



A Report Prepared For:

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Attention: Mr. Richard Gilcrease

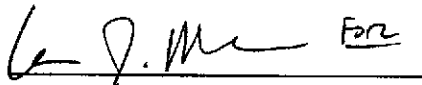
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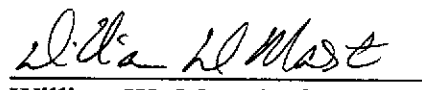
**QUARTERLY MONITORING REPORT
FORMER YOUNG'S CLEANERS
FOOTHILL SQUARE SHOPPING CENTER
OAKLAND, CALIFORNIA**

OCTOBER 13, 1998

By:



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TABLE OF CONTENTS

LIST OF TABLES III
LIST OF ILLUSTRATIONS III
1.0 INTRODUCTION 1
2.0 BACKGROUND INFORMATION 1
3.0 WATER-LEVEL MEASUREMENTS 2
4.0 GROUNDWATER SAMPLING 3
5.0 GROUNDWATER MONITORING RESULTS 4
 5.1 Water-Level Measurements 4
 5.2 Groundwater Chemistry 5
 5.2.1 Volatile Organic Compounds 5
 5.2.2 Inorganic Parameters 5
6.0 DISCUSSION AND RECOMMENDATIONS 6
7.0 REFERENCES 7

TABLES

ILLUSTRATIONS

APPENDICES A - GROUNDWATER SAMPLING REPORT

 B - LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

DISTRIBUTION

LIST OF TABLES

| | |
|---------|---|
| Table 1 | Water-Level Elevation Data – 1996 to Present |
| Table 2 | Analytical Results for Groundwater Samples - Organics |
| Table 3 | Analytical Results for Groundwater Samples - Inorganics |

LIST OF ILLUSTRATIONS

| | |
|---------|---|
| Plate 1 | Location Map |
| Plate 2 | Site Plan and Monitoring Well Location Map |
| Plate 3 | Water-Level Elevations - Shallow Groundwater Zone |
| Plate 4 | Water-Level Elevations - Deep Groundwater Zone |
| Plate 5 | PCE Concentrations - Shallow Groundwater Zone |
| Plate 6 | PCE Concentrations - Deep Groundwater Zone |

1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring performed by PES Environmental, Inc. (PES) during the third quarter of 1998 at Foothill Square Shopping Center (the Site) in Oakland, California (Plate 1). PES was retained by Drake Builders, Inc. to conduct quarterly groundwater monitoring at the site. The groundwater monitoring program consists of measuring the depth to groundwater in 14 onsite monitoring wells and two offsite wells on a quarterly basis, and purging and sampling 10 of the monitoring wells (Wells AMW-1, AMW-4, AMW-6 through AMW-9, MW-6, MW-7, FHS-MW-10, and FHS-MW-11).

The purposes of the groundwater monitoring program are to: (1) evaluate the presence of volatile organic compounds (VOCs) in groundwater; and (2) monitor water-level variations at the site. The quarterly monitoring program was performed in accordance with the procedures outlined in the PES documents *Proposal, Groundwater Monitoring, Former Young Cleaners, Foothill Square Shopping Center, Oakland, California*, dated April 8, 1996, and *Results of Additional Groundwater Investigation and Risk Evaluation, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California*, dated March 24, 1997 (PES, 1996, 1997b).

2.0 BACKGROUND INFORMATION

The site is located in a mixed residential and commercial area in Oakland, California. The site is presently used as a shopping center, which was developed in the early 1960's. Prior to development of Foothill Square Shopping Center, the site was a truck manufacturing plant. Young's Cleaners, formerly located in the center of the shopping center near Well AMW-6 (refer to Plate 2), operated at this location between 1984 and 1995. Prior to Young's Cleaners, a coin-operated dry cleaner, Norge Cleaners, operated at the location between 1962 and 1980.

Beginning in January 1989, Western Geologic Resources (WGR) installed and monitored Wells WGR-MW1 through WGR-MW5 on the property to characterize the subsurface conditions due to the presence of the adjacent ARCO gas station, northwest of the site. Wells WGR-MW1, WGR-MW2, WGR-MW3, and WGR-MW5 were installed in what WGR defined as the shallow groundwater bearing zone, and Well WGR-MW4 was installed in the deep groundwater bearing zone. Monitoring well locations in the vicinity of the site are shown on Plate 2.

Between 1991 and 1993, RESNA Consultants (RESNA) conducted an investigation on behalf of ARCO for the service station site in order to define the extent of gasoline contamination caused by leakage of petroleum fuels. During their investigation, RESNA reported detectable concentrations of chlorinated solvents in several soil borings. As a result, Alameda County Health Care Services Agency requested an investigation of the vertical and lateral extent of

tetrachloroethylene (PCE) on both the ARCO site and the Foothill Square Shopping Center by ARCO as documented in a March 23, 1993 letter to Drake Builders.

In order to verify the source and extent of the PCE contamination, Augeas Corporation (Augeas), on behalf of Drake Builders, installed Wells AMW-1 through AMW-3 in September through November of 1994, Wells AMW-4 and AMW-5 in March 1995, and Wells AMW-6 through AMW-9 in July through August of 1995. Using groundwater bearing zones defined by the WGR wells, Augeas installed Wells AMW-1 through AMW-7 in the shallow groundwater bearing zone, and Wells AMW-8 and AMW-9 in the deep groundwater bearing zone.

Augeas began groundwater monitoring of the AMW wells in October 1994. During September 1995, the last monitoring event conducted by Augeas, Wells WGR-MW1 through WGR-MW5, and MW-6 and MW-7 (installed on Foothill Square property by ARCO) were monitored in addition to the AMW wells (Augeas, 1995). Augeas concluded that the PCE contamination on the site was caused by a release of solvents from the dry cleaner and an associated underground sanitary sewer lateral. Between October 1995 and January 1996, All Environmental, Inc. (AEI) excavated the contaminated soil and backfilled the excavation with clean fill material. During the excavation process, Wells AMW-2 and AMW-3 were accidentally destroyed (AEI, 1996). Soil from the excavation was spread over the southeast corner of the property for treatment by aeration under a permit from the Bay Area Air Quality Management District. Well WGR-MW5 was covered by the soil and has not been accessible since that time.

due to excavation

In December 1996 and January 1997, PES implemented a groundwater investigation program to assess the potential offsite migration of PCE (PES, 1997b). The investigation consisted of HydroPunch™ sampling to collect groundwater samples from the shallow and deep groundwater zones. The results of the offsite groundwater sampling indicated that PCE was not detected offsite in the shallow groundwater zone. In the deep groundwater zone, PCE was detected northwest of the site near the ARCO station and offsite to the west of the site near the intersection of Myers Street and 107th Avenue (see Plate 2). On the basis of these data, PES concluded that the VOC groundwater plume had not migrated substantially off the Foothill Square Shopping Center site. To provide continuing data to evaluate the stability of the PCE groundwater plume, PES installed two sentry wells at the leading edge of the plume in July 1997 and added these wells to the quarterly monitoring program (PES, 1998a). Additionally, the analytical program was expanded at selected wells to evaluate the progress of intrinsic (i.e., naturally occurring) remediation by testing for geochemical parameters indicative of biological and chemical degradation.

3.0 WATER-LEVEL MEASUREMENTS

Water levels in 12 onsite groundwater monitoring wells (Wells WGR-MW2 through WGR-MW4, AMW-1, AMW-4 through AMW-9, MW-6, and MW-7) and two offsite sentry

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wells (FHS-MW-10 and FHS-MW-11) were measured by Blaine Tech Services, Inc. (Blaine Tech) of San Jose, California, under the direct supervision of PES, on August 12, 1998. Monitoring data was not collected from WGR-MW1 because the vault was inaccessible after being accidentally paved over with asphalt in June 1996. Well WGR-MW5 has been inaccessible since 1995, when it was covered by a stockpile of excavated soil.

Depth-to-water in the monitoring wells was measured from the top-of-casing (TOC) reference benchmark to a precision of 0.01 foot using an electronic water-level indicator/interface probe. Depth-to-water measurements were converted to water-level elevations referenced to mean sea level (MSL) by subtracting the depth to water from the TOC reference elevation. Free product was not observed in any of the monitoring wells.

To prevent cross-contamination between wells, the portion of the water-level indicator that was submerged in the well was cleaned between well measurements using a phosphate-free detergent/deionized water solution and double rinsed with deionized water.

4.0 GROUNDWATER SAMPLING

Groundwater samples were collected from AMW-1, AMW-4, AMW-6 through AMW-9, MW-6, MW-7, FHS-MW-10 and FHS-MW-11 on August 12, 1998, by Blaine Tech Services Inc. (Blaine Tech) of San Jose, California, under the direct supervision of PES.

Prior to well purging and groundwater sampling, Blaine Tech personnel measured dissolved oxygen in water in the well casing in six selected wells. This method of measurement minimally disturbs the groundwater in the well casing and provides the closest approximation to dissolved oxygen content in the adjacent aquifer. Groundwater samples were collected from each well after removing approximately three well volumes of water using either a positive displacement pump or disposable bailers. During well purging, the discharged water was monitored for pH, temperature, electrical conductivity, turbidity, and oxidation-reduction potential. Following purging, samples were collected from the wells using a stainless steel or teflon disposable bailer and transferred to the appropriate laboratory sample containers. The sample containers were filled slowly to minimize sample volatilization and to ensure that the sample was free of air bubbles. The samples were labeled to designate sample number, time and date collected, and analysis required. The samples were immediately placed in a chilled, thermally-insulated cooler. To prevent cross-contamination between wells, the pump and the bailer were decontaminated using a high pressure steam cleaner prior to initial use and after sampling at each well. Sampling procedures are documented in the groundwater sampling report prepared by Blaine Tech and included in Appendix A.

Groundwater samples were transported under chain-of-custody protocol to state-certified laboratories as listed below. Entech Analytical Labs, Inc. (Entech) of Sunnyvale, California analyzed samples from the 10 wells for halogenated VOCs using EPA Test Method 8010. Samples from six selected wells (AMW-6, AMW-7, AMW-9, MW-6, FHS-MW-10, and

FHS-MW-11) were analyzed for inorganic parameters consisting of: dissolved oxygen, oxidation-reduction potential, sulfate, nitrate, carbon dioxide, methane, and ferrous iron. As described above, Blaine Tech measured dissolved oxygen and oxidation-reduction potential using field instruments. Quanterra Environmental Services of Sacramento, California analyzed the groundwater samples for sulfate using EPA Test Method 300.0, nitrate by EPA Test Method 353.3/300.0, and carbon dioxide and methane using RSK 175. Environmental Technical Services of Petaluma, California analyzed the samples for ferrous iron using the Phenanthroline Method as described in Standard Methods for Examination of Water and Wastewater, 18th edition (SMEWW 3500-Fe D). The analytical laboratory reports and chain-of-custody records are included in Appendix B.

5.0 GROUNDWATER MONITORING RESULTS

This section presents a summary of water-level measurements and groundwater analyses results from the August 1998 sampling event.

5.1 Water-Level Measurements

During the current groundwater monitoring period, depth-to-water measurements for the shallow groundwater zone ranged from 10.55 feet (AMW-4) to 21.80 feet (AMW-1) below the top-of-casing (TOC). Shallow groundwater zone water-level elevations ranged from 38.21 feet MSL (WGR-MW3) to 54.24 feet MSL (AMW-4). Depth-to-water measurements for the deep groundwater zone ranged from 13.89 feet (AMW-8) to 30.17 feet (MW-6) below TOC. Deep groundwater zone water-level elevations ranged from 31.05 feet MSL (FHS-MW-10) to 50.66 feet MSL (AMW-8). Depth-to-water measurements and calculated water-level elevations since 1996 and for the current period are presented in Table 1. A complete tabulation of recent and historical data was presented in the first quarter 1998 groundwater monitoring report (PES, 1998b).

Plates 3 and 4 present water-level elevation contours developed from water levels measured on August 12, 1998, for the shallow and the deep groundwater zones, respectively. The contoured water-level elevations indicate that groundwater flow in both the shallow and the deep groundwater zones is generally west to northwest, as observed during previous groundwater monitoring events. The groundwater gradient in the shallow groundwater zone ranges from 0.038 to 0.049 foot per foot (ft/ft). In the deep groundwater zone, the groundwater gradient ranges from 0.084 ft/ft on the Foothill Square Shopping Center to 0.002 ft/ft offsite to the west.

5.2 Groundwater Chemistry

5.2.1 Volatile Organic Compounds

A summary of laboratory chemical analyses results since 1996 and for the current period is presented in Table 2; only those chemicals that were detected in at least one sample are listed. The analytical laboratory reports and chain-of-custody forms are presented in Appendix B. A complete tabulation of recent and historical data was presented in the first quarter 1998 groundwater monitoring report (PES, 1998b).

In the shallow groundwater zone, the highest concentrations of VOCs were detected in Wells AMW-6 and AMW-7, located downgradient of the former dry cleaners. During this monitoring period, PCE was detected at concentrations of 2.5, 1,600, and 210 micrograms per liter ($\mu\text{g/L}$) in Wells AMW-4, AMW-6, and AMW-7, respectively. PCE concentrations in shallow groundwater zone wells are presented on Plate 5. Trichloroethylene (TCE), cis-1,2-dichloroethylene (c-1,2-DCE), and trans-1,2-dichloroethylene (t-1,2-DCE) were also detected in Wells AMW-6, AMW-7, and MW-7 but generally at much lower concentrations than PCE. No VOCs were detected in the sample from Well AMW-1.

