff Sullivan, R.G.
Note: Soil at depths of 21' to 30' from pilot boring PB-MW3, adjacent to 9MW3.



Depth Below Surface (ft.)	Sample Depth Interval (ft.)	Lab. Sample I.D. #	G.W. Depth ⊻ drilling ⊻ w/casing	Graphic Log	Soil Description & Classification	Notes
					3"-2': GRAVELLY SILTY SAND (SM):~25% gravel; ~25% dusky yellowish brown (10YR 2/2); ~50% sand.	0-3": Surfacing. 3"-2': possibly fill.
					2'-5': SANDY CLAY (CL): ~30% subrounded/sub-angular sand; ~70% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
5'		-5'			5'-10': SANDY CLAY (CL): ~20% subrounded/sub-angular sand; ~80% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
10'		-10'	⊻		10'-15': SANDY CLAY (CL): ~25% subrounded/sub-angular sand; ~75% moderately plastic dark yellowish brown (10YR 4/2) clay.	10.64': Well water level on 11/16/92.
15'		-15'			15'-21': SANDY CLAY (CL): ~20% subrounded/sub-angular sand; ~80% moderately plastic dark yellowish brown (10YR 4/2) clay.	
20'		-20'			Base of borehole 9MW3.	21' Base 9MW3.
25'		-25'			21'-30': SANDY CLAY (CL):~20% subrounded/sub-angular sand; ~80% moderately plastic dark yellowish brown (10YR 4/2) clay.	From PB-MW3.
30'		-30'			Base of borehole PB-MW3.	30' Base PB-MW3.
35'		B-MW3-				

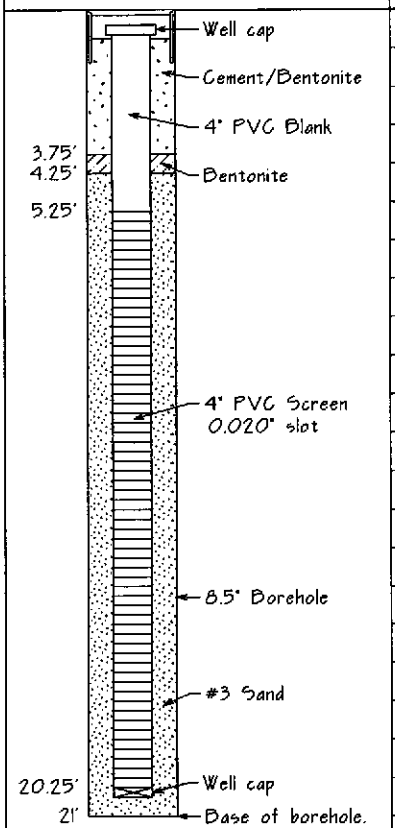
9MW3 Well Log

Figure D-3

DRILLING & CONSTRUCTION WELL LOG

Well #: 9MW4
Site: PACO Pumps
9201 San Leandro St.
Sheet: 1 of 1

Driller: Advance Drilling Co. Inc. Rig: CME-75 Method: Hollow Stem Auger
Started: November 9, 1992 Finished: November 9, 1992 Location: Inside Warehouse
Elevation: Top PVC:17.08'; Lid/PVT:17.62' Boring Depth: 21 feet bgs Screen Depth: 5.25'-20.25'bgs
Field Supervisor: Mark Jonas Supervising Engineer/Geologist: Dr. Jeff Sullivan, R.G.
Note: Cored 1.25' through floor of building: concrete (6"), rock (6"), & asphalt (3").



Depth Below Surface (ft.)	Sample Depth Interval (ft.)	Lab. Sample I.D. #	G.W. Depth ⊠ drilling ⧗ w/casing	Graphic Log	Soil Description & Classification	Notes
		-0.5'			0-1.25': Floor & sub-base: concrete; rock; asphalt.	0-1.25': Floor & Sub-base.
					1.25'-2': SANDY CLAY (CL): ~20% sand; ~80% olive black (5YR 2/1) clay.	
5'		-5'			2'-5': SANDY CLAY (CL): ~25% sand; ~75% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
					5'-10': SANDY CLAY (CL): ~15% sand; ~85% moderately plastic dusky yellowish brown (10YR 2/2) clay.	
10'		-10'	⧗			9.41': Well water level on 11/16/92.
			⊠		10'-13': SANDY CLAY (CL): ~30% sand; ~70% moderately plastic dark yellowish brown (10YR 4/2) clay.	13.5': First water on 11/9/92.
15'		-15'			13'-18.5': SANDY CLAY (CL): ~25% sand; ~75% moderately plastic dark yellowish brown (10YR 4/2) clay.	
20'		-20'			18.5'-21': SANDY CLAY (CL): ~20% sand; ~80% moderately plastic dark yellowish brown (10YR 4/2) clay.	
		B-MW4-			Base of borehole.	
25'						
30'						
35'						

9MW4 Well Log

Figure D-4