Jonas & Associates Inc.

GROUNDWATER MONITORING REPORT
Sampling Round Six

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

October 15, 1994

Report Prepared for:

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

GROUNDWATER MONITORING REPORT
Sampling Round Six
PACO PUMPS, INC.
9201 San Leandro Street, Oakland, California

Jonas and Associates Inc. Job No. PCO-220

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Professional Engineer #C042147

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

1.0 INTRODUCTION

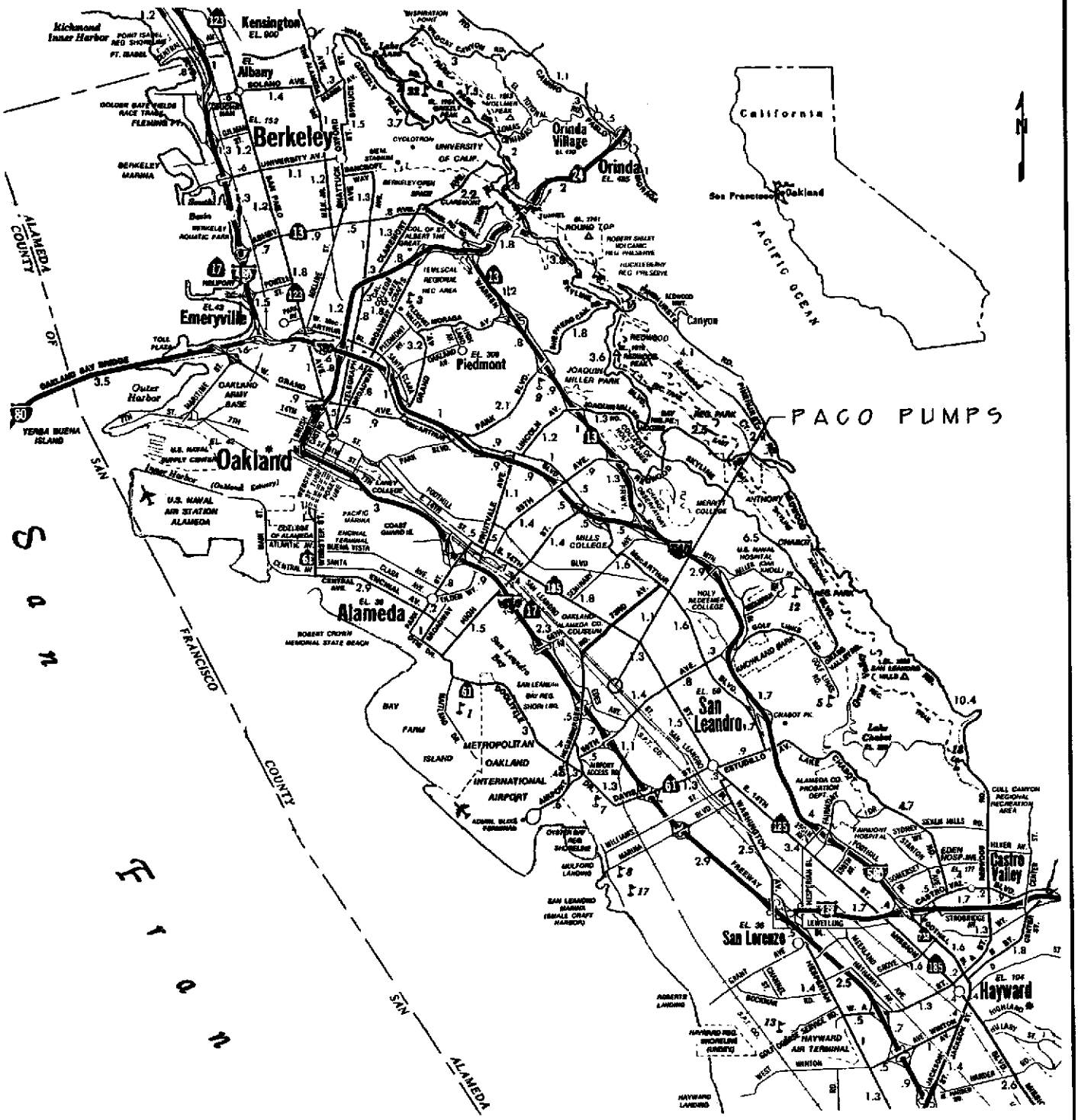
Jonas and Associates Inc. (J&A) has been retained by PACO Pumps Inc. (PACO or PACO Pumps) to perform the groundwater monitoring program at their property located at 9201 San Leandro Street, in Oakland, California 94603-1237. To date, six groundwater sampling rounds have been performed at this facility. The first five sampling rounds were presented in previous documents, identified in Section 4.0 References. This report presents the results of the sixth groundwater sampling round, performed on August 24, 1994.

PACO Pumps' environmental representative for this project is Mr. John Lilla {(512) 314-8500. 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 1131 Harbor Bay Parkway, 2nd Floor, Alameda 94502. The agency representative is Ms. Eva Chu {(510) 567-6762}.

1.1 Site Description

The PACO Pumps facility presented in this report 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 largely secured by a Cyclone fence and gates. PACO Pumps closed this facility and removed its equipment. Currently, this property is leased to a local company which primarily uses it to warehouse glassware. Adjacent to the PACO Pumps property is Saint Vincent DePaul Resale, where a previous investigation by Subsurface Consultants Inc. (1992) identified the presence of various chemicals on their site. Numerous drums were previously stored on the Saint Vincent DePaul's property.

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



Regional Location

PACO PUMPS
Oakland, California

Prepared by
JONAS AND ASSOCIATES INC.

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

Figure 1-1 | Drawing Number PC0217-10/91-1-1

1.2 Scope of Report

This "Groundwater Monitoring Report, Sampling Round Six" is presented in four sections and five 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 recent installation of monitoring well 9MW5, general well construction details for the five monitoring wells, the results of elevation and location surveys, and a local hydrogeologic cross-section. Section 3, Groundwater Sampling and Analysis, presents Round Six groundwater sampling procedures and results, along with water level and free product measurements. Section 4, 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 9MW5 permit, and the monitoring well 9MW5 survey report.

2.0 MONITORING WELLS AND HYDROGEOLOGY

This section of the report presents a brief history and construction details of the five monitoring wells located at the PACO Pumps' 9201 San Leandro Street facility. In addition, a summary of the location and elevation surveys performed by Kier & Wright is provided. A local hydrogeologic cross-section is also presented using lithologic logs from on-site monitoring well boreholes.

2.1 Monitoring Wells

Five monitoring wells are located at the PACO Pumps' facility. Four of these monitoring wells were drilled and installed during a period from November 3 through November 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. Monitoring well 9MW5 was drilled and installed on August 12, 1994. The installation details and rational for monitoring well 9MW5 are presented in section 2.1.1 of this report. All of the monitoring wells are screened at an apparently transmissive fine sand to silty clay found underneath the facility. Figure 2-1 presents the locations of the five monitoring wells, the Round Six analyses performed at each well, the previous excavation site, suspected former underground storage tank locations, Saint Vincent DePaul, and other on-site structures.

2.1.1 Recent Installation of Monitoring Well 9MW5

After reviewing the existing data associated with the site, Alameda County Health Care Services Agency required that a well be installed "downgradient from well MW-3". This requirement was stated in their May 4, 1994 letter titled "Additional Investigation at the Former Paco Pumps, Inc, 9201 San Leandro St. Oakland 94603". On June 13, 1994 the J&A/Newflo "Work Plan, Installation of Monitoring Well 9MW5" was submitted to Alameda County. On July 1, 1994 the agency provided approval of the Work Plan, in their letter titled "Workplan Approval for Paco Pumps, 9201 San Leandro St. Oakland 94603".

On August 12, 1994, monitoring well 9MW5 was installed by Advance Drill Company, Inc. (C-57 License # 607458). The well was installed near the southwest edge of the facility, in a fenced storage area. The total borehole depth for the well was 21.0 feet. A four-inch diameter screen was set from 5¼ to 20¼ feet bgs. The location of monitoring well 9MW5 is identified on the following Figure 2-1. The drilling and construction well log for 9MW5 is presented as Figure 2-2.