In the deep groundwater zone, PCE was detected in onsite Wells AMW-9 and MW-6 at concentrations of 87 and 14 $\mu\text{g/L}$, respectively. In offsite sentry well FHS-MW-11, PCE was detected at a concentration of 6.4 $\mu\text{g/L}$. PCE concentrations in deep wells are presented on Plate 6. No VOCs were detected in onsite Well AMW-8 or in offsite Sentry Well FHS-MW-10.

5.2.2 Inorganic Parameters

A summary of laboratory chemical analyses for inorganic parameters is presented in Table 3. Field measurements of dissolved oxygen and oxidation-reduction potential are included in Blaine Tech's report in Appendix A. The analytical laboratory reports and chain-of-custody forms are presented in Appendix B.

Groundwater samples from shallow zone Wells AMW-6 and AMW-7 were analyzed for inorganic parameters. In general, levels were fairly consistent with those observed during the previous monitoring periods. In the sample from AMW-7, oxidation reduction potential, sulfate, ferrous iron, and carbon dioxide levels were slightly elevated relative to AMW-6, while the dissolved oxygen and nitrate concentrations were slightly lower.

Groundwater samples from deep zone Wells AMW-9, MW-6, FHS-MW-10, and FHS-MW-11 were analyzed for inorganic parameters. In general, levels were fairly consistent with those observed during the previous monitoring periods. A sharp decline in the sulfate and nitrate concentrations was observed in MW-6, while the concentration of ferrous iron increased. The oxidation-reduction potentials in the four deep wells were slightly higher this period compared

with previous periods. At well MW-7, the concentration of carbon dioxide sharply decreased.

6.0 DISCUSSION AND RECOMMENDATIONS

The results of the organic and inorganic groundwater analyses (refer to Tables 1 and 2) indicate that intrinsic (naturally occurring) biodegradation may be occurring at several areas of the site.

At shallow zone Wells AMW-6 and AMW-7, the presence of PCE breakdown products (i.e., TCE, c-1,2-DCE, and t-1,2-DCE) indicate that degradation of the PCE is occurring just downgradient of the former source area.

The low oxidation-reduction potential in the four deep zone wells and elevated ferrous iron levels in deep zone Well MW-6 indicate a reducing environment. In addition, the relatively low concentrations of sulfate and nitrate in these wells suggest ongoing sulfate reduction and denitrification, respectively. This reducing environment may be contributing to declining PCE concentrations in groundwater monitored by the deep zone wells.

At sentry well FHS-MW-10, there continues to be no detected PCE in groundwater. The concentration of PCE in sentry well FHS-MW-11 is slightly lower than the two previous quarterly sampling events (PES, 1998b, c) and indicates that the well is appropriately located at the leading edge of the naturally attenuating plume.

On the basis of continued declines in VOC concentrations onsite in the area of the former dry cleaner, and continued low to non-detectable VOC concentrations in the offsite sentry wells, PES recommends modification of the quarterly groundwater monitoring program. Specifically, the revised program would consist of the following: (1) quarterly water-level elevation measurements at all groundwater monitoring wells; (2) quarterly groundwater sampling and analysis of VOCs using EPA Test Method 8010 in three shallow zone wells (AMW-4, AMW-6, AMW-7) and four deep zone wells (AMW-9, FHS-MW-10, FHS-MW-11, MW-6); (3) annual groundwater sampling and analysis during the fourth quarter of VOCs using EPA Test Method 8010 in shallow zone wells AMW-1 and MW-7, and the deep zone well AMW-8; and (4) quarterly data transmittals including water-level data tables and contour maps, and a summary table of laboratory analytical data and a brief discussion of VOC concentration trends in onsite and offsite monitoring wells. The fourth quarter report would also present summary data tables of all historical water-level elevation and groundwater laboratory analytical data.

7.0 REFERENCES

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Table 1. Water-Level Elevation Data - 1996 To Present*
 Former Young's Cleaners
 Foothill Square Shopping Center
 Oakland, California

| Well Number | Date Measured | Measured by | Top of Casing Elevation (feet MSL) | Depth to Water (feet bgs) | Water Table Elevation (feet MSL) |
|---------------------------|---------------------------|-------------|------------------------------------|---------------------------|----------------------------------|
| WGR-MW1 (Shallow Zone) | 4/16/96 | PES | 65.97 | 3.88 | 62.09 |
| | 7/17/96 | PES | 65.97 | NM | -- |
| | 10/23/96 | PES | 65.97 | NM | -- |
| | 9/29/97 | PES | 65.97 | NM | -- |
| | 12/16/97 | PES | 65.97 | NM | -- |
| | 3/31/98 | PES | 65.97 | NM | -- |
| | 8/12/98 | PES | 65.97 | NM | -- |
| | WGR-MW2 (Shallow Zone) | 4/16/96 | PES | 63.18 | 20.97 |
| 7/17/96 | | PES | 63.18 | 22.71 | 40.47 |
| 10/23/96 | | PES | 63.18 | 24.90 | 38.28 |
| 9/29/97 | | PES | 63.18 | 25.06 | 38.12 |
| 12/16/97 | | PES | 63.18 | 23.17 | 40.01 |
| 3/31/98 | | PES | 63.18 | 16.51 | 46.67 |
| 8/12/98 | | PES | 63.18 | 21.43 | 41.75 |
| WGR-MW3 (Shallow Zone) | | 2/28/96 | EMCON | 58.34 | 14.90 |
| | 4/16/96 | PES | 58.34 | 18.49 | 39.85 |
| | 5/28/96 | EMCON | 58.34 | 18.33 | 40.01 |
| | 7/17/96 | PES | 58.34 | 20.49 | 37.85 |
| | 8/19/96 | EMCON | 58.34 | 21.38 | 36.96 |
| | 10/23/96 | PES | 58.34 | 22.10 | 36.24 |
| | 11/21/96 | EMCON | 58.34 | 18.70 | 39.64 |
| | 3/26/97 | EMCON | 58.34 | 18.98 | 39.36 |
| | 5/20/97 | EMCON | 58.34 | 19.70 | 38.64 |
| | 8/18/97 | EMCON | 57.96** | 21.81 | 36.15 |
| | 9/29/97 | PES | 57.96** | 21.72 | 36.24 |
| | 12/16/97 | PES | 57.96** | 16.00 | 41.96 |
| | 3/31/98 | PES | 57.96** | 15.29 | 42.67 |
| | 8/12/98 | PES | 57.96** | 19.75 | 38.21 |
| | WGR-MW4 (Deep Zone) | 4/16/96 | PES | 60.02 | 23.26 |
| 7/17/96 | | PES | 60.02 | 25.89 | 34.13 |
| 10/23/96 | | PES | 60.02 | 28.12 | 31.90 |
| 9/29/97 | | PES | 60.02 | 28.16 | 31.86 |
| 12/16/97 | | PES | 60.02 | 27.14 | 32.88 |
| 3/31/98 | | PES | 60.02 | 18.01 | 42.01 |
| 8/12/98 | | PES | 60.02 | 24.41 | 35.61 |
| WGR-MW5 (Shallow Zone) | | 4/16/96 | PES | 68.94 | NM |
| | 7/17/96 | PES | 68.94 | NM | -- |
| | 10/23/96 | PES | 68.94 | NM | -- |
| | 9/29/97 | PES | 68.94 | NM | -- |
| | 12/16/97 | PES | 68.94 | NM | -- |
| | 3/31/98 | PES | 68.94 | NM | -- |
| | 8/12/98 | PES | 68.94 | NM | -- |

Table 1. Water-Level Elevation Data - 1996 To Present*
 Former Young's Cleaners
 Foothill Square Shopping Center
 Oakland, California

| Well Number | Date Measured | Measured by | Top of Casing Elevation (feet MSL) | Depth to Water (feet bgs) | Water Table Elevation (feet MSL) |
|-------------------------|---|-------------|------------------------------------|---------------------------|----------------------------------|
| AMW-1 (Shallow Zone) | 4/16/96 | PES | 64.51 | 21.99 | 42.52 |
| | 7/17/96 | PES | 64.51 | 22.65 | 41.86 |
| | 10/23/96 | PES | 64.51 | NM | — |
| | 9/29/97 | PES | 64.51 | 24.52 | 39.99 |
| | 12/16/97 | PES | 64.51 | 23.00 | 41.51 |
| | 3/31/98 | PES | 64.51 | 16.39 | 48.12 |
| | 8/12/98 | PES | 64.51 | 21.80 | 42.71 |
| AMW-2 (Shallow Zone) | Well abandoned during site remediation in 1995. | | | | |
| AMW-3 (Shallow Zone) | Well abandoned during site remediation in 1995. | | | | |
| AMW-4 (Shallow Zone) | 4/16/96 | PES | 64.79 | 11.00 | 53.79 |
| | 7/17/96 | PES | 64.79 | 12.42 | 52.37 |
| | 10/23/96 | PES | 64.79 | 14.10 | 50.69 |
| | 9/29/97 | PES | 64.79 | 13.32 | 51.47 |
| | 12/16/97 | PES | 64.79 | 12.18 | 52.61 |
| | 3/31/98 | PES | 64.79 | 7.57 | 57.22 |
| | 8/12/98 | PES | 64.79 | 10.55 | 54.24 |
| AMW-5 (Shallow Zone) | 4/16/96 | PES | 64.97 | 13.04 | 51.93 |
| | 7/17/96 | PES | 64.97 | 14.48 | 50.49 |
| | 10/23/96 | PES | 64.97 | 15.34 | 49.63 |
| | 9/29/97 | PES | 64.97 | 17.39 | 47.58 |
| | 12/16/97 | PES | 64.97 | 17.34 | 47.63 |
| | 3/31/98 | PES | 64.97 | 14.58 | 50.39 |
| | 8/12/98 | PES | 64.97 | 11.87 | 53.10 |
| AMW-6 (Shallow Zone) | 4/16/96 | PES | 65.10 | 12.10 | 53.00 |
| | 7/17/96 | PES | 65.10 | 13.59 | 51.51 |
| | 10/23/96 | PES | 65.10 | 15.30 | 49.80 |
| | 9/29/97 | PES | 65.10 | 15.43 | 49.67 |
| | 12/16/97 | PES | 65.10 | 15.77 | 49.33 |
| | 3/31/98 | PES | 65.10 | 10.09 | 55.01 |
| | 8/12/98 | PES | 65.10 | 12.93 | 52.17 |
| AMW-7 (Shallow Zone) | 4/16/96 | PES | 64.24 | 14.31 | 49.93 |
| | 7/17/96 | PES | 64.24 | 15.02 | 49.22 |
| | 10/23/96 | PES | 64.24 | 16.38 | 47.86 |
| | 9/29/97 | PES | 64.24 | 16.63 | 47.61 |
| | 12/16/97 | PES | 64.24 | 16.22 | 48.02 |
| | 3/31/98 | PES | 64.24 | 14.57 | 49.67 |
| | 8/12/98 | PES | 64.24 | 15.04 | 49.20 |

Table 1. Water-Level Elevation Data - 1996 To Present*
 Former Young's Cleaners
 Foothill Square Shopping Center
 Oakland, California

| Well Number | Date Measured | Measured by | Top of Casing Elevation (feet MSL) | Depth to Water (feet bgs) | Water Table Elevation (feet MSL) |
|--------------------------|---------------|-------------|------------------------------------|---------------------------|----------------------------------|
| AMW-8 (Deep Zone) | 4/16/96 | PES | 64.55 | 15.06 | 49.49 |
| | 7/17/96 | PES | 64.55 | 16.60 | 47.95 |
| | 10/23/96 | PES | 64.55 | 18.82 | 45.73 |
| | 9/29/97 | PES | 64.55 | 17.69 | 46.86 |
| | 12/16/97 | PES | 64.55 | 17.67 | 46.88 |
| | 3/31/98 | PES | 64.55 | 10.95 | 53.60 |
| | 8/12/98 | PES | 64.55 | 13.89 | 50.66 |
| AMW-9 (Deep Zone) | 4/16/96 | PES | 63.48 | 20.98 | 42.50 |
| | 7/17/96 | PES | 63.48 | 22.74 | 40.74 |
| | 10/23/96 | PES | 63.48 | 24.85 | 38.63 |
| | 9/29/97 | PES | 63.48 | 23.59 | 39.89 |
| | 12/16/97 | PES | 63.48 | 23.31 | 40.17 |
| | 3/31/98 | PES | 63.48 | 17.12 | 46.36 |
| | 8/12/98 | PES | 63.48 | 21.24 | 42.24 |
| FHS-MW-10 (Deep Zone) | 7/25/97 | PES | 52.37** | 26.00 | 26.37 |
| | 10/9/97 | PES | 52.37 | 27.92 | 24.45 |
| | 1/8/98 | PES | 52.37 | 24.43 | 27.94 |
| | 3/31/98 | PES | 52.37 | 14.68 | 37.69 |
| | 8/12/98 | PES | 52.37 | 21.32 | 31.05 |
| FHS-MW-11 (Deep Zone) | 7/25/97 | PES | 54.06** | 28.05 | 26.01 |
| | 9/29/97 | PES | 54.06 | 29.84 | 24.22 |
| | 12/16/97 | PES | 54.06 | 27.88 | 26.18 |
| | 3/31/98 | PES | 54.06 | 17.19 | 36.87 |
| | 8/12/98 | PES | 54.06 | 22.36 | 31.70 |
| MW-6 (Deep Zone) | 2/28/96 | EMCON | 61.78 | 30.18 | 31.60 |
| | 4/16/96 | PES | 61.78 | 29.40 | 32.38 |
| | 5/28/96 | EMCON | 61.78 | 30.29 | 31.49 |
| | 7/17/96 | PES | 61.78 | 32.36 | 29.42 |
| | 8/19/96 | EMCON | 61.78 | 33.54 | 28.24 |
| | 10/23/96 | PES | 61.78 | 35.56 | 26.22 |
| | 11/21/96 | EMCON | 61.78 | 35.70 | 26.08 |
| | 3/26/97 | EMCON | 61.78 | 30.15 | 31.63 |
| | 5/20/97 | EMCON | 61.78 | 32.40 | 29.38 |
| | 8/18/97 | EMCON | 61.78 | 35.47 | 26.31 |
| | 9/29/97 | PES | 61.78 | 36.27 | 25.51 |
| | 12/16/97 | PES | 61.78 | 34.55 | 27.23 |
| | 3/31/98 | PES | 61.78 | 24.01 | 37.77 |
| | 8/12/98 | PES | 61.78 | 30.17 | 31.61 |

