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Engineering & Environmental Services

A Report Prepared For:

Drake Builders, Inc.
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Attention: Mr. Richard Gilcrease

QUARTERLY MONITORING & WELL INSTALLATION REPORT FORMER YOUNG'S CLEANERS FOOTHILL SQUARE SHOPPING CENTER OAKLAND, CALIFORNIA

10700 MacARTHUR, OAK

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1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring and offsite sentry well installation performed by PES Environmental, Inc. (PES) during the third quarter of 1997 at Foothill Square Shopping Center (Site) in Oakland, California (Plate 1). PES has been retained by Drake Builders, Inc. to conduct the quarterly groundwater monitoring at the site. The current 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 11 of the monitoring wells (Wells WGR-MW2 through -4, AMW-4 through AMW-9, MW-6, MW-7, FHS-MW-10, and FHS-MW-11).

The purpose of the groundwater monitoring program at the site is 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 the 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. The cleaners have been on the CAL-SITES database list since 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. A summary of the monitoring well completion details is provided in Table 1.

Augeas began performing 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). The groundwater investigations conducted by 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.

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 108th Avenue (see Plate 2). On the basis of the these data, PES concluded that the VOC groundwater plume had not migrated substantially off of the Foothill Square Shopping Center site. To provide continuing data to evaluate the stability of the PCE groundwater plume, PES recommended installation and monitoring of sentry wells at the leading edge of the plume (PES, 1997b). Installation of these sentry wells is described below. Additionally, PES recommended that the analytical program be expanded at selected wells to evaluate the progress of intrinsic (naturally occurring) remediation by testing for geochemical parameters indicative of biological and chemical degradation. The Regional Water Quality Control Board San Francisco Bay Region (RWQCB) and Alameda County Environmental Health Services (ACEHS) concurred with PES' recommendations in letters dated April 16 and April 23, 1997, respectively.

3.0 SENTRY WELL INSTALLATION

3.1 Pre-Investigation Activities

In July 1997, two sentry wells were installed offsite and downgradient of the Foothill Square Shopping Center. Prior to commencing field activities, drilling Permit No. 97069 was secured from the Alameda County Zone 7 Water Agency. Additionally, excavation and minor encroachment permit permits were obtained from the City of Oakland Office of Planning & Building. An underground utility survey was conducted prior to drilling to assess whether the drilling locations were clear of underground improvements.

Health and safety protocols were conducted in accordance with PES' site-specific health and safety plan, *Site Specific Health and Safety Plan, Groundwater Monitoring Well Installation, Foothill Square Shopping Center, 10700 MacArthur Boulevard, Oakland, California*, dated February 3, 1997 (PES, 1997a).

3.2 Drilling and Well Installation

Monitoring wells FHS-MW-10 and FHS-MW-11 were drilled and constructed at the locations shown on Plate 2 as specified in the March 24, 1997 PES report *Results of Additional Groundwater Investigation and Risk Evaluation, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California* (PES, 1997b). The drilling and well installation activities were performed on July 14 and 15, 1997, by Gregg Drilling of Martinez, California under the direction of PES. The boreholes for FHS-MW-10 and FHS-MW-11 were drilled to 54.5 and 62.5 feet below ground surface (bgs), respectively.

Soil samples were collected every 5 feet to document subsurface conditions. The soil lithology was logged from cuttings and from samples in accordance with the Unified Soil Classification System (USCS) by a PES geologist under the supervision of a California Registered Geologist. The USCS chart is presented on Plate A-1 and boring logs are shown on Plates A-2 and A-3 (Appendix A). Soil samples were collected by driving a modified California split spoon sampler lined with three 6-inch long stainless steel liners approximately 18 inches into undisturbed soil. The first (lead) liner of each sample was field screened for volatile organic chemicals (VOC) in the sample headspace using a photo ionization detector (PID) and the readings were recorded on the boring logs.

The groundwater monitoring wells were completed by placing well casing through the hollow stem of the augers and, as the augers were removed, backfilling the annular space between the borehole sidewall and well casing with a sand filter pack, bentonite pellet seal, and cement sanitary seal. Casing used for the wells was 2-inch diameter, flush-threaded, 0.010-inch machine slotted PVC screen, and blank PVC casing to the ground surface. The screened intervals of the wells were selected based on depth to water measurements and the screened intervals of existing onsite wells. Well FHS-MW-10 was constructed so that the screen extends from 42 to 52 feet bgs and Well FHS-MW-11 was constructed with the screen

extending from 59 to 64 feet bgs, with blank casing extending to the ground surface. A threaded bottom cap was placed at the bottom of the casing. The sand filter pack, consisting of clean graded 2/12 sand, was placed from the bottom of the borehole to approximately 1-foot above the top of the well screen. A 2-foot thick bentonite pellet seal was placed above the sand pack and a Portland cement grout was placed above the bentonite pellet seal to the ground surface. The wellheads were completed with a locking water-tight cap within a flush-mounted traffic-rated vault box set in concrete. The well construction details for monitoring wells FHS-MW-10 and FHS-MW-11 are summarized in Table 1 and shown on Plates A-2 and A-3, respectively.

The well top-of-casing elevation and location were surveyed by Ron Archer, Civil Engineering Inc., a California-licensed land surveyor. Elevations were measured relative to mean sea level referenced to City of Oakland Benchmark 14-B located at the south corner of the intersection of MacArthur Boulevard and 106th Avenue. This benchmark was used previously for existing onsite wells. Monitoring well survey data is provided in Appendix B.

3.3 Well Development

The wells were developed on July 25, 1997 by Gregg Drilling under the direction of PES. Well development was performed to remove sediment from the casing and filter pack, and to improve the hydraulic connection between the well and the aquifer. Development was performed by purging the wells using a submersible centrifugal pump after removing fine sand from the wells and sand pack using a stainless steel bailer and surge block. The volume of water purged from each well during development exceeded 10 casing volumes. Development discharge water was monitored for pH, temperature, turbidity, and electrical conductivity during development. Development equipment was cleaned prior to each use. Records of the well development are included in Appendix C. Development water was collected in DOT-approved 55-gallon steel drums and stored onsite prior to disposal.

4.0 WATER-LEVEL MEASUREMENTS

Water levels in 11 onsite groundwater monitoring wells (Wells WGR-MW2 through WGR-MW4, AMW-1, AMW-4 through AMW-9, MW-6, and MW-7) and one offsite well (FHS-MW-11) were measured by Blaine Tech Services, Inc. (Blaine Tech) of San Jose, California, under the direct supervision of PES, prior to sampling on September 29, 1997. Access to one offsite well (FHS-MW-10) was initially blocked by a parked car; after the car was moved, Blaine Tech revisited the site and measured the water-level on October 9, 1997. 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 the 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.

5.0 GROUNDWATER SAMPLING

Groundwater samples were collected from Wells WGR-MW3, WGR-MW4, AMW-1, AMW-4 through AMW-9, MW-6, MW-7, and FHS-MW-11 on September 29, 1997, by Blaine Tech under the direct supervision of PES. As described above, Well FHS-MW-10 was not accessible for sampling until October 9, 1997. No sample was collected from Well WGR-MW2 during the current monitoring event. This shallow groundwater zone well is downgradient and within approximately 50 feet of a second shallow zone well, AMW-1; neither of these two wells has ever had detectable concentrations of VOCs.

Prior to well purging and groundwater sampling, Blaine Tech personnel measured dissolved oxygen in water in the well casing in eight 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, and turbidity. 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 D.

Groundwater samples were transported under chain-of-custody protocol to state-certified laboratories as listed below. American Environmental Network (AEN) of Pleasant Hill, California analyzed samples for halogenated VOCs using EPA Test Method 8010. The inorganic parameters added to the analytical program for eight selected wells (AMW-4, AMW-6, AMW-7, AMW-9, WGR-MW3, MW-6, FHS-MW-10, and FHS-MW-11) consisted of: dissolved oxygen, oxidation-reduction potential, sulfate, nitrate, carbon dioxide, methane, and ferrous iron. 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 laboratory reports and chain-of-custody records are included in Appendix E.

6.0 GROUNDWATER MONITORING RESULTS

This section presents a summary of water-level measurements and groundwater analyses results from the September 1997 sampling event.

6.1 Water-Level Measurements

During the current groundwater monitoring period, depth-to-water measurements for the shallow groundwater zone ranged from 13.32 feet (AMW-4) to 25.06 feet (WGR-MW2) below the top-of-casing (TOC). Shallow groundwater zone water-level elevations ranged from 36.45 feet MSL (MW-7) to 51.47 feet MSL (AMW-4). Depth-to-water measurements for the deep groundwater zone ranged from 17.69 feet (AMW-8) to 36.27 feet (MW-6) below TOC. Deep groundwater zone water-level elevations ranged from 24.22 feet MSL (FHS-MW-11) to 46.86 feet MSL (AMW-8). Depth-to-water measurements and calculated water-level elevations since 1995 and for the current period are presented in Table 2. Historical water-level elevation data (prior to 1995) were presented in Appendix C of the PES report *Results of Additional Groundwater Investigation and Risk Evaluation, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California*, dated March 24, 1997 (PES, 1997b). This historical data will be presented annually in the fourth quarter groundwater monitoring report.

Plates 3 and 4 present water-level elevation contours developed from water levels measured on September 29, 1997 (and on October 9, 1997 for Well FHS-MW-10), 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 0.045 to 0.065 foot per foot (ft/ft). In the deep groundwater zone, the groundwater gradient ranges from 0.093 ft/ft on the Foothill Square Shopping Center to 0.0036 ft/ft offsite to the west.

6.2 Groundwater Chemistry

6.2.1 Volatile Organic Compounds

A summary of laboratory chemical analyses results since 1995 and for the current period is presented in Table 3; 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 E. Complete historical results (prior to 1995) were presented Appendix C of the PES report

Results of Additional Groundwater Investigation and Risk Evaluation, Former Young's Cleaners, Foothill Square Shopping Center, Oakland, California, dated March 24, 1997 (PES, 1997b). This historical data will be presented annually in the fourth quarter groundwater monitoring report.

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 ranging from 13 to 4,600 micrograms per liter (µg/L) in Wells AMW-4, AMW-5, AMW-6, and AMW-7. PCE concentrations in wells completed in the shallow groundwater zone 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-4, AMW-6, AMW-7, and MW-7, but generally at much lower concentrations than PCE. No VOCs were detected in Wells WGR-MW3, AMW-1, and MW-7.

In the deep groundwater zone, PCE was detected in onsite Wells AMW-8, AMW-9, and MW-6 at concentrations ranging from 0.7 to 670 µg/L. In offsite Sentry Well FHS-MW-11, PCE was detected at a concentration of 4 µg/L. PCE concentrations in deep wells are presented on Plate 6. No VOCs were detected in onsite Wells WGR-MW4 or AMW-8 or in offsite Sentry Well FHS-MW-10.

6.2.2 Inorganic Parameters

A summary of laboratory chemical analyses for inorganic parameters is presented in Table 4. The analytical laboratory reports and chain-of-custody forms are presented in Appendix E.

Groundwater samples from shallow zone Wells AMW-4, AMW-6, AMW-7, and WGR-MW3 were analyzed for inorganic parameters. Levels of dissolved oxygen, oxidation-reduction potential, sulfate, nitrate, ferrous iron, methane, and carbon dioxide were fairly consistent in Wells AMW-4 and AMW-6. In the sample from AMW-7, sulfate and nitrate concentrations were slightly elevated relative to the other three shallow zone wells, while the ferrous iron concentration was low. In the sample from Well WGR-MW3, the concentrations of dissolved oxygen, sulfate, and nitrate were low, relative to the other three shallow zone wells, while concentrations of ferrous iron and methane were elevated.

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 of dissolved oxygen, oxidation-reduction potential, sulfate, nitrate, methane, and carbon dioxide were fairly consistent in samples from Wells MW-6 and FHS-MW-10, although the ferrous iron concentration in MW-6 is lower than that in FHS-MW-10. In the sample from AMW-9, dissolved oxygen, sulfate, and nitrate concentrations were low relative to the other three deep zone wells, while the oxidation-reduction potential, ferrous iron, and methane levels were elevated. In the sample from Well FHS-MW-11, the concentrations of sulfate and methane were slightly

elevated relative to the other three deep zone wells, while concentration of carbon dioxide was low.