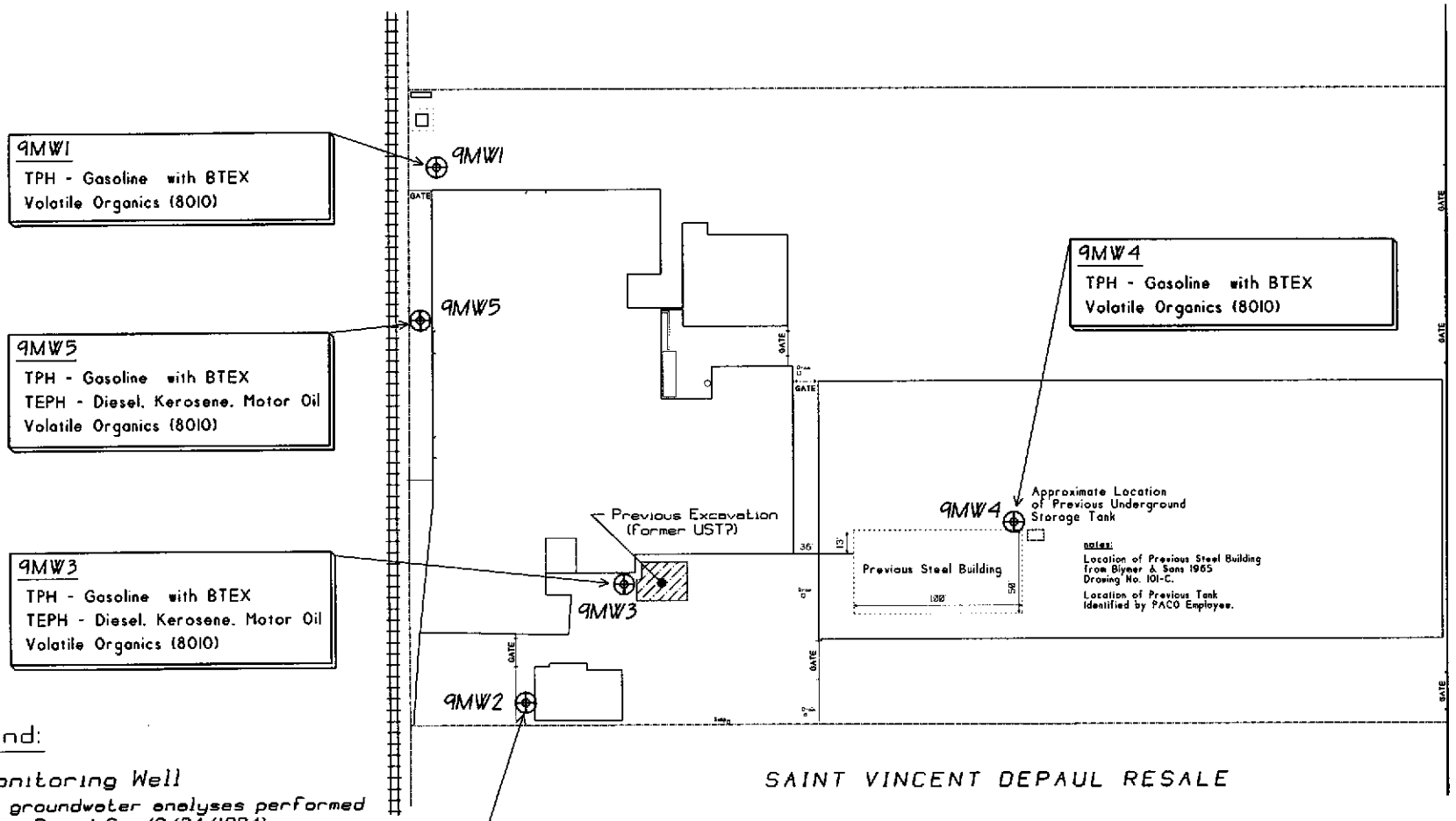
Rationale for Installing 9MW5

After reviewing the Jonas & Associates Inc., April 15, 1994, "Groundwater Monitoring Report, Sampling Rounds One Through Four" Ms. Eva Chu, of Alameda County Health Services, stated the following in a May 4, 1994 letter:

Drawn by M.J. 9-1-1994

Drawning Number PCO220-9/94:G6F2-1

Figure 2-1



Legend:

⊕ *Monitoring Well*
With groundwater analyses performed during Round Six (8/24/1994)

TPH = Total Petroleum Hydrocarbons
TEPH = Total Extractable Petroleum Hydrocarbons
BTEX = Benzene, Toluene, Ethyl Benzene, Total Xylenes
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'
9MW5	8-12-1994	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
50 0 50 100 Feet

Monitoring Wells and Round Six Groundwater Analyses

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 9-1-1994
Locations Approx.

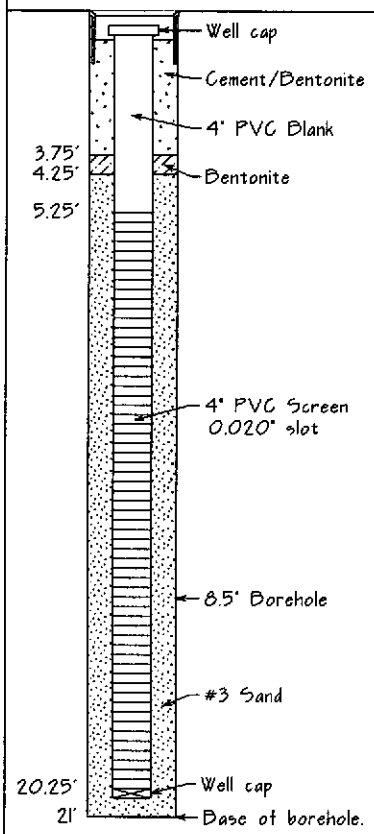
Figure 2-1

Drawing Number
PCO220-9/94:G6F2-1

DRILLING & CONSTRUCTION WELL LOG

Well #: 9 M W 5
Site: PACO Pumps
9201 San Leandro St.
Sheet: 1 of 1

Driller: Advance Drilling Co. Inc. Rig: CME-75 Method: Hollow Stem Auger
Started: August 12, 1994 Finished: August 12, 1994 Location: W. of Mnft. Blg.
Elevation: Top PVC:15.93'; Lid/PVT:16.18' Boring Depth: 21 feet bgs Screen Depth: 5.25'-20.25'bgs
Field Supervisor: Mark Jonas Supervising Engineer/Geologist: Dr. Vida G. Wright, P.E.
Note: Actual depth to first water was not able to be determined.



Depth Below Surface (ft.)	Soil Description & Classification	Notes
	3'-2': GRAVELY SANDY CLAY (CL): Poorly graded gravel-sand-clay mixture; ~25% subangular to subrounded .5 inch gravel; ~35% coarse sand with ~45% grayish brown (5YR 3/2) clay. Minor silt.	3': Asphalt.
5'	2'-6.5': SANDY CLAY (CL): ~25% subangular/ subrounded sand; ~75% dusky yellowish brown (10YR 2/2) clay. Minor silt.	
10'	6.5'-12': SANDY CLAY (CL): ~25% subangular/ subrounded sand; ~75% dusky yellowish brown (10YR 2/2) clay. Minor silt.	8.47': Well water depth 8/24/94.
15'	12'-16.5': SANDY CLAY (CL): ~30% subangular/ subrounded sand; ~70% olive gray (5Y 4/1) clay. Minor silt.	
20'	16.5'-21': SANDY CLAY (CL): ~30% subangular/ subrounded sand; ~70% dark yellowish brown (10YR 4/2) clay. Minor silt.	
25'	Base of borehole.	Base of borehole.
30'		
35'		

9MW5 Well Log

Figure 2-2

"At this time additional investigations are required to delineate the extent of the groundwater contaminant plume. Monitoring well MW-3 {9MW3} is detecting elevated levels of petroleum hydrocarbons (up to 40,000 ppb TPH-G, 2,900 ppb benzene), and low levels of chlorinated hydrocarbons. At least one well is required, downgradient from well MW-3"

This requirement by the lead agency presents the rationale for installation of the proposed monitoring well 9MW5.

Construction of Monitoring Well 9MW5

Prior to the mobilization of the drilling rig at the facility, a Drilling Permit Application was submitted to the Zone 7 Water Agency on August 5, 1994, for their approval. A copy of the Drilling Permit Application for 9MW5 is presented in Appendix D. On August 8, 1994 the drilling application was approved by the agency. Drilling and installation of monitoring well 9MW5 occurred on August 12, 1994. The monitoring well was drilled using a hollow-stem auger. The drilling and monitoring well installation was conducted by Advance Drilling Company Inc. (C-57 License #607458).

Advance Drilling used a CME-75 drilling rig to drill the borehole for the installation of the monitoring well. Hollow-stem auger drilling is performed with the use of a spiral scroll auger with a hollow central shaft. The auger had an outer diameter of 8.5-inches. A bit is attached at the bottom of the lower auger flight. Cuttings created by the bit are removed by the scroll as the stem of the auger is turned. The cuttings were collected in 55-gallon labeled drums and set aside for appropriate disposal.