Table 1. Water-Level Elevation Data - 1996 To Present*
 Former Young's Cleaners
 Foothill Square Shopping Center
 Oakland, California

| Well Number | Date Measured | Measured by | Top of Casing Elevation (feet MSL) | Depth to Water (feet bgs) | Water Table Elevation (feet MSL) |
|------------------------|---------------|-------------|------------------------------------|---------------------------|----------------------------------|
| MW-7 (Shallow Zone) | 2/28/96 | EMCON | 58.64 | 16.54 | 42.10 |
| | 4/16/96 | PES | 58.64 | 19.26 | 39.38 |
| | 5/28/96 | EMCON | 58.64 | 19.29 | 39.35 |
| | 7/17/96 | PES | 58.64 | 21.10 | 37.54 |
| | 8/19/96 | EMCON | 58.64 | 21.84 | 36.80 |
| | 10/23/96 | PES | 58.64 | 24.40 | 34.24 |
| | 11/21/96 | EMCON | 58.64 | 19.58 | 39.06 |
| | 3/26/97 | EMCON | 58.64 | 19.67 | 38.97 |
| | 5/20/97 | EMCON | 58.64 | 20.18 | 38.46 |
| | 8/18/97 | EMCON | 58.64 | 22.21 | 36.43 |
| | 9/29/97 | PES | 58.64 | 22.19 | 36.45 |
| | 12/16/97 | PES | 58.64 | 17.23 | 41.41 |
| | 3/31/98 | PES | 58.64 | 16.37 | 42.27 |
| | 8/12/98 | PES | 58.64 | 20.14 | 38.50 |

Notes:

* = Water-level measurement and elevation data prior to 1996 were presented in *Quarterly Monitoring Report, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California (PES, April 13, 1998)*.

** = Top of casing elevations were surveyed in November 1997.

feet MSL = Feet above mean sea level.

feet bgs = Feet below ground surface.

NM = Not measured.

PES = PES Environmental, Inc.

EMCON = EMCON Associates.

**Table 2. Analytical Results for Groundwater Samples - Organics
1996 To Present***
**Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California**

| Well Number | Date Sampled | Sampled by | PCE (µg/L) | TCE (µg/L) | c-1,2-DCE (µg/L) | t-1,2-DCE (µg/L) | Freon-12 (µg/L) |
|----------------------------------|--------------|------------|------------|------------|------------------|------------------|-----------------|
| WGR-MW1 (Shallow Zone) | 7/17/96 | PES | NS | NS | NS | NS | NS |
| | 10/23/96 | PES | NS | NS | NS | NS | NS |
| | 9/29/97 | PES | NS | NS | NS | NS | NS |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS |
| WGR-MW2 (Shallow Zone) | 4/16/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 7/17/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 10/23/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 9/29/97 | PES | NS | NS | NS | NS | NS |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS |
| WGR-MW3 (Shallow Zone) | 2/28/96 | EMCON | <1 | <1 | <1 | <1 | - |
| | 4/16/96 | PES | 0.6 | 16.51 | <0.5 | <0.5 | 11 |
| | 5/28/96 | EMCON | <1 | <1 | <1 | <1 | - |
| | 7/17/96 | PES | <0.5 | 0.7 | <0.5 | <0.5 | <2 |
| | 8/19/96 | EMCON | <1 | <1 | <1 | <1 | - |
| | 10/23/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 11/21/96 | EMCON | <1 | <1 | <1 | <1 | - |
| | 3/26/97 | EMCON | <1 | <1 | <1 | <1 | - |
| | 5/20/97 | EMCON | <0.5 | <0.5 | <0.5 | <0.5 | - |
| | 8/18/97 | EMCON | <5 | <5 | - | <5 | - |
| | 9/29/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| 8/12/98 | PES | NS | NS | NS | NS | NS | |
| WGR-MW4 (Deep Zone) | 4/16/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 7/17/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 10/23/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 9/29/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS |
| WGR-MW5 (Shallow Zone) | 7/17/96 | PES | NS | NS | NS | NS | NS |
| | 10/23/96 | PES | NS | NS | NS | NS | NS |
| | 9/29/97 | PES | NS | NS | NS | NS | NS |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS |

**Table 2. Analytical Results for Groundwater Samples - Organics
1996 To Present***
**Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California**

| Well Number | Date Sampled | Sampled by | PCE (µg/L) | TCE (µg/L) | c-1,2-DCE (µg/L) | t-1,2-DCE (µg/L) | Freon-12 (µg/L) |
|-------------------------|---|------------|------------|------------|------------------|------------------|-----------------|
| AMW-1 (Shallow Zone) | 4/16/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 7/17/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 10/23/96 | PES | NS | NS | NS | NS | NS |
| | 9/29/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 3/31/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| AMW-2 (Shallow Zone) | Well abandoned during site remediation in 1995. | | | | | | |
| AMW-3 (Shallow Zone) | Well abandoned during site remediation in 1995. | | | | | | |
| AMW-4 (Shallow Zone) | 4/16/96 | PES | 1,200 | 10 | <10 | <10 | <40 |
| | 7/17/96 | PES | 860 | <10 | <10 | <10 | <40 |
| | 10/23/96 | PES | 22 | 0.5 | <0.5 | <0.5 | <2 |
| | 9/29/97 | PES | 340 | 3 | <3 | <3 | <10 |
| | 12/16/97 | PES | 190 | <3 | <3 | <3 | <10 |
| | 3/31/98 | PES | 120 | <3 | <3 | <3 | <10 |
| | 8/12/98 | PES | 2.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| AMW-5 (Shallow Zone) | 4/16/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 7/17/96 | PES | 0.6 | <0.5 | <0.5 | <0.5 | <2 |
| | 10/23/96 | PES | 0.8 | <0.5 | <0.5 | <0.5 | <2 |
| | 9/29/97 | PES | 13 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS |
| AMW-6 (Shallow Zone) | 4/16/96 | PES | 1,900 | 110 | 20 | <10 | <40 |
| | 7/17/96 | PES | 3,300 | 280 | <30 | <30 | <100 |
| | 10/23/96 | PES | 2,900 | 140 | <30 | <30 | <100 |
| | 9/29/97 | PES | 4,600 | 580 | 220 | 70 | <200 |
| | 12/16/97 | PES | 4,300 | 510 | 190 | 60 | <200 |
| | 3/31/98 | PES | 2,100 | 270 | 110 | <50 | <200 |
| | 8/12/98 | PES | 1,600 | 150 | 54 | <25 | <25 |
| AMW-7 (Shallow Zone) | 4/16/96 | PES | 2,300 | 500 | 2,200 | 60 | <100 |
| | 7/17/96 | PES | 2,400 | 530 | 2,100 | <30 | <100 |
| | 10/23/96 | PES | 3,400 | 610 | 3,100 | 50 | <100 |
| | 9/29/97 | PES | 520 | 100 | 330 | 20 | <40 |
| | 12/16/97 | PES | 350 | 67 | 180 | 9 | <20 |
| | 3/31/98 | PES | 270 | 50 | 160 | 10 | <10 |
| | 8/12/98 | PES | 210 | 21 | 31 | <5 | <5 |

**Table 2. Analytical Results for Groundwater Samples - Organics
1996 To Present***
**Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California**

| Well Number | Date Sampled | Sampled by | PCE (µg/L) | TCE (µg/L) | c-1,2-DCE (µg/L) | t-1,2-DCE (µg/L) | Freon-12 (µg/L) |
|--------------------------|--------------|------------|------------|------------|------------------|------------------|-----------------|
| AMW-8 (Deep Zone) | 4/16/96 | PES | 0.8 | <0.5 | <0.5 | <0.5 | <2 |
| | 7/17/96 | PES | 1.6 | <0.5 | <0.5 | <0.5 | <2 |
| | 10/23/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 9/29/97 | PES | 0.7 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 3/31/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| AMW-9 (Deep Zone) | 4/16/96 | PES | 170 | 4 | 7 | <3 | <10 |
| | 7/17/96 | PES | 190 | 4 | <3 | <3 | <10 |
| | 10/23/96 | PES | 190 | <3 | <3 | <3 | <10 |
| | 9/29/97 | PES | 110 | <3 | <3 | <3 | <10 |
| | 12/16/97 | PES | 110 | <0.5 | 1.7 | <0.5 | <2 |
| | 3/31/98 | PES | 100 | <3 | <3 | <3 | <10 |
| | 8/12/98 | PES | 87 | <5 | <5 | <5 | <5 |
| FHS-MW-10 (Deep Zone) | 10/9/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 1/8/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 3/31/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| FHS-MW-11 (Deep Zone) | 9/29/97 | PES | 4.0 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | 9.9 | <0.5 | <0.5 | <0.5 | <2 |
| | 3/31/98 | PES | 9.7 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | 6.4 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-6 (Deep Zone) | 2/28/96 | EMCON | 960 | <20 | <20 | <20 | — |
| | 4/16/96 | PES | 1,400 | 10 | <10 | <10 | 100 |
| | 5/28/96 | EMCON | 970 | <20 | <20 | <20 | — |
| | 7/17/96 | PES | 590 | <5 | <5 | <5 | 30 |
| | 8/19/96 | EMCON | 820 | <20 | <20 | <20 | — |
| | 10/23/96 | PES | 680 | <5 | <5 | <5 | <20 |
| MW-6 (Cont.) | 11/21/96 | EMCON | 680 | <20 | <20 | <20 | — |
| | 3/26/97 | EMCON | 830 | <40 | <40 | <40 | — |
| | 5/20/97 | EMCON | 270 | <5 | <5 | <5 | — |
| | 8/18/97 | EMCON | 420 | <62.5 | — | <62.5 | — |
| | 9/29/97 | PES | 670 | <10 | <10 | <10 | <40 |
| | 12/16/97 | PES | 500 | 8 | <5 | <5 | 40 |
| | 3/31/98 | PES | 12 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | 14 | <0.5 | <0.5 | <0.5 | <0.5 |

**Table 2. Analytical Results for Groundwater Samples - Organics
1996 To Present*
Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California**

| Well Number | Date Sampled | Sampled by | PCE (µg/L) | TCE (µg/L) | c-1,2-DCE (µg/L) | t-1,2-DCE (µg/L) | Freon-12 (µg/L) |
|------------------------|--------------|------------|------------|------------|------------------|------------------|-----------------|
| MW-7 (Shallow Zone) | 2/28/96 | EMCON | <10 | <10 | <10 | <10 | - |
| | 4/16/96 | PES | <0.5 | <0.5 | <0.5 | <0.5 | 8 |
| | 5/28/96 | EMCON | <10 | <10 | <10 | <10 | - |
| | 7/17/96 | PES | <0.5 | 0.6 | 0.6 | <0.5 | <2 |
| | 8/21/96 | EMCON | <1 | <1 | <1 | <1 | - |
| | 10/23/96 | PES | <0.5 | <0.5 | 0.6 | <0.5 | <2 |
| | 11/21/96 | EMCON | <10 | <10 | <10 | <10 | - |
| | 3/26/97 | EMCON | <20 | <20 | <20 | <20 | - |
| | 5/20/97 | EMCON | <10 | <10 | <10 | <10 | - |
| | 8/18/97 | EMCON | <10 | <10 | <10 | <10 | - |
| | 9/29/97 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 12/16/97 | PES | 0.7 | <0.5 | <0.5 | <0.5 | <2 |
| | 3/31/98 | PES | <0.5 | <0.5 | <0.5 | <0.5 | <2 |
| | 8/12/98 | PES | <0.5 | <0.5 | 0.8 | <0.5 | <0.5 |

Notes:

* = Water-level measurement and elevation data prior to 1996 were presented in *Quarterly Monitoring Report, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California (PES, April 13, 1998).*

PCE = Tetrachloroethene.