7.0 DISCUSSION AND RECOMMENDATIONS

The results of the organic and inorganic groundwater analyses (refer to Tables 3 and 4) 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 and ferrous iron levels in deep zone Well AMW-9 indicate a reducing environment. In addition, the relatively low concentrations of sulfate and nitrate in this well suggest ongoing sulfate reduction and denitrification, respectively. This reducing environment may be contributing to declining PCE concentrations in groundwater monitored by Well AMW-9.

PCE has not typically been observed at Well WGR-MW3 (only one time since March 1995). However, petroleum hydrocarbons have been identified in soil and the shallow groundwater zone near this well during investigation activities for the adjacent ARCO service station. The low concentrations of sulfate and nitrate in this well, relative to the three other shallow zone wells, suggest ongoing sulfate reduction and denitrification. Ferrous iron and methane are present in this well at the highest concentrations of all the wells sampled. It appears that intrinsic remediation may be occurring in Well WGR-MW3, but it is likely associated with degradation of the petroleum hydrocarbons.

PES recommends continued quarterly monitoring of VOCs and inorganic constituents in selected monitoring wells. Because PCE has not been detected in Wells WGR-MW3 and WGR-MW4 during the last two years of groundwater monitoring, PES recommends discontinuing all groundwater analyses at these two wells. Further, because of the density of shallow zone wells (AMW-4, AMW-5, and AMW-7) southwest of the former dry cleaner (Plate 2), PES recommends discontinuing analysis of VOCs at Well AMW-5 and inorganic parameters at Well AMW-4. PES plans to implement these changes during subsequent monitoring events. Water-level measurements will continue to be collected at all accessible monitoring wells.

8.0 REFERENCES

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Table 1. Monitoring Well Completion Details
Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California

Well Number	Date Installed	Installed By	Top-of-Casing Elevation (feet MSL)	Casing Diameter (inches)	Total Depth of Casing (feet bgs)	Screened Interval (feet bgs)	Groundwater Zone Monitored
WGR-MW1 (1)	12/5/88	WGR	65.97	4	33.5	23.5 - 28.5	Shallow
WGR-MW2	12/6/88	WGR	63.18	4	40.5	23 - 28	Shallow
WGR-MW3	12/7/88	WGR	58.34	4	42	22 - 27	Shallow
WGR-MW4	12/7/88	WGR	60.02	4	50.5	23 - 45	Deep
WGR-MW5 (2)	12/8/88	WGR	68.94	4	31.5	23.5 - 31.5	Shallow
AMW-1	9/12/94	Augeas	64.51	2	34	24 - 34	Shallow
AMW-2 (3)	9/30/94	Augeas	65.33	2	29	19 - 29	Shallow
AMW-3 (3)	11/18/94	Augeas	65.09	2	29	19 - 29	Shallow
AMW-4	3/22/95	Augeas	64.79	2	25	15 - 25	Shallow
AMW-5	3/22/95	Augeas	64.97	2	30	20 - 30	Shallow
AMW-6	NA	Augeas	65.10	2	25	NA	Shallow
AMW-7	NA	Augeas	64.24	2	25	NA	Shallow
AMW-8	NA	Augeas	64.55	2	48	NA	Deep
AMW-9	NA	Augeas	63.48	2	53	NA	Deep
FHS-MW-10	7/15/97	PES	52.37	2	52	42 - 52	Deep
FHS-MW-11	7/14/97	PES	54.06	2	64	59 - 64	Deep
MW-6	6/16/92	RESNA	61.78	2	56	37.5 - 56	Deep
MW-7	6/16/92	RESNA	58.64	2	37.5	17.5 - 37.5	Shallow

Note:
feet bgs = Feet below ground surface.
feet MSL = Feet above mean sea level.
WGR = Western Geologic Resources, Inc.
Augeas = Augeas Corporation.
RESNA = RESNA Consultants.
(1) = Well accidently covered by asphalt paving in June 1996.
(2) = Well covered by soil remediation stockpile in 1995.
(3) = Well abandoned during site remediation activities in 1995.
NA = Not available.
NM = Not measured.

Table 2. Water-Level Elevation Data - 1995 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)	9/7/95	Augeas	65.97	5.82	60.15
	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**	**--**
WGR-MW2 (Shallow Zone)	3/23/95	Augeas	63.18	21.32	41.86
	6/21/95	Augeas	63.18	21.55	41.63
	9/7/95	Augeas	63.18	23.37	39.81
	4/16/96	PES	63.18	20.97	42.21
	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**
WGR-MW3 (Shallow Zone)	3/10/95	EMCON	58.34	15.20	43.14
	6/5/95	EMCON	58.34	19.25	39.09
	8/29/95	EMCON	58.34	21.41	36.93
	9/7/95	Augeas	58.34	21.55	36.79
	11/16/95	EMCON	58.34	22.50	35.84
	2/28/96	EMCON	58.34	14.90	43.44
	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
	9/29/97	**PES**	**57.96****	**21.72**	**36.24**
WGR-MW4 (Deep Zone)	9/7/95	Augeas	60.02	27.20	32.82
	4/16/96	PES	60.02	23.26	36.76
	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**
WGR-MW5 (Shallow Zone)	9/7/95	Augeas	68.94	NM	--
	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**	**--**

Table 2. Water-Level Elevation Data - 1995 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	3/23/95	Augeas	64.51	21.42	43.09
(Shallow Zone)	6/21/95	Augeas	64.51	23.50	41.01
	9/7/95	Augeas	64.51	23.01	41.50
	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**
AMW-2	3/23/95	Augeas	65.33	13.12	52.21
(Shallow Zone)	6/21/95	Augeas	65.33	13.00	52.33
	Well abandoned during site remediation in 1995.				
AMW-3	3/23/95	Augeas	65.09	12.20	52.89
(Shallow Zone)	6/21/95	Augeas	65.09	11.80	53.29
	Well abandoned during site remediation in 1995.				
AMW-4	5/15/95	Augeas	64.79	12.60	52.19
(Shallow Zone)	6/21/95	Augeas	64.79	12.50	52.29
	9/7/95	Augeas	64.79	13.45	51.34
	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**
AMW-5	5/15/95	Augeas	64.97	13.71	51.26
(Shallow Zone)	6/21/95	Augeas	64.97	13.85	51.12
	9/7/95	Augeas	64.97	14.70	50.27
	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**
AMW-6	9/7/95	Augeas	65.10	14.32	50.78
(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**
AMW-7	9/7/95	Augeas	64.24	15.30	48.94
(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**

Table 2. Water-Level Elevation Data - 1995 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)	9/7/95	Augeas	64.55	17.90	46.65
	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**
AMW-9 (Deep Zone)	9/7/95	Augeas	63.48	23.02	40.46
	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**
FHS-MW-10 (Deep Zone)	7/25/97	PES	52.37**	26.00	26.37
	9/29/97	**PES**	**52.37**	**27.92**	**24.45**
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**
MW-6 (Deep Zone)	3/10/95	EMCON	61.21	31.54	29.67
	6/5/95	EMCON	61.21	31.15	30.06
	8/29/95	EMCON	61.21	34.03	27.18
	9/7/95	Augeus	61.78**	34.09	27.69
	11/16/95	EMCON	61.78	36.40	25.38
	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
	9/29/97	**PES**	**61.78**	**36.27**	**25.51**

Table 2. Water-Level Elevation Data - 1995 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)	3/10/95	EMCON	58.22	17.69	40.53
	6/5/95	EMCON	58.22	19.68	38.54
	8/29/95	EMCON	58.22	21.70	36.52
	9/7/95	Augeus	58.64**	21.86	36.78
	11/16/95	EMCON	58.64	23.02	35.62
	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
	9/29/97	**PES**	**58.64**	**22.19**	**36.45**

Notes:

* = Water-level measurement and elevation data prior to 1995 are presented in *Results of Additional Groundwater Investigation and Risk Evaluation, Former Young's Cleaners, Foothill Square Square Shopping Center, Oakland, California (PES, March 24, 1997).*

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

feet MSL = Feet above mean sea level

NM = Not measured

Augeas = Augeas Corporation

PES = PES Environmental, Inc.

EMCON = EMCON Associates

Sources: Augeus (1995a), EMCON (1996b)

Table 3. Analytical Results for Groundwater Samples - Organics
1995 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	9/12/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
(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**
WGR-MW2	3/23/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
(Shallow Zone)	6/21/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	9/11/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	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**
WGR-MW3	3/11/95	EMCON	<1	<1	<1	<1	–
(Shallow Zone)	6/5/95	EMCON	<1	<1	<1	<1	–
	8/29/95	EMCON	<1	<1	<1	<1	–
	9/11/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	11/16/95	EMCON	<1	<1	<1	<1	<1
	2/28/96	EMCON	<1	<1	<1	<1	–
	4/16/96	PES	0.6	0.5	<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	–
	9/29/97	**PES**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**
WGR-MW4	4/16/96	PES	<0.5	<0.5	<0.5	<0.5	<2
(Deep Zone)	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**
WGR-MW5	7/17/96	PES	NS	NS	NS	NS	NS
(Shallow Zone)	10/23/96	PES	NS	NS	NS	NS	NS
	9/29/97	**PES**	**NS**	**NS**	**NS**	**NS**	**NS**
AMW-1	3/23/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
(Shallow Zone)	6/21/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	9/11/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	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**

Table 3. Analytical Results for Groundwater Samples - Organics
1995 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-2	3/23/95	Augeas	13,000	<250	–	<250	<250
(Shallow Zone)	6/21/95	Augeas	36,000	<500	–	<500	<500
	Well abandoned during site remediation in 1995.						
AMW-3	3/23/95	Augeas	45	<5.0	–	<5.0	<5.0
(Shallow Zone)	6/21/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	Well abandoned during site remediation in 1995.						
AMW-4	5/15/95	Augeas	2,400	<50	–	<50	<50
(Shallow Zone)	6/21/95	Augeas	2,500	<50	–	<50	<50
	9/13/95	Augeas	1,100	<25	–	<25	<25
	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**
AMW-5	5/15/95	Augeas	1.2	<0.5	–	<0.5	<0.5
(Shallow Zone)	6/21/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	9/12/95	Augeas	<0.5	<0.5	–	<0.5	<0.5
	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**
AMW-6	9/13/95	Augeas	930	<25	–	<25	<25
(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**
AMW-7	9/12/95	Augeas	2,350	340	–	<25	<25
(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**
AMW-8	9/11/95	Augeas	95	<25	–	<25	<25
(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**
AMW-9	9/13/95	Augeas	170	<25	–	<25	<25
(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**

Table 3. Analytical Results for Groundwater Samples - Organics
1995 To Present
Former Young's Cleaners
Foothill Square Shopping Center
Oakland, California