Figure 2-2 provides a graphic representation of construction details for monitoring well 9MW5. After penetrating the asphalt pavement, the borehole was completed down to a depth of 21.0 feet bgs. The borehole diameter was 8.5-inches. Soil samples were collected at various depths for lithologic descriptions using the Unified Soil Classification System. After the borehole was complete, #3 sand was placed into the hole at an approximate range in depth of 20.25 to 21.0 feet. A weighted measuring tape was used to measure the approximate depths of the various materials placed into the borehole. Prior to placing the four-inch diameter schedule 40 PVC 0.02-inch screen and casing blank into the hole, they were removed from their protective packing material and screwed together. All joints were flush threaded and no solvents or cements were used on the PVC. At the bottom was a 3-inch cap, which was screwed to the 15 feet of screen. Approximately six feet of schedule 40 PVC blank was attached to the screen. The cap, screen, and blank was centered in the hole and placed on the #3 sand at the base of the borehole. Therefore, with the screen and blank placed in the borehole, the screen depth ranged from 5.5 feet to 20.25 feet bgs. The screen was positioned to extend above the possible groundwater surface and deep enough to screen the sandy clays found between 2 to 21 feet in depth.

After placing the cap, screen, and riser into the hole, #3 sand was placed in the outer annular space as a filter pack up to a depth of approximately 4.25 feet bgs. A bentonite

seal was placed into the hole from 3.75 to 4.25 feet, with one-half inch pellets. Portland Cement with approximately 5% bentonite was used to finish the seal from 3.75 feet to just below the surface. A christy-box was installed in Portland Cement, with the top at the same elevation as the surrounding land. The well was then locked and the top of the christy-box was bolted down.

During well construction, contamination of the borehole and well with the construction materials was prevented to the extent practicable. The following procedures were followed to help in preventing contamination:

» Drilling augers were steam-cleaned prior to usage;

» All screens and casings were assumed to be procured clean from the fabricators;

» The filter-pack material was transferred directly from the bag. Spilled material was not taken from the ground and placed into the boring; and

» No solvents or glues were used to connect the PVC cap, screen lengths and blank.

Monitoring well 9MW5 was developed by pumping water from inside the well casing with the aid of a down-hole submersible pump. Prior to developing the well, the water level was measured at 8.2 feet bgs. Approximately 25 gallons of water was removed from the well. With development of the well, the turbidity decrease significantly. All of the development water was placed into dated and labeled 55-gallon drums for future disposal.

2.1.2 Construction Details

All of the five 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 for analyses. Each of four monitoring wells have a fifteen foot well screen set between approximately 5 to 20 feet below ground surface (bgs). 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 and next to the Saint Vincent DePaul fenceline. 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.

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 remnants of a former tank appears to have been identified during the excavation. The tank was reportedly used to store gasoline. Excavation activities and results were documented in the October 16, 1992 "Site Characterization Report and Work Plan, PACO Pumps, 9201 San Leandro Street, Oakland, California". The well was drilled next to the excavation area and constructed on November 4, 1992. During drilling of the borehole for monitoring well 9MW3, the lithology encountered was 2 feet of an apparent fill composed of gravelly silty sand and 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. First water was not definitively identified. After the construction of monitoring well 9MW3, the well 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 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, 6" 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 identified at an approximate depth of 13.5 feet bgs. On November 16, 1992 well water was measured at 9.41 feet bgs.

Monitoring well 9MW5 was constructed on August 12, 1994. The well was installed in adjacent to the southwest fenceline of the facility and next to the former manufacturing building and the Central Pacific Railroad track. The lithology encountered during drilling ranged from a gravelly sandy clay to a sandy clay between 2 and 21 feet bgs. After the screen was installed, the well water level was measured at 8.22 feet bgs on August 24, 1994.

The following Table 2-1 present a summary of construction details for monitoring wells 9MW1, 9MW2, 9MW3, 9MW4, and 9MW5:

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

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"
9MW5	8/12/1994	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

2.1.3 Monitoring Well Survey

During August 1993, monitoring wells 9MW1, 9MW2, 9MW3, and 9MW4 were surveyed by Kier & Wright Civil Engineers & Surveyors, Inc.. In September 1994 they surveyed monitoring well 9MW5. The September 1, 1994 Kier & Wright survey report for monitoring well 9MW5 is provided in Appendix E of this report. 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.

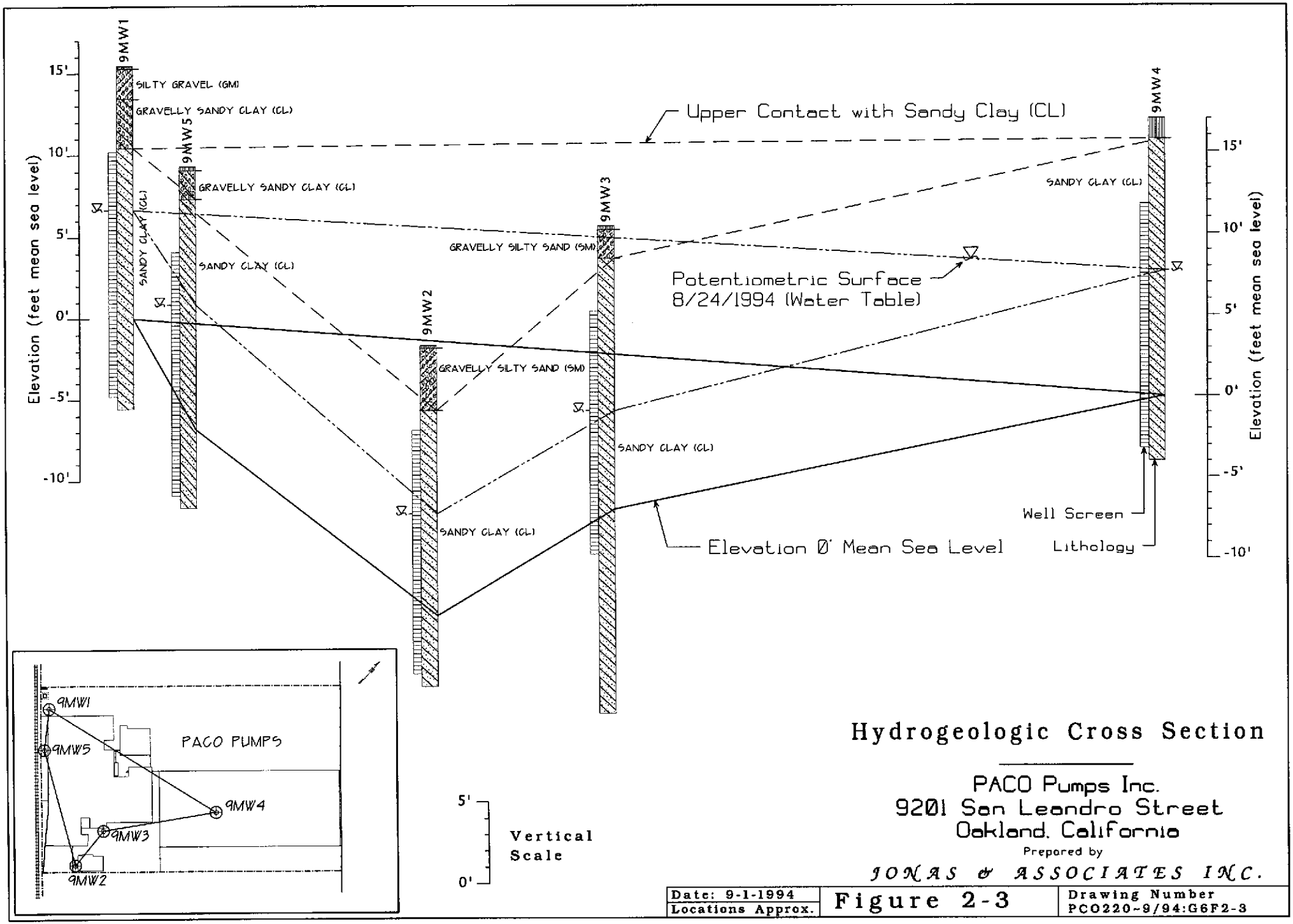
Table 2-2
Monitoring Well Survey Data
PACO PUMPS - 9201 San Leandro Street

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'
9MW5	1512763.21	456638.62	Top PVC: 15.93'

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

2.2 Hydrogeologic Cross Section

Figure 2-3 presents a hydrogeologic cross section using potentiometric and lithologic data associated with the monitoring wells.



Hydrogeologic Cross Section

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 9-1-1994 Locations Approx.	Figure 2-3	Drawing Number PCO220-9/94:G6F2-3

3.0 ROUND SIX GROUNDWATER SAMPLING AND ANALYSIS

Following is a discussion of the procedures and results associated with Round Six groundwater sampling of monitoring wells 9MW1, 9MW2, 9MW3, 9MW4, and 9MW5. Sampling for this round occurred on August 24, 1994 and represents summer seasonal conditions. Also included are Round Six water level and free product measurements.