EMCON = EMCON Associates.

TCE = Trichloroethene.

<0.5 = Not detected at or above the detection limit indicated.

c-1,2-DCE = cis-1,2-dichloroethene.

ND = Not detected, detection limit not reported by EMCON.

t-1,2-DCE = trans-1,2-dichloroethene.

NS = Not sampled.

Freon 12 = Dichlorodifluoromethane.

- = Not analyzed.

µg/L = Micrograms per liter.

PES = PES Environmental, Inc.

Table 3. Analytical Results for Groundwater Samples - Inorganics
Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California

| Sample Location | Date Sampled | Sampled By | Dissolved Oxygen (mg/L) | Ox-Redux Potential (mV) | Sulfate (mg/L) | Nitrate (mg/L) | Ferrous Iron (mg/L) | Methane (mg/L) | Carbon Dioxide (mg/L) |
|---------------------------|--------------|------------|-------------------------|-------------------------|----------------|----------------|---------------------|----------------|-----------------------|
| AMW-4 (Shallow Zone) | 9/29/97 | PES | 0.45 | 149 | 54.9 | 3.8 | 0.18 | 0.0029 | 8.4 |
| | 12/16/97 | PES | NS | NS | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS | NS | NS |
| AMW-8 (Shallow Zone) | 9/29/97 | PES | 0.55 | 245 | 45.9 | 5.3 | 0.19 | <0.0010 | 11 |
| | 12/16/97 | PES | 0.9 | 132 | 47.9 | 5.7 | 0.13 | 0.056 | 4,899 * |
| | 3/31/98 | PES | 0.8 | 63 | 49.9 | 6.3 | 0.14 | 0.0055 | 86.956 |
| | 8/12/98 | PES | 1.0 | 70 | 52.4 | 6.6 | 0.20 | <0.0010 | 82 |
| AMW-7 (Shallow Zone) | 9/29/97 | PES | 0.64 | 109 | 92.2 | 6.1 | 0.01 | <0.0010 | 33 |
| | 12/16/97 | PES | 0.5 | 118 | 89.7 | 5.7 | 0.05 | 0.020 | 15,000 * |
| | 3/31/98 | PES | 0.6 | 41 | 80.1 | 4.0 | 0.09 | 0.0026 | 188.771 |
| | 8/12/98 | PES | 0.7 | 49 | 74.3 | 3.7 | 0.68 | <0.0010 | 200 |
| AMW-9 (Deep Zone) | 9/29/97 | PES | 0.32 | 16.51 | 39.7 | 3.5 | 0.90 | <0.0010 | 7.7 |
| | 12/16/97 | PES | 0.6 | 83 | 27.3 | 2.7 | 0.26 | 0.071 | 2,211 * |
| | 3/31/98 | PES | 4.4 | 20 | 40.0 | 4.0 | 0.09 | <0.0010 | 35.858 |
| | 8/12/98 | PES | 3.3 | 41 | 37.9 | 3.9 | 0.07 | <0.0010 | 32 |
| WGR-MW3 (Shallow Zone) | 9/29/97 | PES | 0.17 | 212 | 28.7 | 0.054 | 1.41 | 0.032 | 23 |
| | 12/16/97 | PES | NS | NS | NS | NS | NS | NS | NS |
| | 3/31/98 | PES | NS | NS | NS | NS | NS | NS | NS |
| | 8/12/98 | PES | NS | NS | NS | NS | NS | NS | NS |
| FHS-MW-10 (Deep Zone) | 10/9/97 | PES | 1.6 | 25 | 44.6 | 4.3 | 0.18 | <0.0010 | 27 |
| | 1/8/98 | PES | 2.1 | 134 | 43.3 | 4.1 | <0.01 | <0.00024 | 3,939 * |
| | 3/31/98 | PES | 1.6 | 62 | 47.0 | 4.6 | <0.01 | <0.0010 | 38.433 |
| | 8/12/98 | PES | 1.8 | 80 | 46.5 | 4.5 | 0.05 | <0.0010 | 49 |
| FHS-MW-11 (Deep Zone) | 9/29/97 | PES | 0.89 | 85 | 67.1 | 5.8 | 0.17 | 0.0019 | 0.3 |
| | 12/16/97 | PES | 2.2 | 163 | 45.3 | 5.4 | 0.08 | <0.00024 | 11,000 * |
| | 3/31/98 | PES | 2.4 | 18 | 31.4 | 6.1 | 0.01 | <0.0010 | 7.940 |
| | 8/12/98 | PES | 2.3 | 28 | 31.2 | 6.0 | <0.01 | <0.0010 | 0.220 |
| MW-6 (Deep Zone) | 9/29/97 | PES | 1.81 | 73 | 37.5 | 4.3 | <0.01 | <0.0010 | 11 |
| | 12/16/97 | PES | 0.5 | 143 | 37.7 | 2.8 | 0.03 | <0.00024 | 3,939 * |
| | 3/31/98 | PES | 1.0 | 35 | 36.7 | 0.45 | 0.12 | <0.0010 | 10.874 |
| | 8/12/98 | PES | 1.1 | 30 | 8.2 | 0.13 | 0.45 | 0.015 | 24 |

Notes:

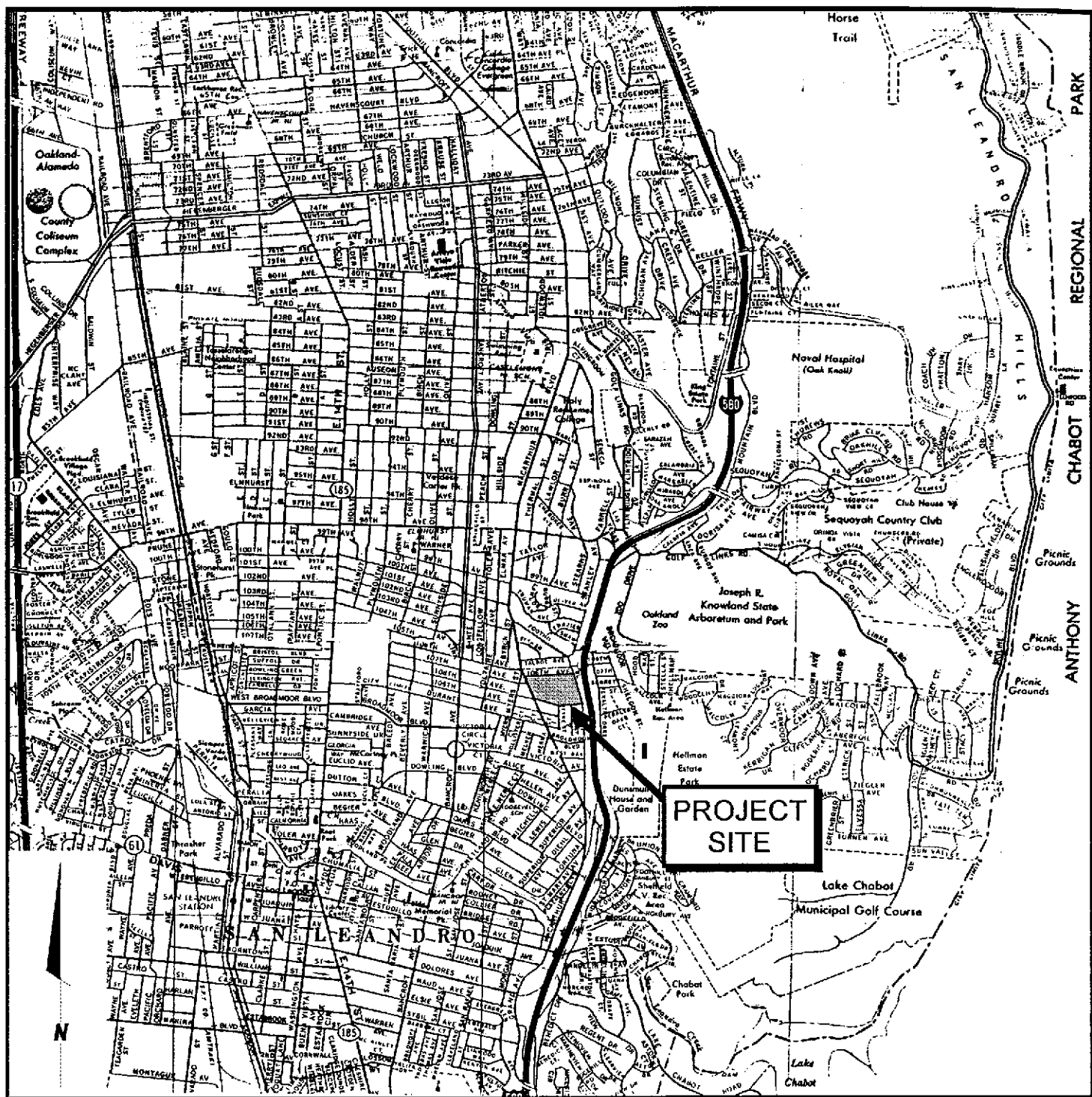
Ox-Redux = Oxidation-reduction potential.

mg/L = Milligrams per liter.

mV = Millivolts.

NS = Not sampled.

* = Sample analyzed outside of holding time; result considered invalid.



Ref. Oakland and East Bay Cities Street Map, Alameda County, California



PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
Foothill Square Shopping Center
10700 MacArthur Boulevard
Oakland, California

PLATE
1

502.0201.006
JOB NUMBER

50202v18.CDR
DRAWING NUMBER

GWK
REVIEWED BY

2/98
DATE

**LARGE
MAP
REMOVED**

APPENDIX A

GROUNDWATER SAMPLING REPORT

RECEIVED AUG 27 1998

BLAINE
TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
(408) 573-7771 FAX
(408) 573-0555 PHONE



August 26, 1998

PES Environmental, Inc.
1682 Novato Blvd., Suite 100
Novato, CA 94947

ATTN: Will Mast

Site:
10700 MacArthur Blvd.
Oakland, California

Date:
August 12, 1998

GROUNDWATER SAMPLING REPORT 980812-C-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results, or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site are presented in the TABLE OF WELL MONITORING DATA. This information was collected during our inspection, well evacuation and sample collection. Measurements include the total depth of the well and the depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, turbidity, dissolved oxygen, oxidation reduction potential and temperature readings were obtained during well evacuation and at the time of sample collection.

STANDARD PRACTICES

Evacuation and Sampling Equipment

As shown in the TABLE OF WELL MONITORING DATA, the wells at this site were evacuated according to a protocol requirement for the removal of three case volumes of water, before sampling. The wells were evacuated using bailers and middleburg pumps.

Samples were collected using bailers.

Bailers: A bailer, in its simplest form, is a hollow tube which has been fitted with a check valve at the lower end. The device can be lowered into a well by means of a cord. When the bailer enters the water, the check valve opens and liquid flows into the interior of the bailer. The bottom check valve prevents water from escaping when the bailer is drawn up and out of the well.

Two types of bailers are used in groundwater wells at sites where fuel hydrocarbons and/or solvents are of concern. The first type of bailer is made of a clear material such as acrylic plastic and is used to obtain a sample of the surface and the near-surface liquids, in order to detect the presence of visible or measurable fuel hydrocarbon floating on the surface. The second type of bailer is made of polyethylene, Teflon, or stainless steel, and is used as an evacuation and/or sampling device. Disposable bailers are made of polyethylene plastic, decontaminated by the manufacturer, individually packaged for one-time only use, and are inexpensive. Teflon and stainless steel bailers are relatively easy to clean and are considered reusable with proper decontamination.

Because bailers are manually operated, variations in operator technique may have a greater influence on performance than would be found when using more automated sampling equipment. Also, in cases where fuel hydrocarbons are involved the bailer may include near-surface contaminants that are not representative of water located deeper in the well.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. Actuation of the pump is accomplished with compressed air supplied by a single hose. Water is pushed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, and temperamental operation, and cleaning requirements which are both elaborate and time consuming.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

Effluent Materials

The evacuation process creates a volume of effluent water which must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 55 gallon DOT 17 E drums to the site, which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms to both State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846 and T.E.G.D. which is published separately.

Sample Containers

Sample containers are supplied by the laboratory performing the analyses.

Sample Handling Procedures

Following collection, samples are promptly placed in an ice chest containing deionized ice or an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days, as jobs and projects often do.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date and signature of person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to Entech in Sunnyvale, California, Quanterra Environmental Services in Sacramento and the City of Industry, California, and Environmental Testing Services in Petaluma, California. Entech and Quanterra Environmental Services are certified by the California Department of Health Services as Hazardous Materials Testing Laboratories, and are listed as DOHS HMTL #2224 and #1171, respectively.

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Reportage

Submission to the Regional Water Quality Control Board and the local implementing agency should include copies of the sampling report, the chain of custody and the certified analytical report issued by the Hazardous Materials Testing Laboratory.

Please call if we can be of any further assistance.