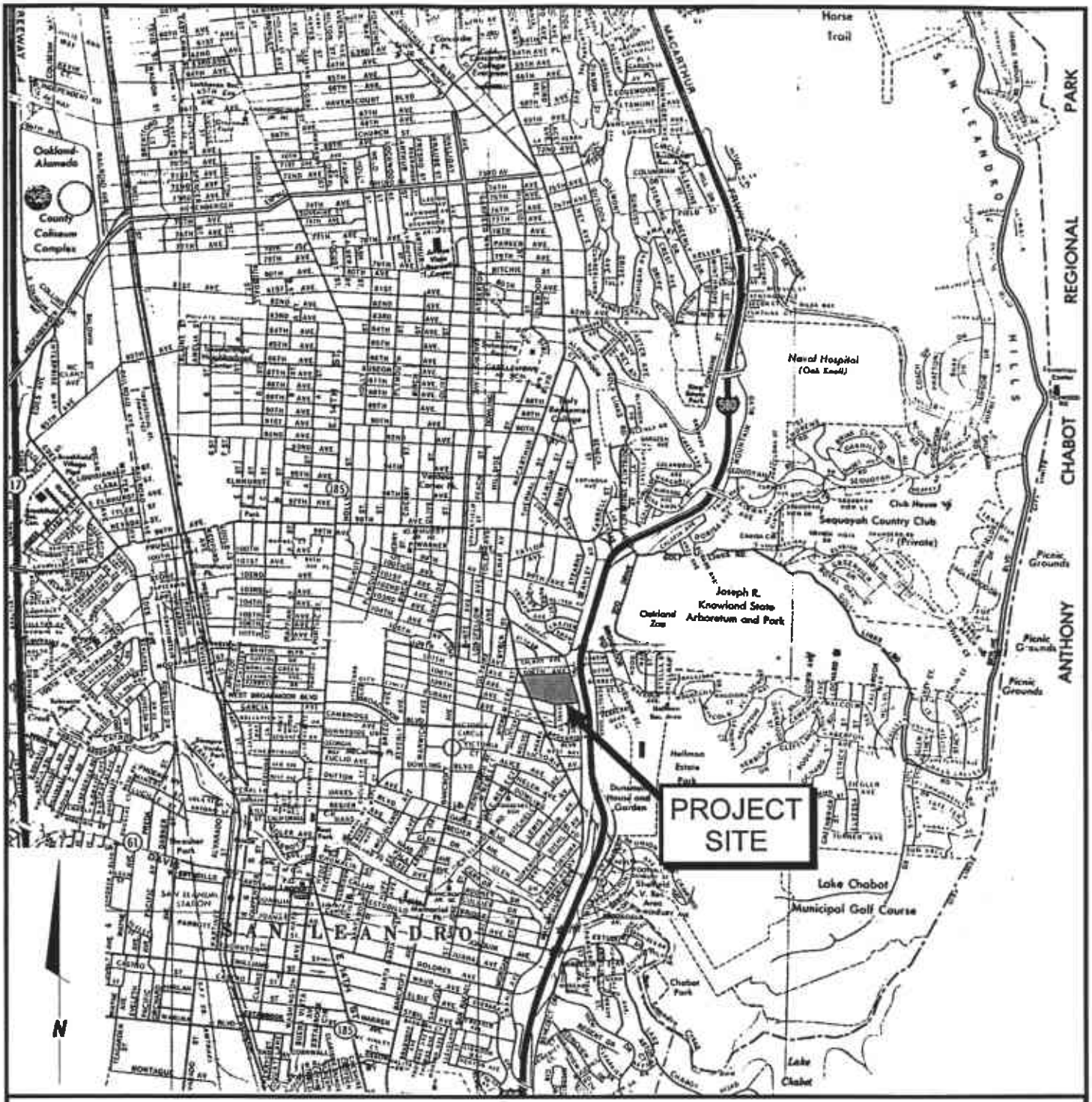
Well Number	Date Sampled	Sampled by	PCE (µg/L)	TCE (µg/L)	c-1,2-DCE (µg/L)	t-1,2-DCE (µg/L)	Freon-12 (µg/L)
FHS-MW-10 (Deep Zone)	**10/9/97**	**PES**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**
FHS-MW-11 (Deep Zone)	**9/29/97**	**PES**	**4.0**	**<0.5**	**<0.5**	**<0.5**	**<2**
MW-6 (Deep Zone)	3/11/95	EMCON	1,300	<20	<20	<0.5	–
	6/5/95	EMCON	2,000	<20	<20	<20	–
	8/29/95	EMCON	1,300	<20	<20	<20	–
	9/11/95	Augeus	2,000	<50	–	<50	<50
	11/16/95	EMCON	1,300	<20	<20	<20	<20
	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
	11/21/96	EMCON	680	<20	<20	<20	–
	3/26/97	EMCON	830	<40	<40	<40	–
	5/20/97	EMCON	270	<5	<5	<5	–
	9/29/97	**PES**	**670**	**<10**	**<10**	**<10**	**<40**
MW-7 (Shallow Zone)	3/11/95	EMCON	Not sampled:floating product entering the well during purging				
	6/5/95	EMCON	<10	<10	<10	<10	–
	8/29/95	EMCON	<10	<10	<10	<10	–
	9/11/95	Augeus	85	<50	–	<50	<50
	11/16/95	EMCON	<20	<20	<20	<20	<20
	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	–
	9/29/97	**PES**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**

Notes:
PCE = Tetrachloroethene.
TCE = Trichloroethene.
c-1,2-DCE = cis-1,2-dichloroethene.
t-1,2-DCE = trans-1,2-dichloroethene.
Freon 12 = Dichlorodifluoromethane.
µg/L = Micrograms per liter.
Augeas = Augeas Corporation.
PES = PES Environmental, Inc.
EMCON = EMCON Associates.
<0.1 = Not detected at or above the detection limit indicated.
ND = Not detected, detection limit not reported by EMCON.
NS = Not sampled.

Table 4. 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
AMW-6 (Shallow Zone)	9/29/97	PES	0.55	245	45.9	5.3	0.19	<0.0010	11
AMW-7 (Shallow Zone)	9/29/97	PES	0.64	109	92.2	6.1	0.01	<0.0010	33
AMW-9 (Deep Zone)	9/29/97	PES	0.32	-87	39.7	3.5	0.90	<0.0010	7.7
WGR-MW3 (Shallow Zone)	9/29/97	PES	0.17	212	28.7	0.054	1.41	0.032	23
MW-6 (Deep Zone)	9/29/97	PES	1.81	73	37.5	4.3	<0.01	<0.0010	11
FHS-MW-10 (Deep Zone)	10/9/97	PES	1.6	25	44.6	4.3	0.18	<0.0010	27
FHS-MW-11 (Deep Zone)	9/29/97	PES	0.89	85	67.1	5.8	0.17	0.0019	0.3

Notes:
Ox-Redux = Oxidation-reduction potential.
mg/L = Milligrams per liter.
mV = Millivolts.



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

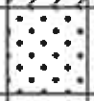
PLATE
1

502.0201.006	502011V1.CDR	DM	1/98
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

LARGE MAP REMOVED

APPENDIX A

LOGS OF MONITORING WELLS

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO.4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND AND GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

PID (PPM) -Photo Ionization Detector readings in parts per million from field headspace sample screening.

BLOWS/6" -Blows required to drive sampler 6 inches as indicated on the logs using sample drive hammer weight of 140 pounds falling 30 inches.

2.5YR 6/2 -Soil Color according to Munsell Soil Color Charts (1994 Revised Edition)

feet MSL -feet above Mean Sea Level

feet BGS -feet below ground surface

- No Soil Sample Recovered
- Partial Soil Sample Recovered
- Undisturbed Soil Sample Recovered
- Soil Sample Submitted for Laboratory Analysis
- First Encountered Groundwater Level
- Piezometric Groundwater Level

PES Environmental, Inc.
Engineering & Environmental Services

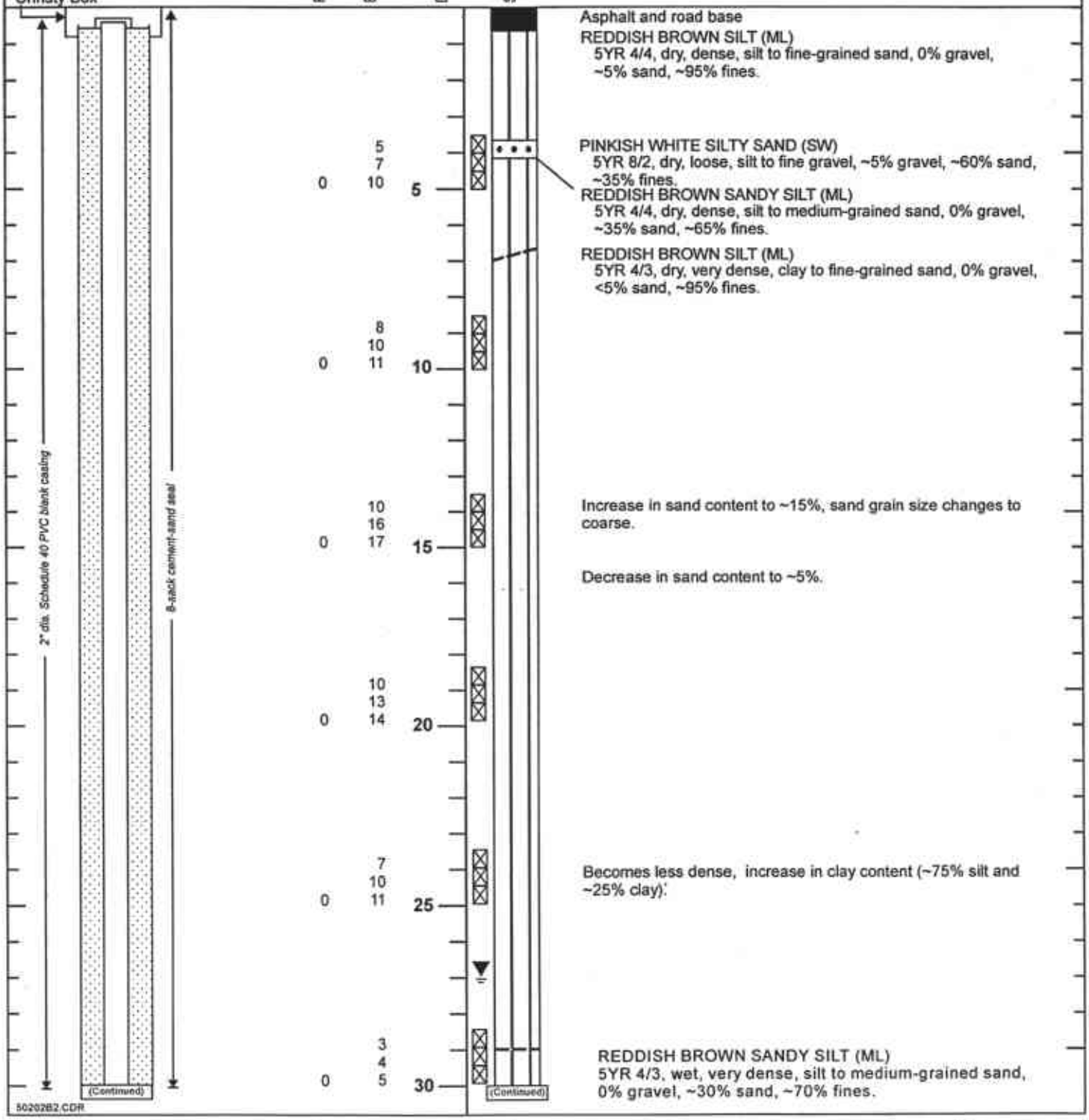
Unified Soil Classification System Chart
Foothill Square Shopping Center
Oakland, California

PLATE
A-1

502.0201006	50202_U.CDR		1/98
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL FHS-MW-10

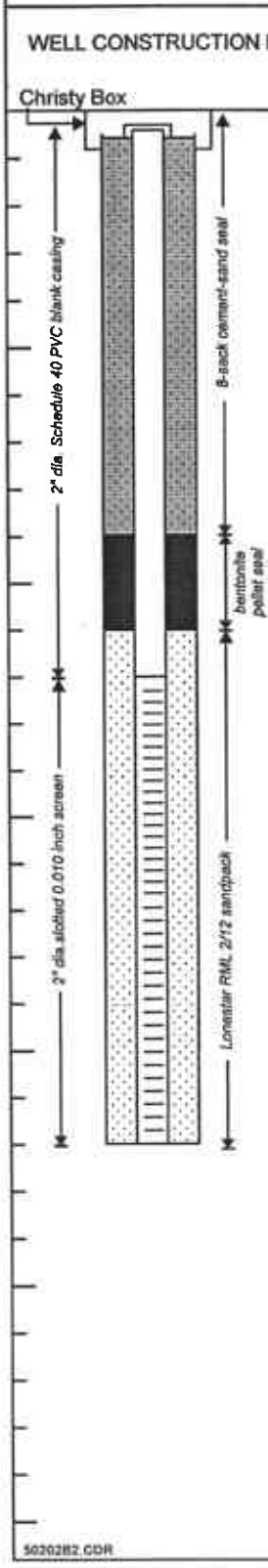


CLIENT	Foothill Square Shopping Center	DIAMETER OF HOLE	8 inches
LOCATION	Oakland, California	TOTAL DEPTH OF HOLE	52 feet
JOB NUMBER	502.0201.003	TOP OF CASING ELEVATION	52.37 feet MSL
GEOLOGIST/ENGINEER	Elizabeth A. Large	DATE STARTED	7/15/97
DRILL RIG	Hollow-Stem Auger	DATE COMPLETED	7/15/97