A summary of all laboratory results from samples collected from the on-site monitoring wells is presented in Appendix A. The chain-of-custody record for the August 24, 1994 Round Six groundwater sampling event is presented in Appendix B. The laboratory data sheets associated with this sampling event are presented in Appendix C.

3.1 Groundwater Sampling Procedures

The sixth round of groundwater sampling was performed on August 24, 1994 and represents summer groundwater conditions. During the sampling event, 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. 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. The analysis and results of groundwater samples collected during Round Six are presented in Section 3.2. The following section presents relevant information associated with sampling each of the four monitoring wells.

Sampling Monitoring Well 9MW1

Prior to purging the well, the depth to groundwater in monitoring well 9MW1 was measured at 8.40 feet below the top of the casing. The water level was measured with an electronic water level indicator on a stretch resistant 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 25 gallons of groundwater was removed from the well. A well volume was calculated at approximately seven gallons. Temperature, pH, and electric conductivity were measured after each five gallons of purging. These parameters appeared to stabilize and were recorded on a groundwater sampling form. Monitoring well 9MW1 appeared to recover relatively rapidly during purging activities. 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 Round Six groundwater samples from monitoring well 9MW1 are identified as GW9-MW1-Q6. Four Volatile Organic Analysis (VOA) containers with HCl preservative were collected for analyses for Total Petroleum Hydrocarbons as Gasoline (TPH-G) (EPA Methods 5030/M.8015); Benzene, Toluene, Ethyl Benzene, and Total Xylenes (BTEX) (EPA Method 602); and Volatile Halogenated Organics (EPA Method 8010).

Sampling Monitoring Well 9MW2

Prior to purging, the water level in monitoring well 9MW2 was measured at 9.98 feet below the top of the casing. A clean, clear bailer was then used to collect a sample from the surface of the groundwater. A slight "oily" sheen was noted. The well was then purged of 22 gallons of well water. During completion of the purging activities the temperature, pH, and electric conductivity appeared to stabilize. During purging activities, the well appeared to recover relatively rapidly. Four VOA containers with HCl preservative were collected for analyses for TPH-G (EPA Methods 5030/M.8015); BTEX (EPA Method 602); and Volatile Halogenated Organics (EPA Method 8010). Two liters were also collected for Total Extractable Petroleum Hydrocarbons as -Diesel, -Kerosene, and -Motor Oil (TEPH-D,-K,-MO) (EPA Methods 3510/8015). The Round Six groundwater samples from monitoring well 9MW2 are identified as GW9-MW2-Q6.

Sampling Monitoring Well 9MW3

During this sampling event, the water level in monitoring well 9MW3 was measured at 11.08 feet below the top of the casing. A slight "oily" sheen was identified. After approximately 20 gallons were purged from the well, four VOA containers with HCL were collected for analyses of TPH-G (EPA Methods 5030/M.8015); BTEX (EPA Method 602); and Volatile Halogenated Organics (EPA Method 8010). Two liters were also collected for analysis of TEPH-D,-K,-MO (EPA Methods 3510/8015). Prior to sampling, temperature, pH, and electric conductivity of the purge water appeared to stabilize. During purging activities, recovery of the well was slower than the other monitoring wells. The Round Six groundwater samples for monitoring well 9MW3 are identified as GW9-MW3-Q6.

Sampling Monitoring Well 9MW4

During this sampling event, the groundwater level in monitoring well 9MW4 was measured at 8.75 feet below the top of the casing. No floating products were identified in this well. The well was purged of approximately 25 gallons. Prior to sampling this well, temperature, pH, and electric conductivity of the purge water appeared to stabilize. Recovery of the well during purging was relatively rapid. Four VOA containers with HCl were used to collect groundwater for analysis of TPH-G (EPA Methods 5030/M.8015); BTEX (EPA Method 602); and Volatile Halogenated Organics (EPA Method 8010). The Round Six groundwater samples for monitoring well 9MW4 are identified as GW9-MW4-Q6.

Sampling Monitoring Well 9MW5

Prior to purging the well, the depth to groundwater in monitoring well 9MW5 was measured at 8.22 feet below the top of the casing. The water level was measured with an electronic water level indicator on a stretch resistant 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 9MW5. After assessing for the presence of floating

product, approximately 25 gallons of groundwater was removed from the well. A well volume was calculated at approximately eight gallons. Temperature, pH, and electric conductivity were measured after each five gallons of purging. These parameters appeared to stabilize and were recorded on our groundwater sampling form. Monitoring well 9MW5 appeared to recover relatively rapidly during purging activities. 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 Round Six groundwater samples from monitoring well 9MW5 are identified as GW9-MW5-Q6. Four Volatile Organic Analysis (VOA) containers with HCl preservative were collected for analyses for Total Petroleum Hydrocarbons as Gasoline (TPH-G) (EPA Methods 5030/M.8015); Benzene, Toluene, Ethyl Benzene, and Total Xylenes (BTEX) (EPA Method 602); and Volatile Halogenated Organics (EPA Method 8010).

3.2 Groundwater Sampling Results

This section of the report presents the analytical results for the Round Six groundwater sampling event. Water level and free product measurements are also presented.

3.2.1 Analytical Results

As stated previously, summary tables, the Round Six chain-of-custody records and laboratory data sheets are presented in Appendix A, B, and C, respectively. The following Table 3-1 present a summary of the analyses performed and the analytes detected during the Round Six groundwater sampling event. Figure 3-1 provides a graphical display of the analytical results.

Table 3-1
August 1994 - Round Six
Groundwater Sampling Results
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Sample I.D.	Analysis	Detected Analytes	
GW9-MW1-Q6	TEPH as Gasoline (3510/M.8015)	none detected	
	BTEX (602)	none detected	
	Volatile Halogenated Organics (8010)	none detected	
GW9-MW2-Q6	TPH as Gasoline (5030/M.8015)	Benzene:	0.0061 mg/L
	BTEX (602)	Toluene:	0.0014 mg/L
	Volatile Halogenated Organics (8010)	Ethyl Benzene:	0.0005 mg/L
	TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	Total Xylenes:	0.0006 mg/L
		TEPH - Motor Oil:	0.6 mg/L
		1,1-DCA:	0.0010 mg/L
		others not detected	
GW9-MW3-Q6	TPH as Gasoline (5030/M.8015)	TPH Gasoline:	5.2 mg/L
	BTEX (602)	Benzene:	0.580 mg/L
	Volatile Halogenated Organics (8010)	Toluene:	0.076 mg/L
	TEPH as Diesel, Kerosene, Motor Oil (3510/8015)	Ethyl Benzene:	0.029 mg/L
		Total Xylenes:	0.022 mg/L
		TEPH - Kerosene:	0.082 mg/L
		1,2-DCA:	0.190 mg/L
		others not detected	
GW9-MW4-Q6	TEPH as Gasoline (3510/M.8015)	TPH as Gasoline:	0.07 mg/L
	BTEX (602)	Benzene:	0.0067 mg/L
	Volatile Halogenated Organics (8010)	Toluene:	0.0009 mg/L
		Ethyl Benzene:	0.0028 mg/L
		Total Xylenes:	0.0026 mg/L
		others not detected	
GW9-MW5-Q6	TPH as Gasoline (5030/M.8015)	TEPH - Diesel:	0.130[1] mg/L
	BTEX (602)	others not detected	
	Volatile Halogenated Organics (8010)		
	TEPH as Diesel, Kerosene, Motor Oil (3510/8015)		

Legend - TPH: Total Petroleum Hydrocarbons
TEPH: Total Extractable Petroleum Hydrocarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes
1,1-DCA: 1,1-Dichloroethane
1,2-DCA: 1,2-Dichloroethane
1/ undefined peaks in diesel range

Drawn by M.J. 9-1-1994

Drawing Number PCO220-9/94:G6F3-1

Figure 3-1

9MW1 (Water Elev.: 7.11')
August 24, 1994 sampling results:

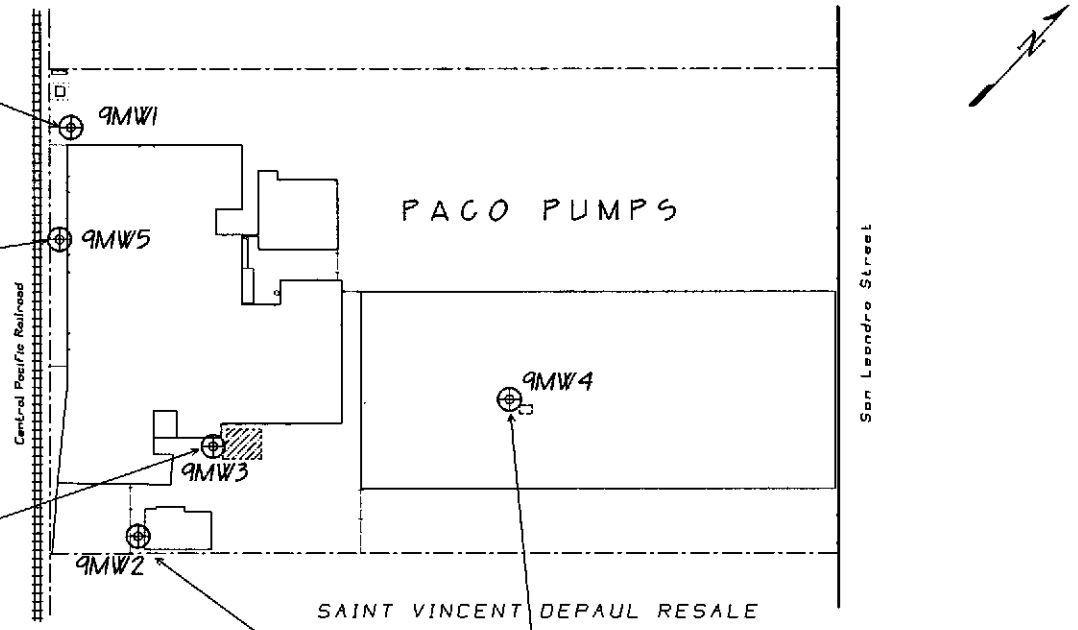
	(mg/L)		
TPH-Gasoline	ND(0.05)	Method 8010 VOCs: none detected	
Benzene	ND(0.0005)		
Toluene	ND(0.0005)		
Ethyl Benzene	ND(0.0005)		
Total Xylenes	ND(0.0005)		

9MW5 (Water Elev.: 7.71')
August 24, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	ND(0.05)	TEPH-Diesel	0.130
Benzene	ND(0.0005)	TEPH-Kerosene	ND(0.05)
Toluene	ND(0.0005)	TEPH-Motor Oil	ND(0.5)
Ethyl Benzene	ND(0.0005)	Method 8010 Volatile Organics: none detected	
Total Xylenes	ND(0.0005)		

9MW3 (Water Elev.: 6.05')
August 24, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	5.200	TEPH-Diesel	ND(0.05)
Benzene	0.580	TEPH-Kerosene	0.082
Toluene	0.076	TEPH-Motor Oil	ND(0.5)
Ethyl Benzene	0.029	Detected Method 8010 Volatile Organics:	
Total Xylenes	0.022	1,2-DCA	0.190



9MW2 (Water Elev.: 6.85')
August 24, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	ND(0.05)	TEPH-Diesel	ND(0.05)
Benzene	0.0061	TEPH-Kerosene	ND(0.05)
Toluene	0.0014	TEPH-Motor Oil	0.6
Ethyl Benzene	0.0005	Detected Method 8010 Volatile Organics:	
Total Xylenes	0.0006	1,1-DCA	0.0010

9MW4 (Water Elev.: 8.33')
August 24, 1994 sampling results:

	(mg/L)		(mg/L)
TPH-Gasoline	0.07	Method 8010 Volatile Organics: none detected	
Benzene	0.0067		
Toluene	0.0009		
Ethyl Benzene	0.0028		
Total Xylenes	0.0026		

Legend:

⊕ Monitoring Well

TPH = Total Petroleum Hydrocarbons

TEPH = Total Extractable Petroleum Hydrocarbons

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

DCA = Dichloroethane

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'
9MW5	8-24-1994	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
75 0 75 150 Feet

August 24, 1994 Groundwater Sampling Results

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 9-1-1994
Locations Approx.

Figure 3-1

Drawing Number PCO220-9/94:G6F3-1

3.2.2 Results of Water Level and Free Product Measurements

During each sampling round, water level measurements are recorded and a determination is made with respect to the presence or absence of a floating product or sheen.

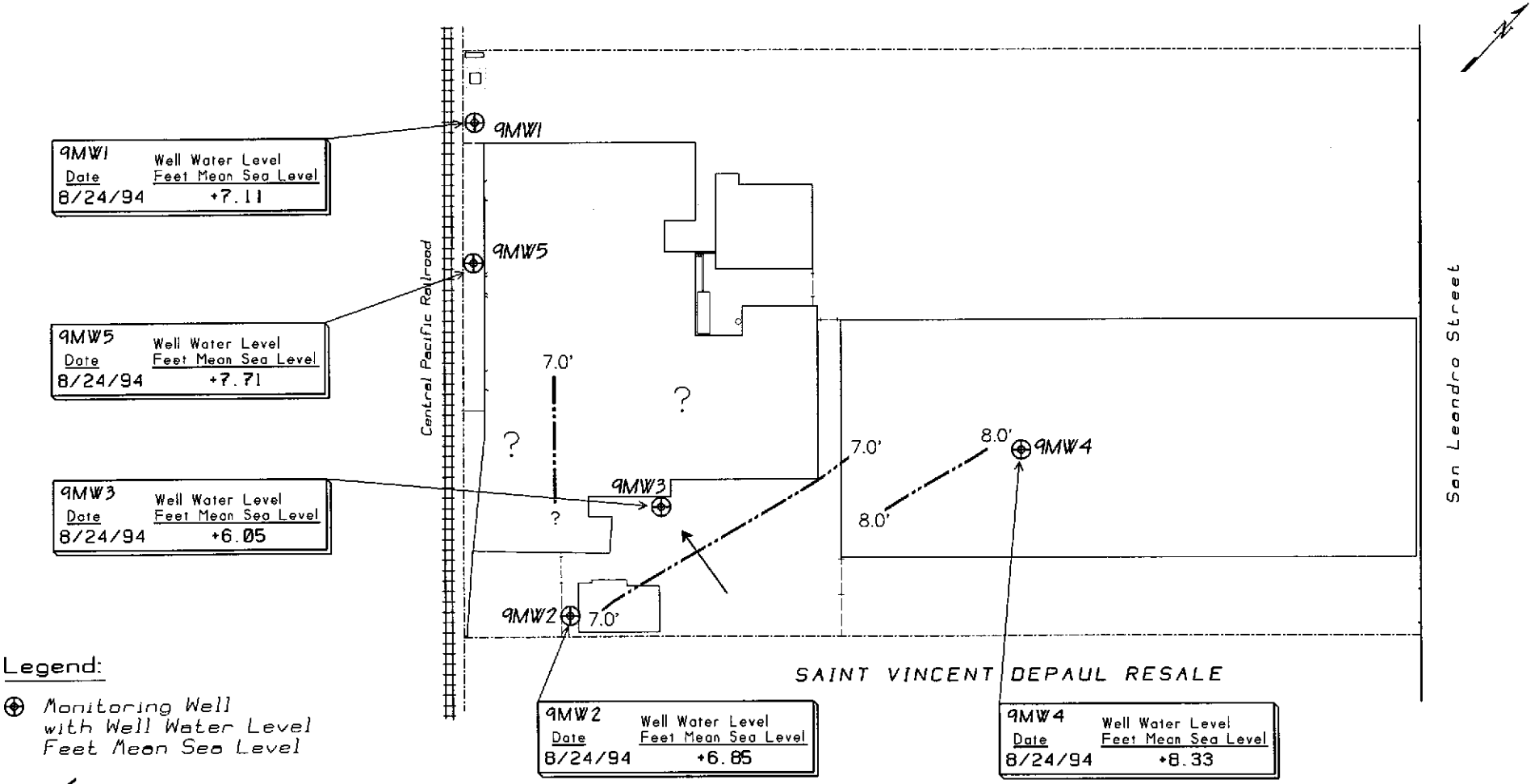
The following Table 3-2 provides a summary of the August 24, 1994 Round Six groundwater level and free product measurements. Water level elevations, with respect to mean sea level, were calculated using the results of the Kier & Wright surveys.

Table 3-2
Round Six - August 24, 1994
Groundwater Level and Free Product Measurement
PACO PUMPS - 9201 San Leandro Street
Oakland, California

Date	Well ID	Surveyed Casing Elevation M.S.L.	Water Level from Top of Casing		Pavement vs. Casing Top	Free Product
			Depth	Elevation M.S.L.		
8/24/1994	9MW1	15.51'	8.40'	7.11'	0.40'	no free product
8/24/1994	9MW2	16.83'	9.98'	6.85'	0.40'	slight "oily" sheen
8/24/1994	9MW3	17.13'	11.08'	6.05'	0.29'	slight "oily" sheen
8/24/1994	9MW4	17.08'	8.75'	8.33'	0.54'	no free product
8/24/1994	9MW5	15.93'	8.22'	7.71'	0.25'	no free product

Notes - » Elevation with respect to mean sea level (M.S.L.) and Kier & Wright survey.