William Jones
Project Coordinator

WRJ/dg

attachments: table of well monitoring data
chain of custody

TABLE OF WELL MONITORING DATA

| Well I.D. | AMW-1 | AMW-4 | AMW-5 | AMW-6 | | | | | |
|------------------------------------|-----------|-----------|------------|-----------|-------|-------|--|-------|-------|
| Date Sampled | 08/12/98 | 08/12/98 | 08/12/98 | 08/12/98 | | | | | |
| Well Diameter (in.) | 2 | 2 | 2 | 2 | | | | | |
| Total Well Depth (ft.) | 33.80 | 24.28 | 30.15 | 24.90 | | | | | |
| Depth To Water (ft.) | 21.80 | 10.55 | 11.87 | 12.93 | | | | | |
| Free Product (in.) | NONE | NONE | NONE | NONE | | | | | |
| Reason If Not Sampled | -- | -- | GAUGE ONLY | -- | | | | | |
| 1 Case Volume (gal.) | 1.9 | 2.2 | | 1.9 | | | | | |
| Did Well Dewater? | NO | NO | | NO | | | | | |
| Gallons Actually Evacuated | 6.0 | 7.0 | | 6.0 | | | | | |
| Purging Device | BAILER | BAILER | | BAILER | | | | | |
| Sampling Device | BAILER | BAILER | | BAILER | | | | | |
| Time | 10:10 | 10:13 | 10:16 | 13:55 | 13:57 | 13:59 | 13:39 | 13:41 | 13:43 |
| Temperature (Fahrenheit) | 70.9 | 68.6 | 67.5 | 64.8 | 66.0 | 66.7 | 69.8 | 70.1 | 70.3 |
| pH | 7.4 | 7.3 | 7.3 | 7.8 | 7.7 | 7.8 | 7.6 | 7.4 | 7.3 |
| Conductivity (micromhos/cm) | 1620 | 1000 | 986 | 600 | 612 | 583 | 2300 | 2320 | 2384 |
| Nephelometric Turbidity Units | >200 | >200 | >200 | >200 | >200 | >200 | >200 | >200 | >200 |
| Dissolved Oxygen (D.O.) (mg/L) | | | | | | | 1.0 | | |
| Oxidation Reduction Potential (mV) | | | | | | | 70 | | |
| BTS Chain of Custody | 980812-C1 | 980812-C1 | | 980812-C1 | | | 980812-C1 | | |
| BTS Sample I.D. | AMW-1 | AMW-4 | | AMW-4 | | | AMW-6 | | |
| DOHS HMTL Laboratory | ENTECH | ENTECH | | ENTECH | | | ENTECH/ QUANTERRA/ ETS | | |
| Analysis | EPA 8010 | EPA 8010 | | EPA 8010 | | | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | | |

TABLE OF WELL MONITORING DATA

| Well I.D. | AMW-7 | | | AMW-8 | | | AMW-9 | | | FHS-MW-10 | | |
|------------------------------------|--|-------|-------|-----------|-------|-------|--|-------|-------|--|-------|-------|
| Date Sampled | 08/12/98 | | | 08/12/98 | | | 08/12/98 | | | 08/12/98 | | |
| Well Diameter (in.) | 2 | | | 2 | | | 2 | | | 2 | | |
| Total Well Depth (ft.) | 24.75 | | | 45.00 | | | 54.29 | | | 51.90 | | |
| Depth To Water (ft.) | 15.04 | | | 13.89 | | | 21.24 | | | 21.32 | | |
| Free Product (in.) | NONE | | | NONE | | | NONE | | | NONE | | |
| Reason If Not Sampled | -- | | | -- | | | -- | | | -- | | |
| 1 Case Volume (gal.) | 1.5 | | | 5.0 | | | 5.3 | | | 4.9 | | |
| Did Well Dewater? | NO | | | NO | | | NO | | | NO | | |
| Gallons Actually Evacuated | 4.5 | | | 15.0 | | | 16.0 | | | 15.0 | | |
| Purging Device | BAILER | | | BAILER | | | MIDDLEBURG | | | MIDDLEBURG | | |
| Sampling Device | BAILER | | | BAILER | | | BAILER | | | BAILER | | |
| Time | 13:22 | 13:24 | 13:26 | 11:42 | 11:49 | 11:56 | 12:40 | 12:46 | 12:49 | 10:36 | 10:42 | 10:48 |
| Temperature (Fahrenheit) | 69.0 | 68.1 | 68.3 | 67.4 | 66.6 | 65.4 | 69.8 | 68.6 | 67.1 | 64.8 | 64.0 | 64.3 |
| pH | 7.0 | 7.1 | 7.2 | 7.6 | 7.5 | 7.6 | 7.3 | 7.4 | 7.5 | 7.0 | 7.0 | 7.0 |
| Conductivity (micromhos/cm) | 1700 | 1643 | 1640 | 380 | 340 | 330 | 860 | 800 | 760 | 600 | 610 | 580 |
| Nephelometric Turbidity Units | >200 | >200 | >200 | >200 | >200 | >200 | >200 | >200 | >200 | >200 | 143 | 68 |
| Dissolved Oxygen (D.O.) (mg/L) | 0.7 | | | | | | 3.3 | | | 1.8 | | |
| Oxidation Reduction Potential (mV) | 49 | | | | | | 41 | | | 80 | | |
| BTS Chain of Custody | 980812-C1 | | | 980812-C1 | | | 980812-C1 | | | 980812-C1 | | |
| BTS Sample I.D. | AMW-7 | | | AMW-8 | | | AMW-9 | | | FHS-MW-10 | | |
| DOHS HMTL Laboratory | ENTECH /QUANTERRA/ETS | | | ENTECH | | | ENTECH/ QUANTERRA/ ETS | | | ENTECH /QANTERRA /ETS | | |
| Analysis | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | | | EPA 8010 | | | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | | | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | | |

TABLE OF WELL MONITORING DATA

| Well I.D. | FHS-MW-11 | MW-6 | MW-7 | WGR/MW-2 | | | | | |
|------------------------------------|--|--|-----------|------------|-------|-------|-------|-------|-------|
| Date Sampled | 08/12/98 | 08/12/98 | 08/12/98 | 08/12/98 | | | | | |
| Well Diameter (in.) | 2 | 2 | 2 | 4 | | | | | |
| Total Well Depth (ft.) | 64.00 | 48.65 | 36.54 | 27.98 | | | | | |
| Depth To Water (ft.) | 22.36 | 30.17 | 20.14 | 21.43 | | | | | |
| Free Product (in.) | NONE | NONE | NONE | NONE | | | | | |
| Reason If Not Sampled | -- | -- | -- | GAUGE ONLY | | | | | |
| 1 Case Volume (gal.) | 6.7 | 3.0 | 2.6 | | | | | | |
| Did Well Dewater? | NO | NO | NO | | | | | | |
| Gallons Actually Evacuated | 21.0 | 9.0 | 8.0 | | | | | | |
| Purging Device | MIDDLEBURG | MIDDLEBURG | BAILER | | | | | | |
| Sampling Device | BAILER | BAILER | BAILER | | | | | | |
| Time | 12:12 | 12:19 | 12:26 | 13:04 | 13:08 | 13:12 | 11:11 | 11:14 | 11:19 |
| Temperature (Fahrenheit) | 68.3 | 67.3 | 66.6 | 66.8 | 66.4 | 65.3 | 69.8 | 66.8 | 66.4 |
| pH | 7.3 | 7.2 | 7.1 | 7.2 | 7.2 | 7.3 | 7.1 | 7.2 | 7.3 |
| Conductivity (micromhos/cm) | 780 | 760 | 766 | 1800 | 1600 | 1680 | 1700 | 1680 | 1600 |
| Nephelometric Turbidity Units | 41 | 38 | 22 | >200 | 44 | 48 | >200 | >200 | >200 |
| Dissolved Oxygen (D.O.) (mg/L) | 2.3 | | | 1.1 | | | | | |
| Oxidation Reduction Potential (mV) | 28 | | | 30 | | | | | |
| BTS Chain of Custody | 980812-C1 | 980812-C1 | 980812-C1 | | | | | | |
| BTS Sample I.D. | FHS-MW-11 | MW-6 | MW-7 | | | | | | |
| DOHS HMTL Laboratory | ENTECH /QUANTERRA/ ETS | ENTECH /QUANTERRA /ETS | ENTECH | | | | | | |
| Analysis | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON | EPA 8010 | | | | | | |

TABLE OF WELL MONITORING DATA

| Well I.D. | WGR/MW-3 | WGR/MW-4 |
|------------------------------------|------------|------------|
| Date Sampled | 08/12/98 | 08/12/98 |
| Well Diameter (in.) | 4 | 4 |
| Total Well Depth (ft.) | 26.95 | 44.97 |
| Depth To Water (ft.) | 19.75 | 24.41 |
| Free Product (in.) | NONE | NONE |
| Reason If Not Sampled | GAUGE ONLY | GAUGE ONLY |
| 1 Case Volume (gal.) | | |
| Did Well Dewater? | | |
| Gallons Actually Evacuated | | |
| Purging Device | | |
| Sampling Device | | |
| Time | | |
| Temperature (Fahrenheit) | | |
| pH | | |
| Conductivity (micromhos/cm) | | |
| Nephelometric Turbidity Units | | |
| Dissolved Oxygen (D.O.) (mg/L) | | |
| Oxidation Reduction Potential (mV) | | |
| BTS Chain of Custody | | |
| BTS Sample I.D. | | |
| DOHS HMTL Laboratory | | |
| Analysis | | |

BLAINE

TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY

JOB # 980812-CA

CLIENT PES

SITE FOOTHILL SQUARE

10700 MacArthur Blvd.

OAKLAND, CA

| SAMPLE I.D. | Date | Time | MATRIX | | TOTAL | CONTAINERS |
|-------------|------|------|----------|----------------------|-------|------------|
| | | | S = SOIL | W = H ₂ O | | |
| AMW 6 | 8/12 | 1345 | ✓ | | 1 | NP Poly |
| AMW 7 | | 1329 | ✓ | | 1 | |
| AMW 9 | | 1252 | ✓ | | 1 | |
| MW 6 | | 1316 | ✓ | | 1 | |
| FHSMW 10 | | 1054 | ✓ | | 1 | |
| FHSMW 11 | ✓ | 1236 | ✓ | ✓ | 1 | |

C = COMPOSITE ALL CONTAINERS

* FERROS IRON

| CONDUCT ANALYSIS TO DETECT | | | | | | |
|----------------------------|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
| | | | | | | |

LAB ETS DHS # _____

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

EPA RWQCB REGION _____

LIA

OTHER

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO PES

ATTN: WILL MAST

* 24 HOUR HOLD TIME

| ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-------------------|--------|-----------|--------------|
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |
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| | | | |
| | | | |

| | | | | | |
|--------------------|-----------|-----------|-------------------------|------------------------------|------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12/98 | 1405 | <i>Cassidy McIntire</i> | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| <i>[Signature]</i> | 8/12/98 | 1415 | <i>James R. Allen</i> | 8/12/98 | 1415 |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | | |
| | | | | | |

8/12/98

BLAINE TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CONDUCT ANALYSIS TO DETECT

LAB ENTECH DHS # _____
ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
 EPA RWQCB REGION _____
 LIA
 OTHER

CHAIN OF CUSTODY
Job # 980812-C1
CLIENT PES
SITE FOOTHILL SQUARE
10700 MacArthur Blvd.
OAKLAND, CA

C = COMPOSITE ALL CONTAINERS

EPA 8010

SPECIAL INSTRUCTIONS
INVOICE & REPORT TO PES
ATTN: WILL MAST

| SAMPLE I.D. | Date | Time | MATRIX | TOTAL | CONTAINERS | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-------------|------|------|---------------------|-------|------------|-------------------|--------|-----------|--------------|
| | | | S = SOIL W = H2O | | | | | | |
| AMW 1 | 8/12 | 1020 | W | 3 | | | | | |
| AMW 4 | | 1403 | | | | | | | |
| AMW 6 | | 1345 | | | | | | | |
| AMW 7 | | 1328 | | | | | | | |
| AMW 8 | | 1200 | | | | | | | |
| AMW 9 | | 1252 | | | | | | | |
| MW 6 | | 1316 | | | | | | | |
| MW 7 | | 1125 | | | | | | | |
| FHS MW 10 | | 1054 | | | | | | | |
| FHS MW 11 | | 1230 | W | W | | | | | |

| | | | | | |
|--------------------|-----------|-----------|-----------------------|------------------------------|------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12 | 14:20 | <i>[Signature]</i> | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| <i>[Signature]</i> | 8/13 | 1:00 | <i>[Signature]</i> | 8/13 | 1:00 |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | | |

BLAINE TECH SERVICES INC.