PLATE
A-2

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL FHS-MW-10



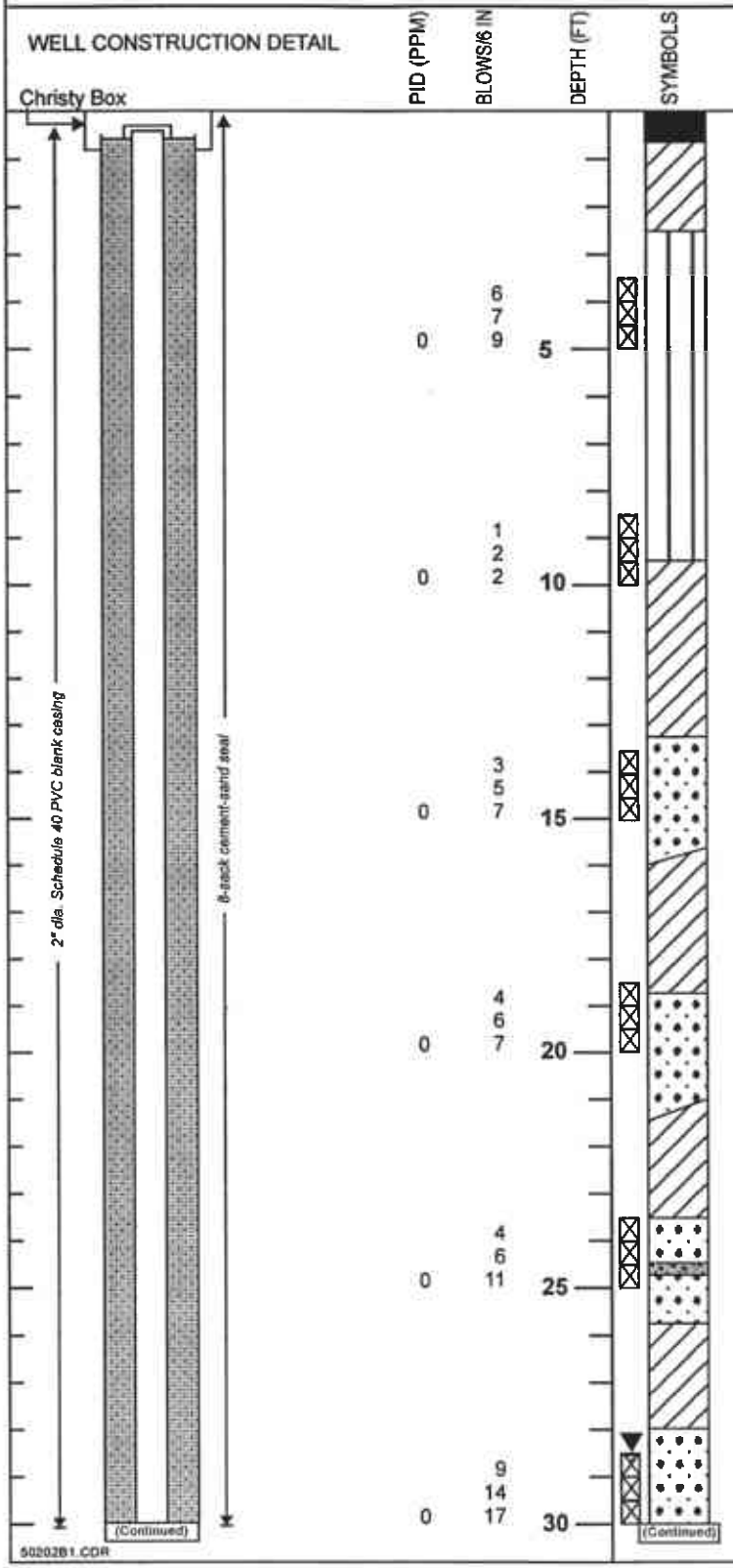
PID (PPM)	BLOWS/6 IN	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
	3			**REDDISH BROWN SILT (ML)** 5YR 4/3, dry, medium dense, clay to fine-grained sand, 0% gravel, <5% sand, ~95% fines.
0	4 6	35		**REDDISH BROWN POORLY GRADED SAND WITH SILT (SP)** 5YR 4/3, wet, slightly dense, silt to medium-grained sand, 0% gravel, ~85% sand, ~15% fines.
				REDDISH BROWN SILT (ML) 5YR 4/3, dry, medium dense, clay to fine-grained sand, 0% gravel, <5% sand, ~95% fines..
	2			**REDDISH BROWN POORLY GRADED SAND WITH SILT (SP)** 5YR 4/3, wet, slightly dense, silt to medium-grained sand, 0% gravel, ~85% sand, ~15% fines. 2 inch silt layer at 39 feet bgs. Sediments saturated.
0	3	40		
				REDDISH BROWN SANDY SILT (ML) 5YR 4/3, wet, dense, clay to fine-grained sand, 0% gravel, ~20% sand, ~80% fines.
				REDDISH BROWN POORLY GRADED SAND WITH SILT (SP) 5YR 4/3, wet, slightly dense, silt to medium-grained sand, 0% gravel, ~90% sand, ~10% fines.
		45		**REDDISH BROWN WELL- GRADED GRAVEL (GW)** 5YR 4/3, wet, dense, silt to medium gravel (~1 inch diameter) ~55% gravel, ~35% sand, ~10% fines.
				REDDISH BROWN POORLY GRADED SAND WITH SILT (SP) 5YR 4/3, wet, slightly dense, silt to medium-grained sand, 0% gravel, ~90% sand, ~10% fines.
				REDDISH BROWN SANDY SILT (ML) 5YR 4/3, wet, dense, silt to fine-grained sand, 0% gravel, ~20% sand, ~80% fines.
	5			**REDDISH BROWN SILTY SAND (SP)** 5YR 4/2, wet, dense, silt to medium-grained sand, 0% gravel, ~80% sand, ~20% fines.
	15			**REDDISH BROWN CLAY WITH SAND (CL)** 5YR 4/3, dry, medium dense, clay to fine-grained sand, 0% gravel, ~15% sand, ~85% fines.
0	22	50		*Bottom of Boring @ 52 feet below ground surface*
		55		
		60		

CLIENT	Foothill Square Shopping Center	DIAMETER OF HOLE	8 inches
LOCATION	Oakland, California	TOTAL DEPTH OF HOLE	52 feet
JOB NUMBER	502.0201.003	TOP OF CASING ELEVATION	52.37 feet MSL
GEOLOGIST/ENGINEER	Elizabeth A. Large	DATE STARTED	7/15/97
DRILL RIG	Hollow-Stem Auger	DATE COMPLETED	7/15/97

PLATE
A-2

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL FHS-MW-11

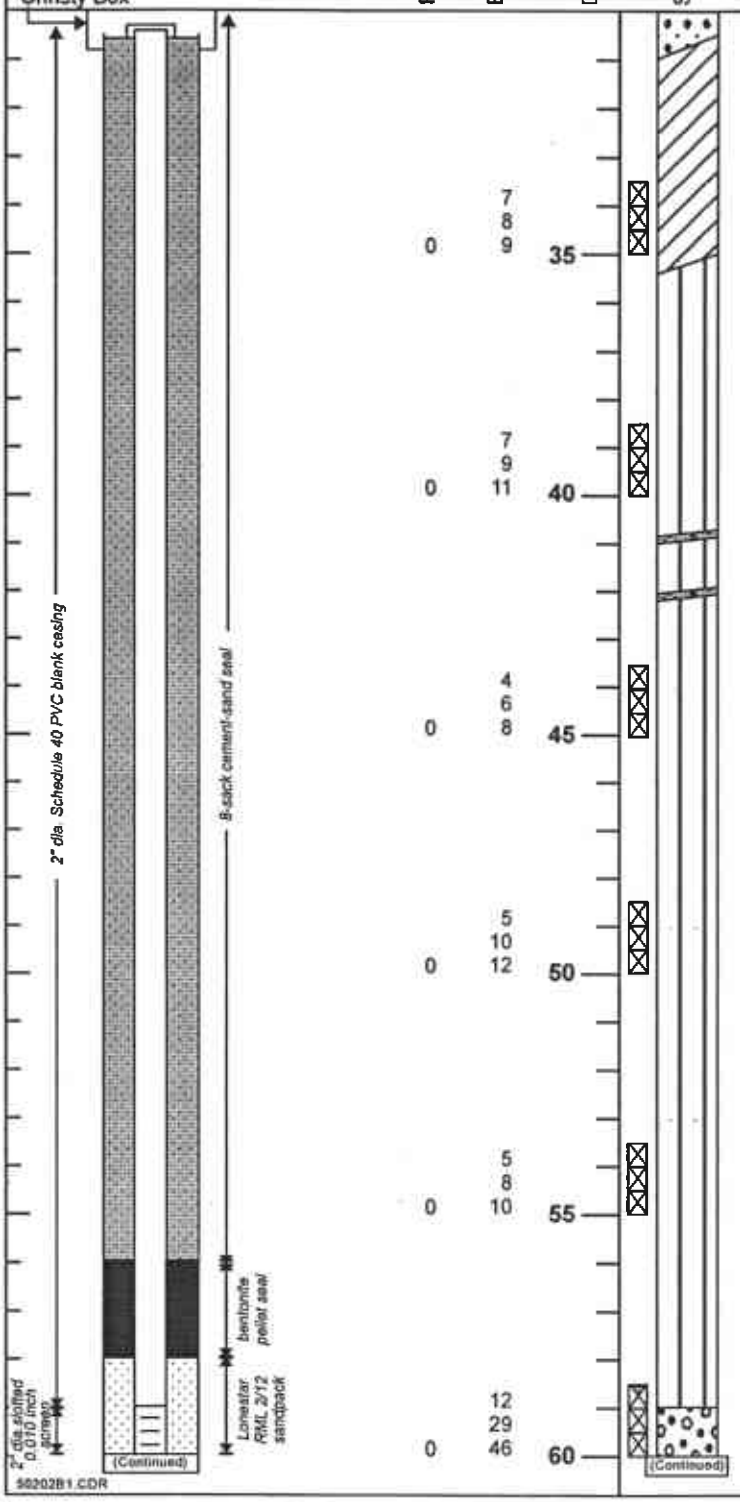


CLIENT	Foothill Square Shopping Center	DIAMETER OF HOLE	8 inches
LOCATION	Oakland, California	TOTAL DEPTH OF HOLE	64.5 feet
JOB NUMBER	502.0201.003	TOP OF CASING ELEVATION	54.06 feet MSL
GEOLOGIST/ENGINEER	Elizabeth A. Large	DATE STARTED	7/14/97
DRILL RIG	Hollow-Stem Auger	DATE COMPLETED	7/14/97

PLATE
A-3

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL FHS-MW-11



MATERIALS DESCRIPTION

REDDISH BROWN SANDY CLAY (CL)
5YR 4/3, sl. moist, slightly dense, clay to fine-grained sand, 0% gravel, ~10% sand, ~90% fines.

REDDISH BROWN SANDY SILT (ML)
5YR 4/3, sl. moist, dense silt to fine-grained sand, 0% gravel, ~20% sand, ~80% fines.

Gravel layer (~1 inch diameter gravel).

Gravel layer (~1 inch diameter gravel).

Increase in sand content to ~30%.

Grain size of sand changes to coarse. Dry.

REDDISH BROWN WELL-GRADED GRAVEL WITH SAND (GW)
5YR 4/3, saturated, dense, silt to medium gravel (1/4 to 1-inch diameter), ~60% gravel, ~30% sand, ~10% fines.

CLIENT	Foothill Square Shopping Center	DIAMETER OF HOLE	8 inches
LOCATION	Oakland, California	TOTAL DEPTH OF HOLE	64.5 feet
JOB NUMBER	502.0201.003	TOP OF CASING ELEVATION	54.06 feet MSL
GEOLOGIST/ENGINEER	Elizabeth A. Large	DATE STARTED	7/14/97
DRILL RIG	Hollow-Stem Auger	DATE COMPLETED	7/14/97

PLATE
A-3

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL FHS-MW-11

WELL CONSTRUCTION DETAIL	PID (PPM)	BLOWS/6 IN	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
2" dia slotted 0.010 inch screen; Lonestar RMC 2/12 sandpack	0	18 24 36 10 26 27 10 18 21	65 70 75 80 85 90		Increase in silt content to ~20% at 61 feet, ~60% gravel, ~20% sand, ~20% fines. REDDISH BROWN SILT (ML) 5YR 4/3, dry, very dense, silt to fine-grained sand, 0% gravel, ~10% sand, ~90% fines. *Bottom of Boring @ 64.5 feet below ground surface*

50202B1.CDR

CLIENT	Foothill Square Shopping Center	DIAMETER OF HOLE	8 inches
LOCATION	Oakland, California	TOTAL DEPTH OF HOLE	64.5 feet
JOB NUMBER	502.0201.003	TOP OF CASING ELEVATION	54.06 feet MSL
GEOLOGIST/ENGINEER	Elizabeth A. Large	DATE STARTED	7/14/97
DRILL RIG	Hollow-Stem Auger	DATE COMPLETED	7/14/97

PLATE
A-3

APPENDIX B

MONITORING WELL SURVEY REPORT

RON ARCHER

CIVIL ENGINEER INC.