Figures 3-2, graphically presents the results of the well water levels collected during the Round Six sampling event. As identified in Figure 3-2, based upon groundwater elevation data from monitoring wells 9MW2, 9MW3, and 9MW4, the apparent direction of groundwater flow during August 1994 is in a westerly direction from the Saint Vincent DePaul facility to PACO Pumps' property. But if all five wells are considered, the overall potentiometric surface appears to be relatively unusual, with the lowest water level elevation in monitoring well 9MW3. This may be a result of 1/ possible tidal influence and/or 2/ purging of a well after collection a water level measurement prior to proceeding to the next well. To potentially decrease the influence of these variables, subsequent water level measurements shall be collected in a relatively short timeframe and prior to purging any of the wells.



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'
9MW5	8-12-1994	21'	4"	8.5"	5.25'-20.25'	4.25'-21'

Scale
50 0 50 100 Feet

August 1994 - Summer Season Potentiometric/Water Table

PACO Pumps Inc.
9201 San Leandro Street
Oakland, California

Prepared by
JONAS & ASSOCIATES INC.

Date: 9-1-1994
Locations Approx.

Figure 3-2

Drawing Number PCO220-9/94:G6F3-2

Figure 3-2

Drawing Number PCO220-9/94:G6F3-2

4.0 REFERENCES

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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 9MW1									
GW9-MW1-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW1-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
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)[2]	ND(0.002)[2]	ND(0.002)[2]	ND(0.002)[2]
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	0.0023	0.0008	ND(0.0005)	ND(0.0005)
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	0.0061	0.0014	0.0005	0.0006
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[2]	0.220[2]	0.047[2]	0.036[2]
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	5.200	0.890	0.180	0.045	0.043
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	5.200	0.580	0.076	0.029	0.022
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
GW9-MW4-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	0.130	0.014	0.0032	0.0061	0.0047
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	0.070	0.0067	0.0009	0.0028	0.0026
Monitoring Well 9MW5									
GW9-MW5-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)

notes: TPH: Total Petroleum Hydrocarbons BTEX: Benzene, Toluene, Ethyl Benzene, Total Xylenes
[1] = probably corrected, apparently switched. [2] = EPA Method 624
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	-
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	0.6	-
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)	-
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	ND(0.050)	ND(0.5)	-
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.050)	0.082	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)	-
Monitoring Well 9MW5								
GW9-MW5-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	0.130	ND(0.050)	ND(0.5)	-

notes: TEPH: Total Extractable Petroleum Hydrocarbons PCBs: Polychlorinated Biphenyls
[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 9MW1															
GW9-MW1-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW1-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
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)
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.0023	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.0061	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
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)
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.890	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.580	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW4															
GW9-MW4-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.014	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	-	0.0067	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW5															
GW9-MW5-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)

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Table A/GW3[con't]

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

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Dibromo-chloromethane	1,2-Di-bromoethane	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
Monitoring Well 9MW1															
GW9-MW1-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW1-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
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)
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)
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)
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	0.0016	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	0.0010	ND(0.0005	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
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)
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)
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	0.250	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	0.190	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW4															
GW9-MW4-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	0.0025	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW5															
GW9-MW5-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	-	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)

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

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	cis-1,3-Di-chloropropene	trans-1,3-Di-chloropropene	Ethyl-Benzene	Freon 113	2-Hexanone	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methylene Chloride	Styrene	1,1,2,2-Tetra-chloroethane	Tetra-chloroethene
Monitoring Well 9MW1															
GW9-MW1-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
GW9-MW1-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
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)
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)
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(0.005)	ND(0.002)'	ND(0.002)	ND(0.002)
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	0.0005	-	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW3															
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.002)	ND(0.002)	0.049	-	-	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)	0.047	-	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.005)	ND(0.002)	ND(0.002)	ND(0.002)
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	0.045	ND(0.0005)	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	0.029	-	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW4															
GW9-MW4-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	0.0061	ND(0.0005)	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	0.0028	-	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)
Monitoring Well 9MW5															
GW9-MW5-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	-	-	-	ND(0.005)	-	ND(0.0005)	ND(0.0005)

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Table A/GW3$^{con't}$

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

Sample I.D.	Sampling Date	Depth (feet)	Matrix	Lab	Toluene	1,1,1-Tri-chloroethane	1,1,2-Tri-chloroethane	Tri-chloroethene	Trichlorofluoro-methane	Vinyl Acetate	Vinyl Chloride	Total Xylenes
Monitoring Well 9MW1												
GW9-MW1-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	ND(0.0005)
GW9-MW1-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	ND(0.0005)
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)
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)
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)
GW9-MW2-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	0.0008	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	ND(0.0005)
GW9-MW2-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	0.0014	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	0.0006
Monitoring Well 9MW3												
GW9-MW3-Q3[1]	7/21/93	5¼'-20¼'$_{screen}$	water	CrLab	0.050	ND(0.002)	ND(0.002)	0.0024	ND(0.002)	-	ND(0.002)	0.047
GW9-MW3-Q4	1/29/94	5¼'-20¼'$_{screen}$	water	CrLab	0.220	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	ND(0.002)	0.036
GW9-MW3-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	0.180	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	0.043
GW9-MW3-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	0.076	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	0.022
Monitoring Well 9MW4												
GW9-MW4-Q5	5/26/94	5¼'-20¼'$_{screen}$	water	CrLab	0.0032	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	0.0047
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	0.0009	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	0.0026
Monitoring Well 9MW5												
GW9-MW4-Q6	9/24/94	5¼'-20¼'$_{screen}$	water	CrLab	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	ND(0.0005)	-	ND(0.0005)	ND(0.0005)

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

SDG #: 9408290
CLIENT: JONAS
DUE: 08/31/94
REF #: 18086

9962 C/L 18086

CHROMALAB, INC.

2239 Omeg
510

Chain of Custody

8-24-94 PAGE 1 OF 1

PROJ. MGR. M.L. Jonas/V.G. Wright, PE
COMPANY Jonas & Associates Inc.
ADDRESS 2815 Mitchell Drive, Suite 209
Walnut Creek, California 94598

SAMPLERS (SIGNATURE) (PHONE NO.)

Jonas & Associates Inc. (510) 933-5360

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)		METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS
GW9-MW1-Q5 mj	8-24-94	11:17 AM	GW			X			X																4
GW9-MW2-Q5	8-24-94	1:55 PM	GW			X	X		X																6
GW9-MW3-Q5	8-24-94	12:45 PM	GW			X	X		X																6
GW9-MW4-Q5	8-24-94	3:45 PM	GW			X			X																4
GW9-MW5-Q5	8-24-94	10:10 AM	GW			X	X		X																6
						2 VOA w/HCL	2 Liter		2 VOA w/HCL																

PROJECT INFORMATION

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

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	26
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
5 day TAT

Round Six

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) Ellis Ishaya 5:30 (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) Ellis Ishaya (DATE) 8-24-94	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY) Jonas & Assoc. Inc.	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) Gary Cook 17:30 (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) Gary Cook 8/24/94 (DATE)
(COMPANY)	(COMPANY)	(LAB) ChromaLab

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas

Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994

re: Five samples for Gasoline and BTEX analysis

Matrix: WATER
Sampled: August 24, 1994 *Analyzed:* August 26, 1994
Method: EPA 5030/M.8015/602

RESULTS:

Sample #	Client Sample I.D.	Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
60958	GW9-MW1-06	N.D.	N.D.	N.D.	N.D.	N.D.
60959	GW9-MW2-06	N.D.	6.1	1.4	0.5	0.6
60960	GW9-MW3-06	5.2[a]	580[a]	76[a]	29[a]	22[a]
60961	GW9-MW5-06	N.D.	N.D.	N.D.	N.D.	N.D.
60962	GW9-MW4-06	0.07	6.7	0.9	2.8	2.6
Blank		N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Recovery		87%	83%	102%	113%	108%
Reporting Limit		0.05	0.5	0.5	0.5	0.5

a-Reporting limit: BTEX = 1.7 µg/L
Gasoline = 0.17 mg/L due to dilution needed.

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Ali Kharrazi
Organic Manager

cc

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

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994

Submission #: 9408290
REVISED: September 17, 1994

JONAS & ASSOCIATES, INC.

Atten: M.L. Jonas

Project: 9201 PACO PUMPS
Project#: PCO-220
Received: August 24, 1994

re: 3 samples for TEPH analysis

Matrix: WATER
Sampled: August 24, 1994
Analyzed: August 30, 1994
Method: 3510/8015

Sample #	Client Sample ID	Kerosene (µg/L)	Diesel (µg/L)	Motor Oil (mg/L)
60959	GW9-MW2-Q6	N.D.	N.D.	0.6
60960	GW9-MW3-Q6	82	N.D.	N.D.
60961	GW9-MW5-Q6	N.D.	130*	N.D.

* Unknown peaks eluting in diesel range quantified as diesel.