1880 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CONDUCT ANALYSIS TO DETECT

LAB QUANTERRA (CITY OF INDUSTRIAL) DHS #
ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
 EPA RWQCB REGION
 LIA
 OTHER

CHAIN OF CUSTODY
JOB # 98078-12C1
CLIENT PES
SITE FOOTHILL SQUARE
10700 MACARTHUR BLVD.
OAKLAND, CA

C = COMPOSITE ALL CONTAINERS

CARBON DIOXIDE (RISK 175)
ETHANE (RISK 175)

| SAMPLE ID | DATE | TIME | MATRIX S = SOIL W = H2O | CONTAINERS TOTAL | Voas HCL NP | C = COMPOSITE ALL CONTAINERS | | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-----------|------|------|-------------------------------|---------------------|-------------|------------------------------|-------------------|-------------------|--------|-----------|--------------|
| | | | | | | CARBON DIOXIDE (RISK 175) | ETHANE (RISK 175) | | | | |
| AMW 6 | 8/12 | 1345 | W | 6 | | X | X | | | | |
| AMW 7 | 8/12 | 1348 | | | | X | X | | | | |
| AMW 8 | 8/12 | 1252 | | | | X | X | | | | |
| FHS MW 10 | 8/12 | 1316 | | | | X | X | | | | |
| FHS MW 11 | 8/12 | 1054 | | | | X | X | | | | |
| FHS MW 11 | 8/12 | 1330 | | | | X | X | | | | |

SPECIAL INSTRUCTIONS
INVOICE & REPORT TO PES
ATTN: WILL MAST

| | | | | | |
|--------------------|-----------|-----------|-----------------------|------------------------------|------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12/98 | 1420 | Cassidy | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | 8/13/98 | 1700 | | | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | | |
| ARBORNE EXPRESS | 8/13/98 | 1700 | | # 5301432054 | |

BLAINE TECH SERVICES INC.

1880 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CONDUCT ANALYSIS TO DETECT

LAB QUANTERRA (W.SACTO) DHS # _____
ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
 EPA RWQCB REGION _____
 LIA
 OTHER

CHAIN OF CUSTODY
JOB # 980812-CD
CLIENT PES
SITE FOOTHILL SQUARE
10700 MACARTHUR BLVD.
OAKLAND, CA

C = COMPOSITE ALL CONTAINERS

EPA 353.3/300.0
NITRATE *
EPA 300.0
SULFATE

SPECIAL INSTRUCTIONS:
INVOICE & REPORT TO PES
ATTN: WILL MASTER
48 HR HOLD TIME

| SAMPLE ID | DATE | TIME | MATRIX | CONTAINERS | | C | NITRATE * | SULFATE | | | | | | | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-----------|------|------|---------------------|------------|---------|---|-----------|---------|--|--|--|--|--|--|-------------------|--------|-----------|--------------|
| | | | S = SOIL W = H2O | TOTAL | | | | | | | | | | | | | | |
| AW6 | 8/12 | 1345 | W | 1 | NP Poly | | X | X | | | | | | | | | | |
| AMW7 | | 1328 | | 1 | | | X | X | | | | | | | | | | |
| AMW9 | | 1252 | | 1 | | | X | X | | | | | | | | | | |
| MW611 | | 1316 | | 1 | | | X | X | | | | | | | | | | |
| FHS MW10 | | 1054 | | 1 | | | X | X | | | | | | | | | | |
| FHS MW11 | | 1230 | | 1 | | | X | X | | | | | | | | | | |

| | | | | | |
|--------------------|-----------|-----------|-----------------------|------------------------------|------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12 | 1420 | Cassidy | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | 8/12/98 | 1630 | | | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | AIRBILL # | |
| AIRBORNE EXPRESS | 8/12/98 | 1630 | | 5301431656 | |

APPENDIX B

**LABORATORY REPORTS
AND
CHAIN-OF-CUSTODY RECORDS**

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

August 24, 1998

Will Mast
PES Environmental, Inc.
1682 Novato Blvd., Suite 100
Novato, CA 94947

Subject: 10 Water Samples
Lab #'s: E14777 through E14786
Project Name:
Project Number:
Method(s): EPA 8010

Dear Will Mast,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2224). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,



Michael N. Golden
Lab Director

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 10:20
 Lab #: E14777
 Client ID: AMW 1

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/16/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | ND | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4-Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 93

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
Sample Matrix: Water
Sample Date/Time: 8/12/98 14:03
Lab #: E14778
Client ID: AMW 4

Date Reported: 8/24/98
Date Received: 8/13/98
Date Analyzed: 8/16/98
Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | 2.3 | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | 18 | 1 | 1 | Tetrachloroethene | 2.5 | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4-Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
2-Bromo-1-Chloropropane 95

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
DF: Dilution Factor

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010


Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 13:45
 Lab #: E14779
 Client ID: AMW 6

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/16/98
 Dilution Factor: 50

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 25 | trans-1,2-Dichloroethene | ND | 0.5 | 25 |
| Bromoform | ND | 1 | 50 | 1,2-Dichloropropane | ND | 0.5 | 25 |
| Bromomethane | ND | 1 | 50 | cis-1,3-Dichloropropene | ND | 0.5 | 25 |
| Carbon Tetrachloride | ND | 0.5 | 25 | trans-1,3-Dichloropropene | ND | 0.5 | 25 |
| Chlorobenzene | ND | 0.5 | 25 | Methylene Chloride | ND | 3 | 150 |
| Chloroethane | ND | 1 | 50 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 25 |
| Chloroform | ND | 1 | 50 | Tetrachloroethene | 1,600 | 0.5 | 25 |
| Chloromethane | ND | 0.5 | 25 | 1,1,1-Trichloroethane | ND | 0.5 | 25 |
| Dibromochloromethane | ND | 1 | 50 | 1,1,2-Trichloroethane | ND | 0.5 | 25 |
| Dichlorodifluoromethane | ND | 0.5 | 25 | Trichloroethene | 150 | 0.5 | 25 |
| 1,2- Dichlorobenzene | ND | 0.5 | 25 | Trichlorofluoromethane | ND | 0.5 | 25 |
| 1,3- Dichlorobenzene | ND | 0.5 | 25 | Vinyl Chloride | ND | 1 | 50 |
| 1,4- Dichlorobenzene | ND | 0.5 | 25 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 25 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 25 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 25 | | | | |
| cis-1,2-Dichloroethene | 54 | 0.5 | 25 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 86

- Results are reported in ug/Liter (ppb)
- DLR= DF x PQL
- Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 13:28
 Lab #: E14780
 Client ID: AMW 7

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/16/98
 Dilution Factor: 10

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 5 | trans-1,2-Dichloroethene | ND | 0.5 | 5 |
| Bromoform | ND | 1 | 10 | 1,2-Dichloropropane | ND | 0.5 | 5 |
| Bromomethane | ND | 1 | 10 | cis-1,3-Dichloropropene | ND | 0.5 | 5 |
| Carbon Tetrachloride | ND | 0.5 | 5 | trans-1,3-Dichloropropene | ND | 0.5 | 5 |
| Chlorobenzene | ND | 0.5 | 5 | Methylene Chloride | ND | 3 | 30 |
| Chloroethane | ND | 1 | 10 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 5 |
| Chloroform | ND | 1 | 10 | Tetrachloroethene | 210 | 0.5 | 5 |
| Chloromethane | ND | 0.5 | 5 | 1,1,1-Trichloroethane | ND | 0.5 | 5 |
| Dibromochloromethane | ND | 1 | 10 | 1,1,2-Trichloroethane | ND | 0.5 | 5 |
| Dichlorodifluoromethane | ND | 0.5 | 5 | Trichloroethene | 21 | 0.5 | 5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 5 | Trichlorofluoromethane | ND | 0.5 | 5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 5 | Vinyl Chloride | ND | 1 | 10 |
| 1,4-Dichlorobenzene | ND | 0.5 | 5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 5 | | | | |
| cis-1,2-Dichloroethene | 31 | 0.5 | 5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 96

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)


 Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

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Certified Analytical Report Purgeable Halocarbons by EPA Method 8010


Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 12:00
 Lab #: E14781
 Client ID: AMW 8

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/16/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | ND | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2- Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3- Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4- Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 92

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)


 Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
Sample Matrix: Water
Sample Date/Time: 8/12/98 12:52
Lab #: E14782
Client ID: AMW 9

Date Reported: 8/24/98
Date Received: 8/13/98
Date Analyzed: 8/16/98
Dilution Factor: 10

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 5 | trans-1,2-Dichloroethene | ND | 0.5 | 5 |
| Bromoform | ND | 1 | 10 | 1,2-Dichloropropane | ND | 0.5 | 5 |
| Bromomethane | ND | 1 | 10 | cis-1,3-Dichloropropene | ND | 0.5 | 5 |
| Carbon Tetrachloride | ND | 0.5 | 5 | trans-1,3-Dichloropropene | ND | 0.5 | 5 |
| Chlorobenzene | ND | 0.5 | 5 | Methylene Chloride | ND | 3 | 30 |
| Chloroethane | ND | 1 | 10 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 5 |
| Chloroform | ND | 1 | 10 | Tetrachloroethene | 87 | 0.5 | 5 |
| Chloromethane | ND | 0.5 | 5 | 1,1,1-Trichloroethane | ND | 0.5 | 5 |
| Dibromochloromethane | ND | 1 | 10 | 1,1,2-Trichloroethane | ND | 0.5 | 5 |
| Dichlorodifluoromethane | ND | 0.5 | 5 | Trichloroethene | ND | 0.5 | 5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 5 | Trichlorofluoromethane | ND | 0.5 | 5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 5 | Vinyl Chloride | ND | 1 | 10 |
| 1,4-Dichlorobenzene | ND | 0.5 | 5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 5 | | | | |

Surrogate Recovery (%)
2-Bromo-1-Chloropropane 93

1. Results are reported in ug/Liter (ppb)
2. $DLR = DF \times PQL$
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
DF: Dilution Factor

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 13:16
 Lab #: E14783
 Client ID: MW 6

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/16/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | 14 | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2- Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3- Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4- Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 93

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)


 Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

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Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

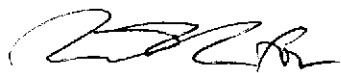
Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 11:25
 Lab #: E14784
 Client ID: MW 7

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/18/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | ND | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4-Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | 0.8 | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 94

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

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Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 10:54
 Lab #: E14785
 Client ID: FHS MW10

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/17/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | ND | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2-Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3-Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4-Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 90

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Certified Analytical Report Purgeable Halocarbons by EPA Method 8010

Client: PES Environmental
 Sample Matrix: Water
 Sample Date/Time: 8/12/98 12:30
 Lab #: E14786
 Client ID: FHS MW11

Date Reported: 8/24/98
 Date Received: 8/13/98
 Date Analyzed: 8/18/98
 Dilution Factor: 1

| Compound | Value | PQL | DLR | Compound | Value | PQL | DLR |
|-------------------------|-------|-----|-----|---------------------------|-------|-----|-----|
| Bromodichloromethane | ND | 0.5 | 0.5 | trans-1,2-Dichloroethene | ND | 0.5 | 0.5 |
| Bromoform | ND | 1 | 1 | 1,2-Dichloropropane | ND | 0.5 | 0.5 |
| Bromomethane | ND | 1 | 1 | cis-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Carbon Tetrachloride | ND | 0.5 | 0.5 | trans-1,3-Dichloropropene | ND | 0.5 | 0.5 |
| Chlorobenzene | ND | 0.5 | 0.5 | Methylene Chloride | ND | 3 | 3 |
| Chloroethane | ND | 1 | 1 | 1,1,2-Tetrachloroethane | ND | 0.5 | 0.5 |
| Chloroform | ND | 1 | 1 | Tetrachloroethene | 6.4 | 0.5 | 0.5 |
| Chloromethane | ND | 0.5 | 0.5 | 1,1,1-Trichloroethane | ND | 0.5 | 0.5 |
| Dibromochloromethane | ND | 1 | 1 | 1,1,2-Trichloroethane | ND | 0.5 | 0.5 |
| Dichlorodifluoromethane | ND | 0.5 | 0.5 | Trichloroethene | ND | 0.5 | 0.5 |
| 1,2- Dichlorobenzene | ND | 0.5 | 0.5 | Trichlorofluoromethane | ND | 0.5 | 0.5 |
| 1,3- Dichlorobenzene | ND | 0.5 | 0.5 | Vinyl Chloride | ND | 1 | 1 |
| 1,4- Dichlorobenzene | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,2-Dichloroethane | ND | 0.5 | 0.5 | | | | |
| 1,1-Dichloroethene | ND | 0.5 | 0.5 | | | | |
| cis-1,2-Dichloroethene | ND | 0.5 | 0.5 | | | | |

Surrogate Recovery (%)
 2-Bromo-1-Chloropropane 90

1. Results are reported in ug/Liter (ppb)
2. DLR= DF x PQL
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #2224)



Michael N. Golden, Lab Director

ND: None Detected at or above DLR
 DLR: Detection Reporting Limit

PQL: Practical Quantitation Limit
 DF: Dilution Factor

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography - Volatile Organics

QC Batch #: VOC2W980816

Date Analyzed: 08/16/98

Matrix: Water

Quality Control Sample: E14865

Units: µg/L

| PARAMETER | Method # | SA | SR | SP | SP | SPD | SPD | RPD | QC LIMITS | |
|-------------------------|----------|------|------|------|-----|------|-----|-----|-----------|--------|
| | | µg/L | µg/L | µg/L | % R | µg/L | %R | | RPD | %R |
| Benzene | 602/8020 | 40 | ND | 41 | 101 | 38 | 94 | 7.2 | 25 | 87-108 |
| Chlorobenzene | 601/8010 | 40 | ND | 42 | 104 | 39 | 98 | 5.7 | 25 | 79-118 |
| 1,1-Dichloroethane | 601/8010 | 40 | ND | 41 | 102 | 38 | 96 | 6.1 | 25 | 76-122 |
| Toluene | 602/8020 | 40 | ND | 40 | 101 | 38 | 95 | 6.4 | 25 | 86-111 |
| Trichloroethene | 601/8010 | 40 | 18.2 | 59 | 103 | 57 | 96 | 6.3 | 25 | 69-128 |
| 2-Bromo-1-chloropropane | 601/8010 | | 96% | 97% | | 95% | | | | 75-125 |
| 1,3,5-Trifluorotoluene | 602/8020 | | 99% | 97% | | 95% | | | | 75-125 |