CONSULTING • PLANNING • DESIGN • SURVEYING

4133 Mohr Ave., Suite E • Pleasanton, CA 94566
(510) 462-9372

REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
Exp. 12/31/97
CIVIL
STATE OF CALIFORNIA

NOVEMBER 14, 1995 *JOB NO 2548*

ELEVATIONS OF MONITORING WELLS NEAR THE FOOTHILL SQUARE SHOPPING CENTER LOCATED ON MAC ARTHUR BOULEVARD, BETWEEN 106TH AND 108TH STREETS, CITY OF OAKLAND, ALAMEDA COUNTY, CALIFORNIA.

FOR: PES ENVIRONMENTAL INC.
PROJECT NO. 502-0201-007

BENCHMARK: # 14-B

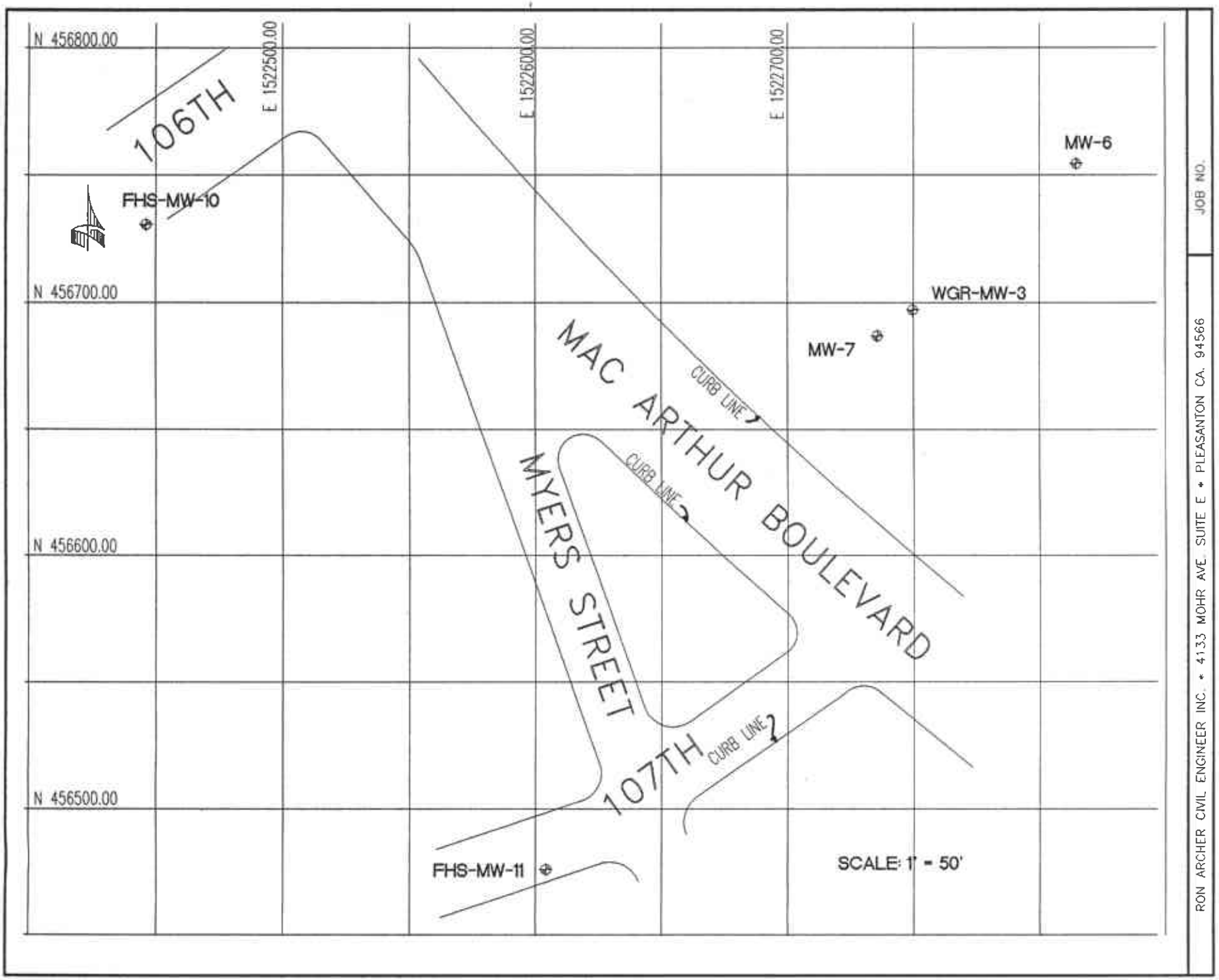
TOP OF A BRASS DISK SET INSIDE OF A STANDARD CITY OF OAKLAND MONUMENT CASTING IN THE SIDEWALK AT THE MOST SOUTHERLY CORNER OF THE INTERSECTION OF MAC ARTHUR BOULEVARD AT 106TH STREET. ELEVATION TAKEN AS 52.811 CITY OF OAKLAND DATUM.

NOTE: *TO CONVERT ALL ELEVATIONS FROM CITY OF OAKLAND DATUM TO MEAN SEA LEVEL (N.G.V.D. 1929), YOU MUST ADD 3.00 FEET.*

ALL COORDINATES ARE BASED ON THE CALIFORNIA STATE COORD. SYSTEM (NAD 27)

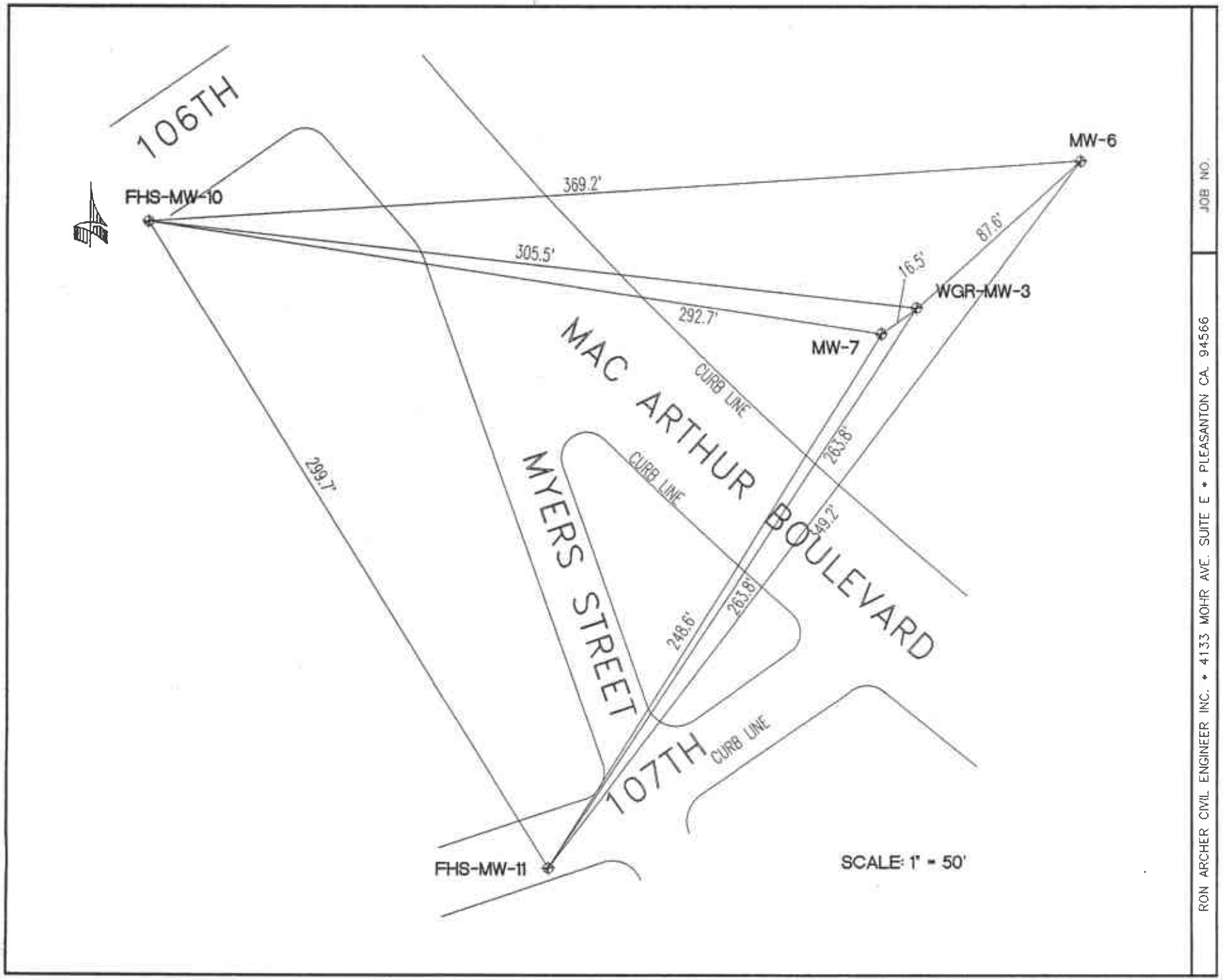
MONITORING WELL DATA TABLE

WELL DESIGNATION	TOP OF CASING ELEVATION	TOP OF BOX ELEVATION	COORDINATES NORTH	COORDINATES EAST
WGR-MW-3	57.96	58.49	456,696.13	1,522,749.25
MW-6			456,754.38	1,522,814.70
MW-7			456,686.80	1,522,735.69
FHS-WM-10	52.37	52.94	456,730.60	1,522,446.30
FHS-MW-11	54.06	54.45	456,475.85	1,522,604.15



JOB NO.

RON ARCHER CIVIL ENGINEER INC. • 4133 MOHR AVE. SUITE E • PLEASANTON CA. 94566



JOB NO.

RON ARCHER CIVIL ENGINEER INC. * 4133 MOHR AVE. SUITE E * PLEASANTON CA. 94566

APPENDIX C

MONITORING WELL DEVELOPMENT LOGS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Sample ID _____

Well Number FHSMW-10 | Borehole Diameter 8" | Qty. of Drilling Fluid Lost _____

Date 7-25-97 | Screen Length 10' | Minimum Gal. to be Purged 42 (10 gal)

Time Start: 1210 End: _____ | Measured Depth (pre-development) 51.91 | Development Method _____

Client PES | Measured Depth (post-development) 51.91 | Purging Equipment _____

Project S02.0102.003 | Static Water Level (ft.) 26.00 | Water Level Equipment _____

Job Number S02.0102.003 | Standing Water Column (ft.) 25.91 | pH/EC Meter _____

Installation Date 7-15-97 | One Well Volume (gal.) _____ | Turbidity Meter _____

Well Diameter 2" | One Annulus Vol. (gal.) _____ | Other _____

Time	Amount Purged (gal)	Field Parameters Measured: EC	pH	Temp.	Turbidity	D.O.	SAL.	GPM / W.L.	Comments	Field Tech.
1245	3	.782	6.85	20.9	>999	—	0.03			
1255	6	.749	6.78	19.9	7999	—	.03			
1259	9	.659	6.63	19.7	7999		.02			
Set pump at 1' off bottom w/ rate = 1.5 gal/min								1.5 / 26.28		
1312	19	[redacted]	6.27	20.2	7999	—	.02	1.5 / 26.65		
1318	27	.509	6.21	20.2	702	—	.02	1.5 / 26.68		
1328	42	.502	6.16	20.3	443	—	.02	1.5 / 26.68		
1339	58.5	.497	6.18	20.5	253	—	.02	1.5 / 26.68		
1346	69.0	.496	6.17	20.3	350	—	.02	1.5 / 26.68		
1356	84.0	.495	6.15	20.4	234	—	.02	1.5 / 26.68		
1406	99.0	.501	6.20	20.6	287		.02	1.5 / 26.68		

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: [X] Top of Casing [ ] Protective Casing [ ] Ground Level