Blank	N.D.	N.D.	N.D.
Spike Recovery	---	74%	---
Dup Spike Recovery	---	83%	---
Reporting Limit	50	50	0.5

ChromaLab, Inc.

Alex Tam
Analytical Chemist

Ali Kharrazi
Organic Manager

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(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas
Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994
re: One sample for Volatile Halogenated Compounds analysis.

Sample I.D.: **GW9-MW1-Q6** *Matrix:* WATER
Sampled: August 24, 1994 *Analyzed:* August 26, 1994
Method: EPA 8010 *Spl#:* 60958

ANALYTE	Result (µg/L)	Reporting Limit (µg/L)	Blank Result (µg/L)	Blank spike Result (%)
CHLOROMETHANE	N.D.	0.5	N.D.	---
VINYL CHLORIDE	N.D.	0.5	N.D.	---
BROMOMETHANE	N.D.	0.5	N.D.	---
CHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	0.5	N.D.	---
TRICHLOROTRIFLUOROETHANE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHENE	N.D.	0.5	N.D.	96
METHYLENE CHLORIDE	N.D.	5.0	N.D.	---
TRANS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHANE	N.D.	0.5	N.D.	---
CIS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
CHLOROFORM	N.D.	0.5	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	0.5	N.D.	---
CARBON TETRACHLORIDE	N.D.	0.5	N.D.	---
1,2-DICHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROETHENE	N.D.	0.5	N.D.	110
1,2-DICHLOROPROPANE	N.D.	0.5	N.D.	---
BROMODICHLOROMETHANE	N.D.	0.5	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	0.5	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	0.5	N.D.	---
TETRACHLOROETHENE	N.D.	0.5	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	0.5	N.D.	---
CHLOROBENZENE	N.D.	0.5	N.D.	114
BROMOFORM	N.D.	0.5	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	0.5	N.D.	---
1,3-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,4-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,2-DICHLOROBENZENE	N.D.	0.5	N.D.	---

ChromaLab, Inc.

Aaron McMichael
Chemist

Ali Kharrazi
Organic Manager

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

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas
Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994
re: One sample for Volatile Halogenated Compounds analysis.

Sample I.D.: **GW9-MW2-Q6** *Matrix:* WATER
Sampled: August 24, 1994 *Analyzed:* August 26, 1994
Method: EPA 8010 *Spl#:* 60959

ANALYTE	Result (µg/L)	Reporting Limit (µg/L)	Blank Result (µg/L)	Blank spike Result (%)
CHLOROMETHANE	N.D.	0.5	N.D.	---
VINYL CHLORIDE	N.D.	0.5	N.D.	---
BROMOMETHANE	N.D.	0.5	N.D.	---
CHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	0.5	N.D.	---
TRICHLOROTRIFLUOROETHANE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHENE	N.D.	0.5	N.D.	96
METHYLENE CHLORIDE	N.D.	5.0	N.D.	---
TRANS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHANE	1.0	0.5	N.D.	---
CIS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
CHLOROFORM	N.D.	0.5	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	0.5	N.D.	---
CARBON TETRACHLORIDE	N.D.	0.5	N.D.	---
1,2-DICHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROETHENE	N.D.	0.5	N.D.	110
1,2-DICHLOROPROPANE	N.D.	0.5	N.D.	---
BROMODICHLOROMETHANE	N.D.	0.5	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	0.5	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	0.5	N.D.	---
TETRACHLOROETHENE	N.D.	0.5	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	0.5	N.D.	---
CHLOROBENZENE	N.D.	0.5	N.D.	114
BROMOFORM	N.D.	0.5	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	0.5	N.D.	---
1,3-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,4-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,2-DICHLOROBENZENE	N.D.	0.5	N.D.	---

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CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas
Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994
re: One sample for Volatile Halogenated Compounds analysis.

Sample I.D.: **GW9-MW3-Q6** *Matrix:* WATER
Sampled: August 24, 1994 *Analyzed:* August 30, 1994
Method: EPA 8010 *Spl#:* 60960

ANALYTE	Result (µg/L)	Reporting Limit (µg/L)	Blank Result (µg/L)	Blank spike Result (%)
CHLOROMETHANE	N.D.	0.5	N.D.	---
VINYL CHLORIDE	N.D.	0.5	N.D.	---
BROMOMETHANE	N.D.	0.5	N.D.	---
CHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	0.5	N.D.	---
TRICHLOROTRIFLUOROETHANE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHENE	N.D.	0.5	N.D.	107
METHYLENE CHLORIDE	N.D.	5.0	N.D.	---
TRANS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHANE	N.D.	0.5	N.D.	---
CIS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
CHLOROFORM	N.D.	0.5	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	0.5	N.D.	---
CARBON TETRACHLORIDE	N.D.	0.5	N.D.	---
1,2-DICHLOROETHANE	190	13	N.D.	---
TRICHLOROETHENE	N.D.	0.5	N.D.	104
1,2-DICHLOROPROPANE	N.D.	0.5	N.D.	---
BROMODICHLOROMETHANE	N.D.	0.5	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	0.5	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	0.5	N.D.	---
TETRACHLOROETHENE	N.D.	0.5	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	0.5	N.D.	---
CHLOROBENZENE	N.D.	0.5	N.D.	110
BROMOFORM	N.D.	0.5	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	0.5	N.D.	---
1,3-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,4-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,2-DICHLOROBENZENE	N.D.	0.5	N.D.	---

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Aaron McMichael
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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas
Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994
re: One sample for Volatile Halogenated Compounds analysis.

Sample I.D.: **GW9-MW4-Q6** *Matrix:* WATER
Sampled: August 24, 1994 *Analyzed:* August 26, 1994
Method: EPA 8010 *Spl#:* 60962

ANALYTE	Result (µg/L)	Reporting Limit (µg/L)	Blank Result (µg/L)	Blank spike Result (%)
CHLOROMETHANE	N.D.	0.5	N.D.	---
VINYL CHLORIDE	N.D.	0.5	N.D.	---
BROMOMETHANE	N.D.	0.5	N.D.	---
CHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	0.5	N.D.	---
TRICHLOROTRIFLUOROETHANE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHENE	N.D.	0.5	N.D.	96
METHYLENE CHLORIDE	N.D.	5.0	N.D.	---
TRANS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHANE	N.D.	0.5	N.D.	---
CIS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
CHLOROFORM	N.D.	0.5	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	0.5	N.D.	---
CARBON TETRACHLORIDE	N.D.	0.5	N.D.	---
1,2-DICHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROETHENE	N.D.	0.5	N.D.	110
1,2-DICHLOROPROPANE	N.D.	0.5	N.D.	---
BROMODICHLOROMETHANE	N.D.	0.5	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	0.5	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	0.5	N.D.	---
TETRACHLOROETHENE	N.D.	0.5	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	0.5	N.D.	---
CHLOROBENZENE	N.D.	0.5	N.D.	114
BROMOFORM	N.D.	0.5	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	0.5	N.D.	---
1,3-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,4-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,2-DICHLOROBENZENE	N.D.	0.5	N.D.	---

ChromaLab, Inc.

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

August 31, 1994 *Submission #:* 9408290

JONAS & ASSOCIATES, INC.
Atten: M.L. Jonas
Project: 9201 PACO PUMPS *Project#:* PCO-220
Received: August 24, 1994
re: One sample for Volatile Halogenated Compounds analysis.

Sample I.D.: **GW9-MW5-Q6** *Matrix:* WATER
Sampled: August 24, 1994 *Analyzed:* August 26, 1994
Method: EPA 8010 *Spl#:* 60961

ANALYTE	Result (µg/L)	Reporting Limit (µg/L)	Blank Result (µg/L)	Blank spike Result (%)
CHLOROMETHANE	N.D.	0.5	N.D.	---
VINYL CHLORIDE	N.D.	0.5	N.D.	---
BROMOMETHANE	N.D.	0.5	N.D.	---
CHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	0.5	N.D.	---
TRICHLOROTRIFLUOROETHANE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHENE	N.D.	0.5	N.D.	96
METHYLENE CHLORIDE	N.D.	5.0	N.D.	---
TRANS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
1,1-DICHLOROETHANE	N.D.	0.5	N.D.	---
CIS-1,2-DICHLOROETHENE	N.D.	0.5	N.D.	---
CHLOROFORM	N.D.	0.5	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	0.5	N.D.	---
CARBON TETRACHLORIDE	N.D.	0.5	N.D.	---
1,2-DICHLOROETHANE	N.D.	0.5	N.D.	---
TRICHLOROETHENE	N.D.	0.5	N.D.	110
1,2-DICHLOROPROPANE	N.D.	0.5	N.D.	---
BROMODICHLOROMETHANE	N.D.	0.5	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	0.5	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	0.5	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	0.5	N.D.	---
TETRACHLOROETHENE	N.D.	0.5	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	0.5	N.D.	---
CHLOROBENZENE	N.D.	0.5	N.D.	114
BROMOFORM	N.D.	0.5	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	0.5	N.D.	---
1,3-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,4-DICHLOROBENZENE	N.D.	0.5	N.D.	---
1,2-DICHLOROBENZENE	N.D.	0.5	N.D.	---

ChromaLab, Inc.