Note: LCS and LCSD results reported for the following Parameters:

None

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

na: Not Analyzed in QC batch

SA: Spike Added

SR: Sample Result

RPD(%): Duplicate Analysis - Relative Percent Difference

SP: Spike Result

SP (%R): Spike % Recovery

SPD: Spike Duplicate Result

SPD (%R): Spike Duplicate % Recovery

NC: Not Calculated

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography - Volatile Organics

QC Batch #: VOC2W980817

Date Analyzed: 08/17/98

Matrix: Water

Quality Control Sample: E14867

Units: µg/L

| PARAMETER | Method # | SA | SR | SP | SP | SPD | SPD | RPD | QC LIMITS | |
|-------------------------|----------|------|------|------|-----|------|-----|-----|-----------|--------|
| | | µg/L | µg/L | µg/L | % R | µg/L | %R | | RPD | %R |
| Benzene | 602/8020 | 40 | ND | 38 | 94 | 38 | 95 | 1.3 | 25 | 87-108 |
| Chlorobenzene | 601/8010 | 40 | ND | 41 | 102 | 41 | 102 | 0.0 | 25 | 79-118 |
| 1,1-Dichloroethane | 601/8010 | 40 | ND | 41 | 102 | 41 | 102 | 0.7 | 25 | 76-123 |
| Toluene | 602/8020 | 40 | ND | 39 | 97 | 39 | 97 | 0.5 | 25 | 86-111 |
| Trichloroethene | 601/8010 | 40 | 18.2 | 36 | 45 | 36 | 45 | 0.0 | 25 | 69-128 |
| 2-Bromo-1-chloropropane | 601/8010 | | 88% | 96% | | 98% | | | | 75-125 |
| 1,3,5-Trifluorotoluene | 602/8020 | | 95% | 98% | | 96% | | | | 75-125 |

Note: LCS and LCSD results reported for the following Parameters:

None

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

- na: Not Analyzed in QC batch
- SA: Spike Added
- SR: Sample Result
- RPD(%): Duplicate Analysis - Relative Percent Difference
- SP: Spike Result
- SP (%R): Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R): Spike Duplicate % Recovery
- NC: Not Calculated

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography - Volatile Organics

QC Batch #: VOC2W980818

Date Analyzed: 08/18/98

Matrix: Water

Quality Control Sample: Blank Spike

Units: µg/L

| PARAMETER | Method # | SA | SR | SP | SP | SPD | SPD | RPD | QC LIMITS | |
|-------------------------|----------|------|------|------|-----|------|-----|-----|-----------|--------|
| | | µg/L | µg/L | µg/L | % R | µg/L | %R | | RPD | %R |
| Benzene | 602/8020 | 40 | ND | 38 | 96 | 39 | 97 | 0.5 | 25 | 87-108 |
| Chlorobenzene | 601/8010 | 40 | ND | 41 | 102 | 41 | 102 | 0.0 | 25 | 79-118 |
| 1,1-Dichloroethane | 601/8010 | 40 | ND | 46 | 114 | 43 | 107 | 6.8 | 25 | 76-123 |
| Toluene | 602/8020 | 40 | ND | 39 | 97 | 39 | 98 | 0.5 | 25 | 86-111 |
| Trichloroethene | 601/8010 | 40 | ND | 36 | 91 | 37 | 91 | 0.8 | 25 | 69-128 |
| 2-Bromo-1-chloropropane | 601/8010 | | 91% | 93% | | 95% | | | | 75-125 |
| 1,3,5-Trifluorotoluene | 602/8020 | | 99% | 96% | | 96% | | | | 75-125 |

Note: LCS and LCSD results reported for the following Parameters:

All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

na: Not Analyzed in QC batch

SA: Spike Added

SR: Sample Result

RPD(%): Duplicate Analysis - Relative Percent Difference

SP: Spike Result

SP (%R): Spike % Recovery

SPD: Spike Duplicate Result

SPD (%R): Spike Duplicate % Recovery

NC: Not Calculated

BLAINE TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
Job # 980812-C1

CLIENT
PES

SITE
FOOTHILL SQUARE
10700 MacArthur Blvd.
OAKLAND, CA

| CONDUCT ANALYSIS TO DETECT | | | | | | | | | | |
|------------------------------|----------|--|--|--|--|--|--|--|--|--|
| C = COMPOSITE ALL CONTAINERS | EPA 8010 | | | | | | | | | |
| | | | | | | | | | | |
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LAB ENTECH DHS # _____

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

EPA RWQCB REGION _____

LIA

OTHER

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO PES

ATTN: WILL MAST

| SAMPLE I.D. | Date | Time | MATRIX S = SOIL W = H2O | TOTAL | C = COMPOSITE ALL CONTAINERS | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-------------|------|------|-------------------------------|-------|------------------------------|-------------------|--------|-----------|--------------|
| AMW 1 | 8/12 | 1020 | W | 3 | X | | | | E14777 |
| AMW 4 | | 1403 | | | X | | | | E14778 |
| AMW 6 | | 1345 | | | X | | | | E14779 |
| AMW 7 | | 1328 | | | X | | | | E14780 |
| AMW 8 | | 1200 | | | X | | | | E14781 |
| AMW 9 | | 1252 | | | X | | | | E14782 |
| MW 6 | | 1316 | | | X | | | | E14783 |
| MW 7 | | 1125 | | | X | | | | E14784 |
| FHS MW 10 | | 1054 | | | X | | | | E14785 |
| FHS MW 11 | | 1230 | W | W | X | | | | E14786 |

| | | | | | |
|--------------------|-----------|-----------|-----------------------|------------------------------|--------------------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12 | 14:20 | <i>[Signature]</i> | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| <i>[Signature]</i> | 8/13 | 1:00 | <i>[Signature]</i> | 8/13 | 1:00 |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| <i>[Signature]</i> | 8/13 | 2:55 | VTKAZO | 8/13/98 | <i>[Signature]</i> |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | | |
| | | | 8.20C | | |



Environmental
Services

Quanterra Incorporated
18501 East Gale Avenue #130
City of Industry, California 91748

818 965-1006 Telephone
818 965-1003 Fax

August 27, 1998

PES ENVIRONMENTAL, INC.
1682 Navato Blvd.
Suite 100
Novato, CA 94947
ATTN: Mr. Will Mast

ANALYSIS NO.: 133572-0001/0006-SA
ANALYSIS: Dissolved Gases in Water by GC
DATE SAMPLED: 08/12/98
DATE SAMPLES REC'D: 08/14/98

PROJECT: PES/980812-C1

Enclosed with this letter is the report on the chemical and physical analyses for the samples from ANALYSIS NO.: 133572-0001/0006-SA as shown above.

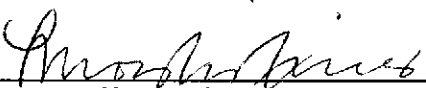
The samples were received by Quanterra Incorporated, City of Industry, intact and with the chain-of-custody record attached.

Please note that ND means not detected at the reporting limits expressed.

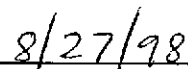
The preliminary results were faxed to Mr. Will Mast on August 21, 1998.

Report Narrative:

The above analysis was performed in reference to RSKSOP-175.



Maria O. Jones
Project Manager



8/27/98
Date
Approved

SAMPLE DESCRIPTION INFORMATION
for
PES Environmental, Inc.

| Lab ID | Client ID | Matrix | Sampled | | Received |
|----------------|-----------|--------|-----------|-------|-----------|
| | | | Date | Time | Date |
| 133572-0001-SA | AMW6 | WATER | 12 AUG 98 | 13:45 | 14 AUG 98 |
| 133572-0002-SA | AMW7 | WATER | 12 AUG 98 | 13:28 | 14 AUG 98 |
| 133572-0003-SA | AMW9 | WATER | 12 AUG 98 | 12:52 | 14 AUG 98 |
| 133572-0004-SA | MW6 | WATER | 12 AUG 98 | 13:16 | 14 AUG 98 |
| 133572-0005-SA | FHS MW10 | WATER | 12 AUG 98 | 10:54 | 14 AUG 98 |
| 133572-0006-SA | FHS MW11 | WATER | 12 AUG 98 | 12:30 | 14 AUG 98 |

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW6
LAB ID: 133572-0001-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1

Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0

Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | ND | | 0.0010 | mg/L |

ND = Not Detected

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW7
LAB ID: 133572-0002-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | ND | | 0.0010 | mg/L |

ND = Not Detected



Environmental
Services

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW9
LAB ID: 133572-0003-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | ND | | 0.0010 | mg/L |

ND = Not Detected

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: MW6
LAB ID: 133572-0004-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1

Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0

Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | 0.015 | | 0.0010 | mg/L |

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: FHS MW10
LAB ID: 133572-0005-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1

Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0

Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | ND | | 0.0010 | mg/L |

ND = Not Detected

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: FHS MW11
LAB ID: 133572-0006-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|-----------|--------|-----------|--------|-------|
| Methane | ND | | 0.0010 | mg/L |

ND = Not Detected

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW6
LAB ID: 133572-0001-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|-----|-------|
| Carbon dioxide | 82 | | 1.7 | mg/L |

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW7
LAB ID: 133572-0002-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1

Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0

Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|-----|-------|
| Carbon dioxide | 200 | | 1.7 | mg/L |



Environmental
Services

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: AMW9
LAB ID: 133572-0003-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|-----|-------|
| Carbon dioxide | 32 | | 1.7 | mg/L |

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: MW6
LAB ID: 133572-0004-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|-----|-------|
| Carbon dioxide | 24 | | 1.7 | mg/L |



Environmental
Services

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: FHS MW10
LAB ID: 133572-0005-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|-----|-------|
| Carbon dioxide | 49 | | 1.7 | mg/L |

Dissolved Gases in Water by GC

Client Name: PES Environmental, Inc.
Client ID: FHS MW11
LAB ID: 133572-0006-SA
Matrix: WATER
Authorized: 14 AUG 98
Instrument: GC-1
Sampled: 12 AUG 98
Prepared: N/A
Dilution: 1.0
Received: 14 AUG 98
Analyzed: 17 AUG 98

| Parameter | Result | Qualifier | RL | Units |
|----------------|--------|-----------|------|-------|
| Carbon dioxide | 0.22 | | 0.17 | mg/L |

QC LOT ASSIGNMENT REPORT - MS QC
Air Toxics

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA, MS, SD, DU) |
|-----------------------------|-----------|-------------|------------------------|----------------------------------|--------------------------------------|
| 133572-0001-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0002-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0003-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0004-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0005-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0006-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0001-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0002-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0003-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0004-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0005-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |
| 133572-0006-SA | AQUEOUS | RSKSOP175G | 17 AUG 98-A1M | 17 AUG 98-A1M | |

DUPLICATE CONTROL SAMPLE REPORT
Air Toxics
Project: 133572

Category: RSKSOP175G Dissolved Gases in Water by GC
Matrix: AQUEOUS
QC Lot: 17 AUG 98-A1M
Concentration Units: mg/L

Date Analyzed: 17 AUG 98

| Analyte | Spiked | Concentration Measured | | %Recovery | | RPD | Acceptance Limits | |
|----------------|--------|------------------------|-------|-----------|------|-----|-------------------|-----|
| | | DCS1 | DCS2 | DCS1 | DCS2 | | Recov. | RPD |
| Methane | 0.327 | 0.349 | 0.386 | 107 | 118 | 10 | 70-130 | 20 |
| Carbon dioxide | 8.98 | 7.45 | 7.86 | 83 | 88 | 5.4 | 70-130 | 20 |

Calculations are performed before rounding to avoid round-off errors in calculated results



Environmental
Services

METHOD BLANK REPORT
Air Toxics
Project: 133572

Test: RSKSOP-175-CO2-G Dissolved Gases in Water by GC
Matrix: AQUEOUS
QC Run: 17 AUG 98-A1M

Date Analyzed: 17 AUG 98
Reporting
Limit

| Analyte | Result | Units |
|----------------|--------|-------|
| Carbon dioxide | ND | mg/L |

0.17

Test: RSKSOP-175-G Dissolved Gases in Water by GC
Matrix: AQUEOUS
QC Run: 17 AUG 98-A1M

Date Analyzed: 17 AUG 98
Reporting
Limit

| Analyte | Result | Units |
|---------|--------|-------|
| Methane | ND | mg/L |

0.0010

ND = Not Detected

BLAINE TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
JOB # 980812-C1

CLIENT
PES

SITE
FOOTHILL SQUARE
10700 MACARTHUR BLVD.
OAKLAND, CA

C = COMPOSITE ALL CONTAINERS

| CONDUCT ANALYSIS TO DETECT | |
|----------------------------|-------------------|
| CARBON DIOXIDE (RSL 175) | METHANE (RSL 175) |

LAB QUANTERRA (CITY OF INDUSTRIAL) DHS # _____

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

EPA RWQCB REGION _____

LIA

OTHER

133572

SPECIAL INSTRUCTIONS
INVOICE & REPORT TO PES
ATTN: WILL MAST

| SAMPLE I.D. | Date | MATRIX S = SOIL W = H2O | CONTAINERS TOTAL | VEAS HCLT NP | C | CONDUCT ANALYSIS TO DETECT | | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-------------|------|-------------------------------|---------------------|--------------------|---|----------------------------|-------------------|-------------------|--------|-----------|--------------|
| | | | | | | CARBON DIOXIDE (RSL 175) | METHANE (RSL 175) | | | | |
| AMW 6 | 8/12 | 1345 W | 6 | | | X | X | | | | |
| AMW 7 | | 1328 | | | | X | X | | | | |
| AMW 9 | | 1252 | | | | X | X | | | | |
| MW 6 | | 1316 | | | | X | X | | | | |
| FHS MW 10 | | 1054 | | | | X | X | | | | |
| FHS MW 11 | | 1230 | | | | X | X | | | | |

| | | | | | |
|--------------------|-----------|-----------|-----------------------|------------------------------|-------|
| SAMPLING COMPLETED | DATE | TIME | SAMPLING PERFORMED BY | RESULTS NEEDED NO LATER THAN | |
| | 8/12/98 | 1420 | Cassidy | PER CLIENT | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | 8/13/98 | 1700 | [Signature] | 8-14-98 | 11:00 |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| RELEASED BY | DATE | TIME | RECEIVED BY | DATE | TIME |
| | | | | | |
| SHIPPED VIA | DATE SENT | TIME SENT | COOLER # | | |
| ARBORNE EXPRESS | 8/13/98 | 1700 | | # 5301432054 | |

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

August 19, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 300967
PO/CONTRACT: 502.0201.006 JOB# 980812-C1

Will Mast
PES
1682 Novato Boulevard
Novato, CA 94947

Dear Mr. Mast,

This report contains the analytical results for the six samples received under chain of custody by Quanterra Incorporated on August 13, 1998. These samples are associated with your Foothill Square project.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4383.