Sample ID _____

Well Number FHS-MW-11
Date 7/25/97
Time Start: 9:30 End: _____
Client PES
Project FOOTHILL SQUARE
Job Number 502.6102.003
Installation Date 7-14-97
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) _____
Measured Depth (post-development) 64.12
Static Water Level (ft.) 28.05
Standing Water Column (ft.) 36.07
One Well Volume (gal.) 5.8
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost _____
Minimum Gal. to be Purged 58
Development Method SURGE, BAIL, PUMP
55. BAILER
Purging Equipment GRUNDFOS PUMP
Water Level Equipment SOLINST
pH/EC Meter HORIBA U-10
Turbidity Meter _____
Other _____

MF

Time	Amount Purged (gal)	Field Parameters Measured: EC mS/cm	pH	Temp °C	Turbidity	D.O.	SAL. ‰	GPM / W.L.	Comments	Field Tech.
1011	3	.557	9.83	20.3 C	>999		0.02			
1030	8	.567	8.74	19.8	7999		0.02			
set pump 1' off bottom								1.5/28.33		
1048	16	.557	7.45	20.3	>999		.02	1.5/34.87		
1054	25	.551	7.01	20.3	527		.02	1.5/35.08		
1059	32.5	.547	6.87	20.4	304		.02	1.5/35.08		
1104	41.5	.545	6.79	20.3	186		.02	1.5/35.08		
1109	49.0	.544	6.72	20.4	239		.02	1.5/35.08		
Stopped to switch drums; Started up at 1113										
1118	56.5	.541	6.71	20.4	438		.02	1.5/34.92		
1121	61.0	.548	6.66	20.3	199		.02	1.5/34.93		

FINAL FIELD PARAMETER MEASUREMENTS

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Well Number FHS-MW-11
Date 7-25-97
Time Start: _____ End: _____
Client PES
Project Foothill Square
Job Number 302.0102.003
Installation Date 7-14-97
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) _____
Measured Depth (post-development) 64.19'
Static Water Level (ft.) _____
Standing Water Column (ft.) _____
One Well Volume (gal.) _____
One Annulus Vol. (gal.) _____

Sample ID _____
Qty. of Drilling Fluid Lost _____
Minimum Gal. to be Purged _____
Development Method _____
_____
Purging Equipment _____
Water Level Equipment _____
pH/EC Meter _____
Turbidity Meter _____
Other _____

MF

Time	Amount Purged (gal)	Field Parameters Measured: EC	pH	Temp.	Turbidity	D.O.	SAL.	GPM / W.L.	Comments	Field Tech.
1128	71.5	.550	6.64	20.4	228		.02	1.5/		
1130	75.0	.574	6.65	20.4	152		.02	1.5/35.0		

FINAL FIELD PARAMETER MEASUREMENTS

APPENDIX D

GROUNDWATER SAMPLING REPORT

BLAINE
TECH SERVICES INC.

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

October 14, 1997

RECEIVED OCT

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

ATTN: Will Mast

Site:
10700 MacArthur Blvd.
Oakland, California

Date:
September 29 & October 9, 1997

GROUNDWATER SAMPLING REPORT 970929-L-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, middleburg pumps, and electric submersible 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 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 Teflon or stainless steel, and is used as an evacuation and/or sampling device.

Bailers are inexpensive and relatively easy to clean. Because they are manually operated, variations in operator technique may have a greater influence than would be found with more automated sampling equipment. Also, where fuel hydrocarbons are involved, the bailer may include near surface contaminants that are not representative of water deeper in the well.

Electric Submersible Pumps: Electric submersible pumps are appropriate for the high volume evacuation of wells of any depth provided the well diameter is large enough to admit the pump. Four inch and three inch diameter wells will readily accept electric submersible pumps, while two inch wells do not. In operation, the pump is lowered into the well with a pipe train above it. A checkvalve immediately above the pump and below the first section of pipe prevents water that has entered the pipe from flowing back into the well. Electricity is provided to the pump via an electrical cable and the action of the pump is to push water up out of the well.

Electric submersible pumps are often used as well evacuation devices, which are then supplanted with a more specialized sample collection device (such as a bailer) at the time of sampling. An alternative is to use the pump for both evacuation and sampling. When a bailer is used to collect the sample, interpretation of results by the consultant should allow for variations attributable to near surface contamination entering the bailer. When the electric submersible is, itself, used for sample collection it should be operated with the output restricted to a point where the loss of volatiles becomes indistinguishable from the level obtained with true sampling pumps. It should

be noted that when the pump is used for both evacuation and sample collection that it is possible to perform these operations as an uninterrupted continuum. This contrasts with the variations in elapsed time between evacuation and sample collection that occur when field personnel cease one mode of operation and must bring other apparatus into use.

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. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed 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, 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 American Environmental Network (AEN) in Pleasant Hill, California, Quanterra Environmental Services in Sacramento, California and Environmental Testing Services in Petaluma, California . AEN and Quanterra Environmental Services are certified by the California Department of Health Services as a Hazardous Materials Testing Laboratory, and are listed as DOHS HMTL #1172 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.

The following addresses have been listed here for your convenience:

Water Quality Control Board
San Francisco Bay Region
2101 Webster Street
5th Floor
Oakland, CA 94612
ATTN: John West

Oakland Fire Prevention Bureau
One City Hall Plaza
Oakland, CA 94612
ATTN: Stanley Y. Chi

Please call if we can be of any further assistance.

Kent Brown

KEB/aa

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	09/29/97			09/29/97			09/29/97			09/29/97		
Well Diameter (in.)	2			2			2			2		
Total Well Depth (ft.)	33.94			24.27			30.13			24.96		
Depth To Water (ft.)	24.52			13.32			17.39			15.43		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	1.5			1.8			2.0			1.5		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	4.5			5.5			6.0			4.5		
Purging Device	BAILER			BAILER			BAILER			BAILER		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	14:00	14:03	14:05	11:40	11:44	11:49	15:01	15:07	15:12	12:07	12:10	12:12
Temperature (Fahrenheit)	78.2	72.4	71.8	76.0	70.6	71.6	76.0	70.8	70.9	72.8	69.4	69.0
pH	6.7	6.6	6.5	7.2	7.2	7.1	6.8	6.8	6.7	7.6	7.4	7.5
Conductivity (micromhos/cm)	1600	1800	1800	2000	1700	1800	1400	1800	2000	2200	2300	2500
Nephelometric Turbidity Units	>200	15.1	20.5	>200	>200	>200	>200	>200	>200	>200	>200	>200
Dissolved Oxygen (D.O.) (mg/L)				0.45						0.55		
Oxidation Reduction Potential (mV)				149						245		
BTS Chain of Custody	970929-K1			970929-K1			970929-K1			970929-K1		
BTS Sample I.D.	AMW-1			AMW-4			AMW-5			AMW-6		
DOHS HMTL Laboratory	AEN			AEN/QUANTERRA/ETS			AEN			AEN/QUANTERRA/ETS		
Analysis	EPA 8010			EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			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	09/29/97			09/29/97			09/29/97			09/29/97
Well Diameter (in.)	2			2			2			--
Total Well Depth (ft.)	24.75			45.49			54.30			--
Depth To Water (ft.)	16.63			17.69			23.59			--
Free Product (in.)	NONE			NONE			NONE			INACCESSIBLE
Reason If Not Sampled	--			--			--			
1 Case Volume (gal.)	1.3			4.5			4.9			
Did Well Dewater?	NO			NO			NO			
Gallons Actually Evacuated	4.0			13.5			15.0			
Purging Device	BAILER			MIDDLEBURG			MIDDLEBURG			
Sampling Device	BAILER			BAILER			BAILER			
Time	11:30	11:35	11:40	14:30	14:35	14:40	12:06	12:11	12:16	
Temperature (Fahrenheit)	65.0	63.4	63.2	72.6	68.6	70.1	64.6	64.2	64.4	
pH	6.4	6.7	6.7	7.2	7.4	7.4	7.5	7.1	7.0	
Conductivity (micromhos/cm)	1660	1700	1700	700	600	640	915	1900	1980	
Nephelometric Turbidity Units	>200	>200	>200	>200	>200	>200	176	132	>200	
Dissolved Oxygen (D.O.) (mg/L)	0.64						0.32			
Oxidation Reduction Potential (mV)	109						-87			
BTS Chain of Custody	970929-K1			970929-K1			970929-K1			
BTS Sample I.D.	AMW-7			AMW-8			AMW-9			
DOHS HMTL Laboratory	AEN/QUANTERRA/ETS			AEN			AEN/QUANTERRA/ETS			
Analysis	EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			EPA 8010			EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			

TABLE OF WELL MONITORING DATA

Well I.D.	FHS-MW-10*			FHS-MW-11			MW-6			MW-7		
Date Sampled	10/09/97			09/29/97			09/29/97			09/29/97		
Well Diameter (in.)	2			2			2			2		
Total Well Depth (ft.)	51.94			64.07			48.69			36.57		
Depth To Water (ft.)	27.92			29.84			36.27			22.19		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	3.9			5.5			2.0			2.3		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	12.0			17.0			6.0			7.0		
Purging Device	BAILER			MIDDLEBURG			BAILER			BAILER		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	11:48	11:54	12:00	10:45	10:53	11:01	12:35	12:40	12:45	15:41	15:44	15:49
Temperature (Fahrenheit)	66.6	66.2	65.5	63.6	61.2	62.1	59.8	59.0	59.6	75.8	72.1	70.9
pH	7.7	7.5	7.4	6.9	6.7	6.8	6.9	7.1	6.9	6.4	6.2	6.3
Conductivity (micromhos/cm)	590	500	480	717	610	619	1970	1960	1970	860	840	820
Nephelometric Turbidity Units	33	18	17	>200	>200	74.5	>200	>200	>200	86.9	65.3	61.8
Dissolved Oxygen (D.O.) (mg/L)	1.6			0.89			1.81					
Oxidation Reduction Potential (mV)	25			85			73					
BTS Chain of Custody	971009-T1			970929-K1			970929-K1			970929-K1		
BTS Sample I.D.	FHS-MW-10			FHS-MW-11			MW-6			MW-7		
DOHS HMTL Laboratory	AEN/QUANTERRA/ETS			AEN/QUANTERRA/ETS			AEN/QUANTERRA/ETS			AEN		
Analysis	EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON			EPA 8010		

* Well FHS-MW-10 was accessible on 10/09/97. Well was sampled per client's request.

TABLE OF WELL MONITORING DATA

Well I.D.	WGR MW-1	WGR MW-2	WGR MW-3	WGR MW-4
Date Sampled	09/29/97	09/29/97	09/29/97	09/29/97
Well Diameter (in.)	--	4	4	4
Total Well Depth (ft.)	--	27.98	26.94	44.96
Depth To Water (ft.)	--	25.06	21.72	28.16
Free Product (in.)	--	--	NONE	NONE
Reason If Not Sampled	INACCESSIBLE	GAUGE ONLY	--	--
1 Case Volume (gal.)			3.4	10.9
Did Well Dewater?			NO	NO
Gallons Actually Evacuated			10.5	33.0
Purging Device			ELECTRIC SUBMERSIBLE	ELECTRIC SUBMERSIBLE
Sampling Device			BAILER	BAILER

Time						
Temperature (Fahrenheit)				12:30	12:31	12:32	15:25	15:27	15:29
pH				98.2	78.6	76.8	72.6	68.4	69.1
Conductivity (micromhos/cm)				6.6	7.0	7.1	7.0	6.8	6.6
Nephelometric Turbidity Units				2500	1400	1300	1000	1100	1100
Dissolved Oxygen (D.O.) (mg/L)				12.8	7.5	5.8	24.9	17.9	19.1
Oxidation Reduction Potential (mV)				0.17					
				212					

BTS Chain of Custody			970929-K1	970929-K1
BTS Sample I.D.			WGR MW-3	WGR MW-4
DOHS HMTL Laboratory			AEN/QUANTERRA/ETS	AEN
Analysis			EPA 8010, SULFATE, NITRATE, CARBON DIOXIDE, METHANE & FERROUS IRON	EPA 8010

BLAINE
TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES@

SITE 10700 MacArthur
Oakland, CA

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: TPH as 5M 3500D
PES-MW-10 10/9/97 1210	W	1		X

LAB ETS DHS #

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

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

- 24 Hour Hold

- Invoice & Report to Will Mast @ PES Environmental.

ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #

SAMPLING COMPLETED DATE 10/9/97 TIME 1215

SAMPLING PERFORMED BY Mike Toll

RESULTS NEEDED NO LATER THAN PER CLIENT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	10/9/97	1300	Chris Rossett	10-9-97	1300
Chris Rossett	10-9-97	1827	W. Will Mast	10-9-97	1827
Will Mast	10-10-97	0815	[signature]	10/10/97	8:15 am

SHIPPED VIA | DATE SENT | TIME SENT | COOLER #

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES

SITE 10700 MacArthur Blvd.
Oakland, CA

LAB Quanterra

DHS #

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

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

- 48 hour hold time
INVOICE & REPORT TO
PES ENVIRONMENTAL
ATTN: WILL MAST

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.			MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C	5a/Hg+c by 300.0, Nitrate 353.2	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FSH-MW-1D	10/9/97	1210	W	3		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1210

SAMPLING PERFORMED BY Mike Tolli

RESULTS NEEDED NO LATER THAN - PER CLIENT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[illegible]	10/9/97	1700			

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	AIRBILL #
AIRBORNE EXPRESS	10/9/97	1700		2748848115

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES

SITE 10700 MacArthur Blvd.
Oakland, CA

LAB AEN

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 ENVIRONMENTAL
ATTN: WILL MAST

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: 8010	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FHSMW-10 10/9/97 1210	W	3		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1215

SAMPLING PERFORMED BY Mike Toll

RESULTS NEEDED NO LATER THAN PER CLIENT

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

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 97009-T1

CLIENT PES

SITE 10700 MacArthur Blvd.
Oakland, CA

LAB Quanterra DHS #

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

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ____

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO PES ENVIRONMENTAL ATTN: WILL MAST

SAMPLE I.D.			MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: Carbon Dioxide & Methane BTEX 1750	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
SH-MW1D	10/9/97	1210	W	3		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1215

SAMPLING PERFORMED BY Mike Toll

RESULTS NEEDED NO LATER THAN — PER CLIENT —

RELEASED BY Mike Toll	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

BLAINE TECH SERVICES INC.
1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY 9729-LL

CLIENT PES

SITE 10700 MACARTHUR BLVD.
Oakland, CA

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

LAB AEN 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 ENVIRONMENTAL
ATTN: WILL MART

SAMPLE I.D.	DATE	TIME	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C	VOCs by EPA 8260								ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-1	9/29	14:21	W	3	40ml		X											
AMW-4		11:55	W	3	HCL		X											
AMW-5		15:17	W	3	VOAs		X								9729-LL			
AMW-6		12:20	W	3			X								PES			
AMW-7		11:44	W	3			X								10700 MacArthur Blvd. Oakland CA			
AMW-8		11:45	W	3			X											
AMW-9		12:20	W	3			X											
WBR-MW3		12:40	W	3			X											
WBR-MW4		15:34	W	3			X											

SAMPLING COMPLETED	DATE	TIME
	9/29/97	16:30

SAMPLING PERFORMED BY LAD Gilchrist

RESULTS NEEDED NO LATER THAN As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	9-30-97	16:05	Rick V Schroeder	9-30-97	16:05
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970929-[illegible]LJ

CLIENT PES

SITE 10700 MacArthur Blvd
Oakland CA

LAB AEN

DHS #

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

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ____

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO
PES ENV.
ATTN: WILL MAST

SAMPLE I.D.	Date	Time	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: 8010 EPA 601	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-6	9/29/97	12:50	W	3	40ml		X				
MW-7		15:53	W	3	HCL		X				
FMS-MW11	↓	11:10	W	3	VOAs		X				

SAMPLING COMPLETED DATE 9/29/97 TIME 1630

SAMPLING PERFORMED BY Lad Gilchrist

RESULTS NEEDED NO LATER THAN AS Contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9-30-97	16:05	Rick Gilmore	9-30-97	16:05

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970929-KL1

CLIENT PES

SITE 10700 MacArthur Blvd
Oakland, CA

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

LAB Quanterra Environmental Services DHS #

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

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION _____

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO
PES ENVIRONMENTAL
ATTN: WILL MAST
* CHECK HOLD TIMES NITRATE/SULFATE.

SAMPLE I.D.	Date/Time	MATRIX S=SOIL W=H2O	CONTAINERS TOTAL	40ml	Silica by EPA 200.0	Nitrate by EPA 300.0	Sulfate by EPA 300.0	SLV RSV	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-4	9/29/97 8:33	W	4	3 VOAS NO PRES	X	X	X					
AMW-6	12:20	W	9	1 LTR	X	X	X					
AMW-7	11:44	W	4	POLY NO PRES	X	X	X					
AMW-9	12:20	W	4		X	X	X					
MGR-MW3	12:40	W	4		X	X	X					
MW-6	12:50	W	4		X	X	X					
FHS-MW4	11:10	W	4		X	X	X					

SAMPLING COMPLETED	DATE	TIME
	9/29/97	1630

SAMPLING PERFORMED BY LAD GILCHRIST

RESULTS NEEDED NO LATER THAN AS CONTRACTED

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	9/30/97	1135		9-30-	11:35
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #
WHITE COTTON DELIVERS	9/30	1135	

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970929-L1

CLIENT PES

SITE 10700 MACARTHUR BLVD, OAKLAND CA

LAB E.T.S. DHS #

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

☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	CONTAINERS	C	IRON BY SM 3500 D	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-4	9/29	1155	W	3	40ml		X				
AMW-6		1229 ~~1250~~	W	3	VOAS		X				
AMW-7		1144	W	3	NO HCL		X				
AMW-9		1220	W	3			X				
NGR-MW3		1240	W	3			X				
MW-6		1250	W	3			X				
FHS-MW11	↓	1110	W	3	↓		X				

SAMPLING COMPLETED DATE 9-29-97 TIME 1250

SAMPLING PERFORMED BY LAD GILCHRIST

RESULTS NEEDED NO LATER THAN AS CONTRACTED

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	9-29-97	1515		9.29.97	1515
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970929-L1

CLIENT PES

SITE 10700 MACARTHUR BLVD.
OAKLAND CA

LAB E.T.S. 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 ENVIRONMENTAL
ATTN: WILL MAST

CONDUCT ANALYSIS TO DETECT

C = COMPOSITE ALL CONTAINERS

SAMPLE I.D.	DATE	TIME	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	40ml VOAs H2O PRES	C	IRON BY SM3500D	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FHS-MW11	9/29	1110	W	3	X		X				

SAMPLING COMPLETED DATE 9-29-97 TIME 1250

SAMPLING PERFORMED BY LAD GILCHRIST

RESULTS NEEDED NO LATER THAN AS CONTRACTED

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9/30/97	930			
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	
ULTRA EXPRESS	9/30/97	930		TRACKING # 688750

APPENDIX E

LABORATORY REPORT
AND
CHAIN-OF-CUSTODY RECORDS

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

PES ENVIRONMENTAL, INC.
1682 NOVATO BLVD. STE. 100
NOVATO, CA 94947

ATTN: WILL MAST
CLIENT PROJ. ID: 10700 MACARTHR

C.O.C. NUMBER: 970929-L1

REPORT DATE: 10/16/97

DATE(S) SAMPLED: 09/29/97

DATE RECEIVED: 09/30/97

AEN WORK ORDER: 9709424

PROJECT SUMMARY:

On September 30, 1997, this laboratory received 12 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-1
AEN LAB NO: 9709424-01
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	ND	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	ND	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	ND	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-4
AEN LAB NO: 9709424-02
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	3	ug/L	10/10/97
Bromoform	75-25-2	ND	3	ug/L	10/10/97
Bromomethane	74-83-9	ND	10	ug/L	10/10/97
Carbon Tetrachloride	56-23-5	ND	3	ug/L	10/10/97
Chlorobenzene	108-90-7	ND	3	ug/L	10/10/97
Chloroethane	75-00-3	ND	10	ug/L	10/10/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	3	ug/L	10/10/97
Chloroform	67-66-3	4 *	3	ug/L	10/10/97
Chloromethane	74-87-3	ND	10	ug/L	10/10/97
Dibromochloromethane	124-48-1	ND	3	ug/L	10/10/97
1,2-Dichlorobenzene	95-50-1	ND	3	ug/L	10/10/97
1,3-Dichlorobenzene	541-73-1	ND	3	ug/L	10/10/97
1,4-Dichlorobenzene	106-46-7	ND	3	ug/L	10/10/97
Dichlorodifluoromethane	75-71-8	ND	10	ug/L	10/10/97
1,1-Dichloroethane	75-34-3	ND	3	ug/L	10/10/97
1,2-Dichloroethane	107-06-2	ND	3	ug/L	10/10/97
1,1-Dichloroethene	75-35-4	ND	3	ug/L	10/10/97
cis-1,2-Dichloroethene	156-59-2	ND	3	ug/L	10/10/97
trans-1,2-Dichloroethene	156-60-5	ND	3	ug/L	10/10/97
1,2-Dichloropropane	78-87-5	ND	3	ug/L	10/10/97
cis-1,3-Dichloropropene	10061-01-5	ND	3	ug/L	10/10/97
trans-1,3-Dichloropropene	10061-02-6	ND	3	ug/L	10/10/97
Methylene Chloride	75-09-2	ND	10	ug/L	10/10/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	3	ug/L	10/10/97
Tetrachloroethene	127-18-4	340 *	3	ug/L	10/10/97
1,1,1-Trichloroethane	71-55-6	ND	3	ug/L	10/10/97
1,1,2-Trichloroethane	79-00-5	ND	3	ug/L	10/10/97
Trichloroethene	79-01-6	3 *	3	ug/L	10/10/97
Trichlorofluoromethane	75-69-4	ND	10	ug/L	10/10/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	3	ug/L	10/10/97
Vinyl Chloride	75-01-4	ND	10	ug/L	10/10/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-5
AEN LAB NO: 9709424-03
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	4 *	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	2 *	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	13 *	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