Aaron McMichael
Chemist

Ali Kharrazi
Organic Manager

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(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

Appendix D

Monitoring Well 9MW5 Permit

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT PACO PUMPS
9201 San Leandro Street (near 92nd Ave.)
Oakland, California 94603

CLIENT
Name PACO PUMPS, INC. Drake Blvd.
Address 80 E. Sir Francis Phone (415) 925-3100 (John Lilla)
City Larkspur, California Zip 94939

APPLICANT
Name Jonas & Associates Inc.
attn: Mark L. Jonas
Address 2815 Mitchell,Ste.209 Phone (510) 933-5360
City Walnut Creek, Calif. Zip 94598

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring X 1	XX	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger XX
Cable ___ Other ___

DRILLER'S LICENSE NO. C-57 #607458

WELL PROJECTS

Drill Hole Diameter	8.5	in.	Maximum Depth	21	ft.
Casing Diameter	4	in.	Number	1	
Surface Seal Depth	4	ft.			

GEOTECHNICAL PROJECTS

Number of Borings	___		Maximum Depth	___	ft.
Hole Diameter	___	in.			

ESTIMATED STARTING DATE 8/10/1994
ESTIMATED COMPLETION DATE 8/10/1994

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Mark Jonas Date 8/5/1995

FOR OFFICE USE

PERMIT NUMBER 94482
LOCATION NUMBER 9MW5

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 22 Aug 94
Wyman Hong
verbal authorization on August 8, 1994

31992

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
1131 Harbor Bay Parkway, 2nd Flr
Alameda CA 94502

StID 4245

July 1,1994

Mr. Mark Jonas
2815 Mitchell Dr, Suite 209
Walnut Creek 94598

Subject: Workplan Approval for Paco Pumps, 9201 San Leandro St. Oakland 94603

Dear Mr. Jonas:

I have completed review of Jonas & Associates' June 1994 Workplan for Installation of Monitoring Well 9MW5 for the above referenced site. The proposal to install a monitoring well downgradient of 9MW3 is acceptable. Field work should commence by **August 17, 1994.** Please notify this office at least 72 hours prior to the start of field activities. Quarterly monitoring/sampling of all wells should continue at this site until further notice.

Be advised, this department is requiring the adjacent site, St. Vincent de Paul, to conduct a groundwater investigation. We have not received a workplan for the proposed work, to date, but it is anticipated in the near future.

Since our office is in the midst of relocating, phone lines will not be available until the end of next week. In the meantime, I may be reached via (510) 271-4330, if you have any questions or comments.

Sincerely,

eva chu
Hazardous Materials Specialist

cc: John Lilla, Newflo Corp, 80 E. Sir Francis Drake Blvd, #1
Larkspur, CA 94939
files

paco1.2

NEWFLO Corporation
80 E. Sir Francis Drake Boulevard, Suite One
Larkspur, CA 94939
(415) 925-3100
Fax: (415) 925-3111

John D. Lilla
Vice President
Human Resources and Risk Management

June 13, 1994

Ms. Eva Chu
Hazardous Waste Specialist
Department of Environmental Health
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

SUBJECT: Submittal of Work Plan for Installation of Monitoring Well 9MW5 and Request for Better Groundwater Characterization by Saint Vincent DePaul

PROJECT: PACO Pumps, Inc.
9201 San Leandro Street
Oakland, CA 94603

Dear Ms. Chu:

We are pleased to submit the attached Work Plan for Installation of Monitoring Well 9MW5 at PACO Pumps' facility at 9201 San Leandro Street, located in Oakland, California. This Work Plan is in accordance with your May 4, 1994 letter titled "Additional Investigation at the Former PACO Pumps, Inc., 9201 San Leandro Street, Oakland 94603." Please relay your approval of the document or any comments you may have to our consultant, Jonas and Associates, Inc., through Mr. Mark Jonas (510-933-5360). As soon as your agency has determined that the Work Plan is acceptable, our consultant will submit the Drilling Permit Application to Zone 7 Alameda County. After we have received their approval, we will then have the monitoring well installed. We anticipate having this new well included in the August, 1994 groundwater sampling round.

As you are aware, we have been diligently performing soil and groundwater characterization and excavation activities at the PACO Pumps facility. Our concern is that we consider Saint Vincent DePaul has been relatively slow in the adequate characterization of their site. In particular, we are not aware that any groundwater monitoring wells have been installed, even though significant concentrations of trichloroethene, methylene chloride, lead, total oil and grease, TEPH as Diesel, and TEPII as Motor Oil, along with benzene, toluene, ethyl benzene, total zylenes, and chlorobenzene have been detected in soil on their site (Subsurface Consultant, December 16, 1992). Additional analytes may have been subsequently

detected, but we do not have any more current reports, if they are available. As you are aware, it appears that Saint Vincent DePaul is apparently upgradient from the PACO Pumps facility. Therefore, groundwater which may have been contaminated by Saint Vincent DePaul could enter into groundwater underlying the PACO Pumps facility. We have been detecting various chlorinated solvents (TCE, 1,1-DCA, 1,2-DCA) in groundwater under the PACO Pumps facility that may be associated with contamination at the Saint Vincent DePaul facility. During our last round of groundwater samples, collected on May 26, 1994, three of the four monitoring wells contained detectable concentration of chlorinated solvents. This included the upgradient well adjacent to the fence line with Saint Vincent DePaul.

Therefore, we respectfully request that your agency direct Saint Vincent DePaul to install at least three monitoring wells, and if analytes are detected, then they should install additional wells. In particular, since the highest concentrations of chlorinated solvents appear to be present in our monitoring well 9MW3, that we request that Saint Vincent DePaul should install a monitoring well upgradient of 9MW3 in an area near their fence line between the two properties. In addition, because chlorinated solvents have been detected on their facility, they should have their groundwater samples analyzed for Volatile Organic Compounds, in addition to testing for any other analytes that were previously found in their soil or water samples. To discuss this issue further, we are proposing a meeting with you, our consultant, and the agency project manager for the Saint Vincent DePaul site.

We welcome your support on this issue. Please contact us at your convenience if you would like to discuss either the Work Plan or the request for Saint Vincent DePaul to adequately characterize their underlying groundwater.

Sincerely,

/fa
Attach: June 13, 1994 "Work Plan - Installation of Monitoring Well 9MW5, PACO Pumps, 9201 San Leandro Street, Oakland, California"
cc - Mark Jonas, Jonas & Associates, Inc.

CONFIDENTIAL

STATE OF CALIFORNIA-DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

Appendix E

Monitoring Well 9MW5 Survey Report

KIER & WRIGHT
Civil Engineers & Surveyors, Inc.

September 1, 1994
Job No. 93552-1

Mr. Mark L. Jonas
Jonas & Associates, Inc.
Environmental Consultants
1056 Dale Place
Concord, California 94518
FAX 510/680-6511

RE: PACO PUMPS FACILITY

Dear Mark:

As you have requested we have surveyed monitoring well number 9MW5 at the Paco Pump Facilities in Oakland. This site was surveyed to Mean Seal Level.

If we can be of further services or if you have any questions, please do not hesitate to give us a call.

Sincerely,

KIER & WRIGHT

Tony McCants

Tony McCants

ACM/rl

Enclosure

5880 West Las Positas Boulevard, Suite 34 • Pleasanton, California 94588 • (510) 734-8060 • FAX (510) 734-8064

August 29, 1994
Job No. 93552-1

Table of Elevation & Coordinates
on
Monitoring Wells
Paco Pumps Facility
845 92nd Avenue - Oakland, CA

Well NO.	Northing	Easting	Elevation	
9 MW-5	456638.62	1512763.21	15.93	Cut notch on top North edge of PVC casing.

BENCHMARK:

City of Oakland Benchmark Number 721, cut square in North curb 92nd Avenue, 10 feet East of the Northeast corner of 92nd Avenue and G Street.

Elevation = 19.415 M.S.L.

BASIS OF BEARINGS AND COORDINATES:

The bearing North 60° 36' 22" East taken on the monument line of 92nd Avenue between the City of Oakland Monument located at the intersection of 92nd Avenue and G Street (coordinate values North 457,577.52 / East 1,514,029.15) and the City of Oakland Monument located at the intersection of 92nd Avenue and E Street (coordinate values North 457,937.52 / East 1,514,668.21) was taken as the basis of all bearings and coordinates shown hereon.