Sincerely,



Calvin Tanaka
Project Manager

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 300967

Case Narrative

Quanterra's Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

General Inorganics - Method 300.0

Samples: 1 - 6

 Sample Data Sheets

 Method Blank Reports

 Laboratory QC Reports

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 300967

General Comments

The sample containers were received intact and in good condition. Any discrepancies identified upon receipt would have been forwarded to Mr. Will Mast and documented on the enclosed Chain of Custody.

There were no anomalies associated with this project.

Quanterra - Western Region
Quality Control Definitions

| QC Parameter | Definition |
|--|---|
| QC Batch | A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots. |
| Duplicate Control Sample (DCS) | Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD. |
| Duplicate Sample (DU) | A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch. |
| Laboratory Control Sample (LCS) | A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. |
| Matrix Spike and Matrix Spike Duplicate (MS/MSD) | A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked. |
| Method Blank (MB) | A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps. |
| Surrogate Spike | Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process. |

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

BLAINE TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CONDUCT ANALYSIS TO DETECT

LAB QUANTERA (W.SACTD) DHS # _____

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- EPA
 LIA
 OTHER

RWQCB REGION _____

CHAIN OF CUSTODY

Job # 980812-C1

CLIENT

PES

SITE

FOOTHILL SQUARE

10700 MacArthur Blvd.

OAKLAND, CA

C = COMPOSITE ALL CONTAINERS

EPA 353.3/300.0
NITRATE *

EPA 300.0
SULFATE

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO PES
ATTN: WILL MAST
* 48 HR Hold Time

| SAMPLE I.D. | Date | Time | MATRIX | CONTAINERS | | C = COMPOSITE ALL CONTAINERS | NITRATE * | SULFATE | | | | | | ADD'L INFORMATION | STATUS | CONDITION | LAB SAMPLE # |
|-------------|------|------|---------------------|------------|---------|------------------------------|-----------|---------|--|--|--|--|--|-------------------|--------|-----------|--------------|
| | | | % SOIL % W = H2O | TOTAL | | | | | | | | | | | | | |
| AMW6 | 8/12 | 1345 | W | 1 | NP Poly | | X | X | | | | | | | | | |
| AMW7 | | 1328 | | 1 | | | X | X | | | | | | | | | |
| AMW9 | | 1252 | | 1 | | | X | X | | | | | | | | | |
| MW6 | | 1316 | | 1 | | | X | X | | | | | | | | | |
| FHS MW10 | | 1054 | | 1 | | | X | X | | | | | | | | | |
| FHS MW11 | | 1230 | | 1 | | | X | X | | | | | | | | | |

rec'd in good cond.
08/12/98

SAMPLING COMPLETED DATE 8/12 TIME 1420 SAMPLING PERFORMED BY Cassidy RESULTS NEEDED NO LATER THAN PER CLIENT

RELEASED BY [Signature] DATE 8/12/98 TIME 1630 RECEIVED BY [Signature] DATE 8-13-98 TIME 1340

RELEASED BY _____ DATE _____ TIME _____ RECEIVED BY _____ DATE _____ TIME _____

RELEASED BY _____ DATE _____ TIME _____ RECEIVED BY _____ DATE _____ TIME _____

SHIPPED VIA AIRBORNE EXPRESS DATE SENT 8/12/98 TIME SENT 1630 COOLER # _____ AIRBILL # 5301431656

General Inorganics - Method 300.0



GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW6
Lab ID: 300967-0001-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 6.6 | mg/L | 0.25 | 300.0 | NA | 13 AUG 98 o |
| Sulfate | 52.4 | mg/L | 5.0 | 300.0 | NA | 13 AUG 98 o |

Note o : Reporting limit(s) raised due to high level of analyte present in sample.

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.

Rev 230787



GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW7
Lab ID: 300967-0002-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 3.7 | mg/L | 0.25 | 300.0 | NA | 13 AUG 98 o |
| Sulfate | 74.3 | mg/L | 5.0 | 300.0 | NA | 13 AUG 98 o |

Note o : Reporting limit(s) raised due to high level of analyte present in sample.

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.

Rev 230787



GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW9
Lab ID: 300967-0003-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 3.9 | mg/L | 0.25 | 300.0 | NA | 13 AUG 98 o |
| Sulfate | 37.9 | mg/L | 5.0 | 300.0 | NA | 13 AUG 98 o |

Note o : Reporting limit(s) raised due to high level of analyte present in sample.

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.

Rev 230787



GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: MW6
Lab ID: 300967-0004-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 0.13 | mg/L | 0.050 | 300.0 | NA | 13 AUG 98 |
| Sulfate | 8.2 | mg/L | 1.0 | 300.0 | NA | 13 AUG 98 |

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.
Rev 230787



GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: FHSMW10
Lab ID: 300967-0005-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 4.5 | mg/L | 0.25 | 300.0 | NA | 13 AUG 98 o |
| Sulfate | 46.5 | mg/L | 5.0 | 300.0 | NA | 13 AUG 98 o |

Note o : Reporting limit(s) raised due to high level of analyte present in sample.

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.

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GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: FHSMW11
Lab ID: 300967-0006-SA
Matrix: AQUEOUS
Authorized: 13 AUG 98

Sampled: 12 AUG 98
Prepared: See Below

Received: 13 AUG 98
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|----------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Nitrate (as N) | 6.0 | mg/L | 0.25 | 300.0 | NA | 13 AUG 98 o |
| Sulfate | 31.2 | mg/L | 5.0 | 300.0 | NA | 13 AUG 98 o |

Note o : Reporting limit(s) raised due to high level of analyte present in sample.

ND = Not detected
NA = Not applicable

Reported By: Hamid Foolad

Approved By: Mark Frey

The cover letter is an integral part of this report.

Rev 230787



QC LOT ASSIGNMENT REPORT - MS QC
Wet Chemistry Analysis and Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|-----------------------------|-----------|-------------|------------------------|----------------------------------|-----------------------------------|
| 300967-0001-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |
| 300967-0002-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |
| 300967-0003-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |
| 300967-0004-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |
| 300967-0005-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |
| 300967-0006-SA | AQUEOUS | IC-A | - | 13 AUG 98-B | 13 AUG 98-BA |

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation
Project: 300967

Test: IC-SCAN-2-A
Method: 300.0
Matrix: AQUEOUS
QC Lot: 13 AUG 98-BX
Analyzed: 13 AUG 98

Ion Chromatography Scan, Multiple elements

QC Run: 13 AUG 98-B
Time: 19:36

| Analyte | Result | Units | Reporting Limit | Qualifier |
|----------------|--------|-------|-----------------|-----------|
| Nitrate (as N) | ND | mg/L | 0.050 | |

Test: IC-SCAN-2-A
Method: 300.0
Matrix: AQUEOUS
QC Lot: 13 AUG 98-BX
Analyzed: 13 AUG 98

Ion Chromatography Scan, Multiple elements

QC Run: 13 AUG 98-B
Time: 19:36

| Analyte | Result | Units | Reporting Limit | Qualifier |
|---------|--------|-------|-----------------|-----------|
| Sulfate | ND | mg/L | 1.0 | |

ND = Not Detected



LABORATORY CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 300967

Category: IC-A Ion Chromatography Inorganics
Test: IC-SCAN-2-A
Matrix: AQUEOUS
QC Lot: 13 AUG 98-BX
Concentration Units: mg/L

QC Run: 13 AUG 98-B

| Analyte | Concentration | | Accuracy(%) | |
|-----------------------|---------------|----------|-------------|--------|
| | Spiked | Measured | LCS | Limits |
| Fluoride | 5.00 | 4.91 | 98 | 90-110 |
| Chloride | 10.0 | 9.59 | 96 | 90-110 |
| Nitrite (as N) | 1.00 | 0.979 | 98 | 90-110 |
| Bromide | 5.00 | 4.79 | 96 | 90-110 |
| Nitrate (as N) | 1.00 | 0.926 | 93 | 90-110 |
| Orthophosphate (as P) | 2.00 | 1.88 | 94 | 90-110 |
| Sulfate | 20.0 | 19.6 | 98 | 90-110 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
 Wet Chemistry Analysis and Preparation
 Project: 300967

Category: IC-A Ion Chromatography Inorganics
 Test : IC-SCAN-2-A
 Matrix : AQUEOUS
 Sample : 300967-0002
 S Run : 13 AUG 98-BA
 Units : mg/L

Method: 300.0

-----Concentration-----

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked | | %Recovery | | %RPD | Acceptance Limit | |
|----------------|---------------|-----------|------------|---------------|------|-----------|-----|------|------------------|-----|
| | | | | MS | MSD | MS | MSD | | Recov. | RPD |
| Nitrate (as N) | 3.70 | 13.2 | 13.3 | 10.0 | 10.0 | 95 | 96 | 1.1 | 75-125 | 20 |
| Sulfate | 74.3 | 231 | 230 | 150 | 150 | 105 | 104 | 0.42 | 75-125 | 20 |

Calculations are performed before rounding to avoid round-off errors in calculated results.



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WATER ANALYSIS REPORT

To: William Mast
PES Environmental, Inc.
1682 Novato Blvd. Suite 100
Novato, CA 94947

Date: August 19, 1998
Lab #: 98-03-0111, thru 98-08-0113
Received: August 12, 1998
Tech(s): C. Lawrence
Lab Supervisor: D. Jacobson
Lab Director: G.S. Conrad, Ph.D.
Sample ID(s): MW6, AMW6, AMW7, AMW9,
FHSMW10 & FHSMW11

Sample of: monitor well water
Job #: 980812-C1

Site Location: Foothill Square, 10700 MacArthur Blvd., Oakland,
California.

RESULTS

| SAMPLE ID | FERROUS IRON |
|-----------|--------------|
| MW6 | 0.45 mg/l |
| AMW6 | 0.20 mg/l |
| AMW7 | 0.68 mg/l |
| AMW9 | 0.07 mg/l |
| FHSMW10 | 0.05 mg/l |
| FHSMW11 | <0.01 mg/l |

COMMENTS

These three samples ranged from non-detect to moderate in ferrous iron. The values for the MW and AMW samples makes it appear as though there might be some sort of gradient from low to moderate in this set; whereas both FHSMW samples were very low. Either total iron levels or oxidation states and microbial activity should be more or less commensurate (directly or inversely) with ferrous levels.

QC DATA - Ferrous Tests 5/15/98

| Test | Lab Standard | Result | Percent Recovery |
|---------------|--------------|------------|------------------|
| Ferrous Iron* | 2.000 mg/l | 1.944 mg/l | 97.2% |

* Ferrous Ammonium Sulfate - $(\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O})$.

NOTES:

These tests were done according to the Association for Testing Materials (ASTM), and/or conform to standard and accepted protocols as described in Standard Methods for the Examination of Water and Wastewater, 18th ed., © 1992: Ferrous Iron (Fe^{++}) - Phenanthroline Method (modified SMEWW 3500-Fe D); Redox - ASTM D 1498.

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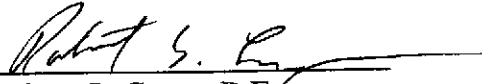
**QUARTERLY MONITORING REPORT
FORMER YOUNG'S CLEANERS
FOOTHILL SQUARE SHOPPING CENTER
OAKLAND, CALIFORNIA**

OCTOBER 13, 1998

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QUALITY CONTROL REVIEWER


Robert S. Creps, P.E.
Principal Engineer