Bromomethane and chloromethane reported are estimated concentrations.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-6
AEN LAB NO: 9709424-04
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	50	ug/L	10/13/97
Bromoform	75-25-2	ND	50	ug/L	10/13/97
Bromomethane	74-83-9	ND	200	ug/L	10/13/97
Carbon Tetrachloride	56-23-5	ND	50	ug/L	10/13/97
Chlorobenzene	108-90-7	ND	50	ug/L	10/13/97
Chloroethane	75-00-3	ND	200	ug/L	10/13/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	50	ug/L	10/13/97
Chloroform	67-66-3	ND	50	ug/L	10/13/97
Chloromethane	74-87-3	ND	200	ug/L	10/13/97
Dibromochloromethane	124-48-1	ND	50	ug/L	10/13/97
1,2-Dichlorobenzene	95-50-1	ND	50	ug/L	10/13/97
1,3-Dichlorobenzene	541-73-1	ND	50	ug/L	10/13/97
1,4-Dichlorobenzene	106-46-7	ND	50	ug/L	10/13/97
Dichlorodifluoromethane	75-71-8	ND	200	ug/L	10/13/97
1,1-Dichloroethane	75-34-3	ND	50	ug/L	10/13/97
1,2-Dichloroethane	107-06-2	ND	50	ug/L	10/13/97
1,1-Dichloroethene	75-35-4	ND	50	ug/L	10/13/97
cis-1,2-Dichloroethene	156-59-2	220 *	50	ug/L	10/13/97
trans-1,2-Dichloroethene	156-60-5	70 *	50	ug/L	10/13/97
1,2-Dichloropropane	78-87-5	ND	50	ug/L	10/13/97
cis-1,3-Dichloropropene	10061-01-5	ND	50	ug/L	10/13/97
trans-1,3-Dichloropropene	10061-02-6	ND	50	ug/L	10/13/97
Methylene Chloride	75-09-2	ND	200	ug/L	10/13/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	50	ug/L	10/13/97
Tetrachloroethene	127-18-4	4,600 *	50	ug/L	10/13/97
1,1,1-Trichloroethane	71-55-6	ND	50	ug/L	10/13/97
1,1,2-Trichloroethane	79-00-5	ND	50	ug/L	10/13/97
Trichloroethene	79-01-6	580 *	50	ug/L	10/13/97
Trichlorofluoromethane	75-69-4	ND	200	ug/L	10/13/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	50	ug/L	10/13/97
Vinyl Chloride	75-01-4	ND	200	ug/L	10/13/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-7
AEN LAB NO: 9709424-05
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	10	ug/L	10/13/97
Bromoform	75-25-2	ND	10	ug/L	10/13/97
Bromomethane	74-83-9	ND	40	ug/L	10/13/97
Carbon Tetrachloride	56-23-5	ND	10	ug/L	10/13/97
Chlorobenzene	108-90-7	ND	10	ug/L	10/13/97
Chloroethane	75-00-3	ND	40	ug/L	10/13/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	10	ug/L	10/13/97
Chloroform	67-66-3	ND	10	ug/L	10/13/97
Chloromethane	74-87-3	ND	40	ug/L	10/13/97
Dibromochloromethane	124-48-1	ND	10	ug/L	10/13/97
1,2-Dichlorobenzene	95-50-1	ND	10	ug/L	10/13/97
1,3-Dichlorobenzene	541-73-1	ND	10	ug/L	10/13/97
1,4-Dichlorobenzene	106-46-7	ND	10	ug/L	10/13/97
Dichlorodifluoromethane	75-71-8	ND	40	ug/L	10/13/97
1,1-Dichloroethane	75-34-3	ND	10	ug/L	10/13/97
1,2-Dichloroethane	107-06-2	ND	10	ug/L	10/13/97
1,1-Dichloroethene	75-35-4	ND	10	ug/L	10/13/97
cis-1,2-Dichloroethene	156-59-2	330 *	10	ug/L	10/13/97
trans-1,2-Dichloroethene	156-60-5	20 *	10	ug/L	10/13/97
1,2-Dichloropropane	78-87-5	ND	10	ug/L	10/13/97
cis-1,3-Dichloropropene	10061-01-5	ND	10	ug/L	10/13/97
trans-1,3-Dichloropropene	10061-02-6	ND	10	ug/L	10/13/97
Methylene Chloride	75-09-2	ND	40	ug/L	10/13/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	10	ug/L	10/13/97
Tetrachloroethene	127-18-4	520 *	10	ug/L	10/13/97
1,1,1-Trichloroethane	71-55-6	ND	10	ug/L	10/13/97
1,1,2-Trichloroethane	79-00-5	ND	10	ug/L	10/13/97
Trichloroethene	79-01-6	100 *	10	ug/L	10/13/97
Trichlorofluoromethane	75-69-4	ND	40	ug/L	10/13/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	10	ug/L	10/13/97
Vinyl Chloride	75-01-4	ND	40	ug/L	10/13/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-8
AEN LAB NO: 9709424-06
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	ND	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	ND	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	0.7 *	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: AMW-9
AEN LAB NO: 9709424-07
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	3	ug/L	10/10/97
Bromoform	75-25-2	ND	3	ug/L	10/10/97
Bromomethane	74-83-9	ND	10	ug/L	10/10/97
Carbon Tetrachloride	56-23-5	ND	3	ug/L	10/10/97
Chlorobenzene	108-90-7	ND	3	ug/L	10/10/97
Chloroethane	75-00-3	ND	10	ug/L	10/10/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	3	ug/L	10/10/97
Chloroform	67-66-3	ND	3	ug/L	10/10/97
Chloromethane	74-87-3	ND	10	ug/L	10/10/97
Dibromochloromethane	124-48-1	ND	3	ug/L	10/10/97
1,2-Dichlorobenzene	95-50-1	ND	3	ug/L	10/10/97
1,3-Dichlorobenzene	541-73-1	ND	3	ug/L	10/10/97
1,4-Dichlorobenzene	106-46-7	ND	3	ug/L	10/10/97
Dichlorodifluoromethane	75-71-8	ND	10	ug/L	10/10/97
1,1-Dichloroethane	75-34-3	ND	3	ug/L	10/10/97
1,2-Dichloroethane	107-06-2	ND	3	ug/L	10/10/97
1,1-Dichloroethene	75-35-4	ND	3	ug/L	10/10/97
cis-1,2-Dichloroethene	156-59-2	ND	3	ug/L	10/10/97
trans-1,2-Dichloroethene	156-60-5	ND	3	ug/L	10/10/97
1,2-Dichloropropane	78-87-5	ND	3	ug/L	10/10/97
cis-1,3-Dichloropropene	10061-01-5	ND	3	ug/L	10/10/97
trans-1,3-Dichloropropene	10061-02-6	ND	3	ug/L	10/10/97
Methylene Chloride	75-09-2	ND	10	ug/L	10/10/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	3	ug/L	10/10/97
Tetrachloroethene	127-18-4	110 *	3	ug/L	10/10/97
1,1,1-Trichloroethane	71-55-6	ND	3	ug/L	10/10/97
1,1,2-Trichloroethane	79-00-5	ND	3	ug/L	10/10/97
Trichloroethene	79-01-6	ND	3	ug/L	10/10/97
Trichlorofluoromethane	75-69-4	ND	10	ug/L	10/10/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	3	ug/L	10/10/97
Vinyl Chloride	75-01-4	ND	10	ug/L	10/10/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: WGR-MW3
AEN LAB NO: 9709424-08
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	ND	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	ND	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	ND	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: WGR-MW4
AEN LAB NO: 9709424-09
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	4 *	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	2 *	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	ND	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

Bromomethane and chloromethane reported are estimated concentrations.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-6
AEN LAB NO: 9709424-10
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	10	ug/L	10/13/97
Bromoform	75-25-2	ND	10	ug/L	10/13/97
Bromomethane	74-83-9	ND	40	ug/L	10/13/97
Carbon Tetrachloride	56-23-5	ND	10	ug/L	10/13/97
Chlorobenzene	108-90-7	ND	10	ug/L	10/13/97
Chloroethane	75-00-3	ND	40	ug/L	10/13/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	10	ug/L	10/13/97
Chloroform	67-66-3	ND	10	ug/L	10/13/97
Chloromethane	74-87-3	ND	40	ug/L	10/13/97
Dibromochloromethane	124-48-1	ND	10	ug/L	10/13/97
1,2-Dichlorobenzene	95-50-1	ND	10	ug/L	10/13/97
1,3-Dichlorobenzene	541-73-1	ND	10	ug/L	10/13/97
1,4-Dichlorobenzene	106-46-7	ND	10	ug/L	10/13/97
Dichlorodifluoromethane	75-71-8	ND	40	ug/L	10/13/97
1,1-Dichloroethane	75-34-3	ND	10	ug/L	10/13/97
1,2-Dichloroethane	107-06-2	ND	10	ug/L	10/13/97
1,1-Dichloroethene	75-35-4	ND	10	ug/L	10/13/97
cis-1,2-Dichloroethene	156-59-2	ND	10	ug/L	10/13/97
trans-1,2-Dichloroethene	156-60-5	ND	10	ug/L	10/13/97
1,2-Dichloropropane	78-87-5	ND	10	ug/L	10/13/97
cis-1,3-Dichloropropene	10061-01-5	ND	10	ug/L	10/13/97
trans-1,3-Dichloropropene	10061-02-6	ND	10	ug/L	10/13/97
Methylene Chloride	75-09-2	ND	40	ug/L	10/13/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	10	ug/L	10/13/97
Tetrachloroethene	127-18-4	670 *	10	ug/L	10/13/97
1,1,1-Trichloroethane	71-55-6	ND	10	ug/L	10/13/97
1,1,2-Trichloroethane	79-00-5	ND	10	ug/L	10/13/97
Trichloroethene	79-01-6	ND	10	ug/L	10/13/97
Trichlorofluoromethane	75-69-4	ND	40	ug/L	10/13/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	10	ug/L	10/13/97
Vinyl Chloride	75-01-4	ND	40	ug/L	10/13/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-7
AEN LAB NO: 9709424-11
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/12/97
Bromoform	75-25-2	ND	0.5	ug/L	10/12/97
Bromomethane	74-83-9	ND	2	ug/L	10/12/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/12/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/12/97
Chloroethane	75-00-3	ND	2	ug/L	10/12/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/12/97
Chloroform	67-66-3	ND	0.5	ug/L	10/12/97
Chloromethane	74-87-3	ND	2	ug/L	10/12/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/12/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/12/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/12/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/12/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/12/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/12/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/12/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/12/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/12/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/12/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/12/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/12/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/12/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/12/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/12/97
Tetrachloroethene	127-18-4	ND	0.5	ug/L	10/12/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/12/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/12/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/12/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/12/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/12/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/12/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: FHS-MW11
AEN LAB NO: 9709424-12
AEN WORK ORDER: 9709424
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 09/29/97
DATE RECEIVED: 09/30/97
REPORT DATE: 10/16/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/13/97
Bromoform	75-25-2	ND	0.5	ug/L	10/13/97
Bromomethane	74-83-9	ND	2	ug/L	10/13/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/13/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/13/97
Chloroethane	75-00-3	ND	2	ug/L	10/13/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/13/97
Chloroform	67-66-3	ND	0.5	ug/L	10/13/97
Chloromethane	74-87-3	ND	2	ug/L	10/13/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/13/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/13/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/13/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/13/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/13/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/13/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/13/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/13/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/13/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/13/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/13/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/13/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/13/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/13/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/13/97
Tetrachloroethene	127-18-4	4.0 *	0.5	ug/L	10/13/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/13/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/13/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/13/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/13/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/13/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/13/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9709424

CLIENT PROJECT ID: 10700 MACARTHR

Quality Control Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8010

AEN JOB NO: 9709424
INSTRUMENT: I
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery: Bromochloro-methane	Percent Recovery: 1-Bromo-3-chloro-propane
10/12/97	AMW-1	01	93	97
10/10/97	AMW-4	02	93	98
10/12/97	AMW-5	03	97	109
10/13/97	AMW-6	04	106	116
10/13/97	AMW-7	05	103	107
10/12/97	AMW-8	06	93	102
10/10/97	AMW-9	07	103	108
10/12/97	WGR-MW3	08	95	100
10/12/97	WGR-MW4	09	98	107
10/13/97	MW-6	10	101	108
10/12/97	MW-7	11	88	97
10/13/97	FHS-MW11	12	100	110
QC Limits:			70-130	70-130

DATE ANALYZED: 10/10/97
SAMPLE SPIKED: 9709424-10
INSTRUMENT: I

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits: Percent Recovery	QC Limits: RPD
1,1-Dichloroethene	125	96	3	64-136	20
Trichloroethene	125	100	2	71-142	20
Chlorobenzene	125	100	<1	63-119	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

BLAINE TECH SERVICES INC.

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

9709424 — 1 of 2

CHAIN OF CUSTODY 970929-[illegible]

CLIENT PES

SITE 10700 MACARTHUR BLVD.
Oakland, CA

LAB AEN — DHS #

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

- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION _____

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO
PES ENVIRONMENTAL
ATTN: WILL HART

SAMPLE I.D.	DATE	TIME	MATRIX (S = SOIL, W = H2O)	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: VOCs by EPA 8010	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-1	9/29	1421	W	3	40ml		X				01A-C
AMW-4		11:55	W	3	HCL		X				02A-C
AMW-5		13:17	W	3	VOAS		X				03A-C
AMW-6		12:20	W	3			X				04A-C
AMW-7		11:44	W	3			X				05A-C
AMW-8		11:45	W	3			X				06A-C
AMW-9		12:20	W	3			X				07A-C
WGR-MW3		12:40	W	3			X				08A-C
WGR-MW4		13:34	W	3			X				09A-C

SAMPLING COMPLETED DATE 9/29/97 TIME 16:30

SAMPLING PERFORMED BY LAD Geologist

RESULTS NEEDED NO LATER THAN As Contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9-30-97	16:05	Rick Gilmore	9-30-97	16:05
Rick Gilmore	9-30-97	18:20	[signature]	9/30/97	18:20

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

BLAINE TECH SERVICES INC.

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

LAB AEN 9709424 DHS # 2 OF 2

CHAIN OF CUSTODY [redacted]-LL

CLIENT PES

SITE 10700 MacArthur Blvd
Oakland, CA

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

☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

INVOICE & REPORT TO
PES ENV.
ATTN: WILL MAST

SAMPLE I.D.	Date	Time	MATRIX S=SOIL W=H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: 8010 8020 8015	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-6	9/29/97	12:50	W	3	40ml		X				10A-C
MW-7	↓	15:53	W	3	HCL		X				11A-C
FB3-MW11	↓	11:10	W	3	VOAs		X				12A-C

SAMPLING COMPLETED	DATE	TIME
	9/29/97	1630

SAMPLING PERFORMED BY Lad Gilchrist

RESULTS NEEDED NO LATER THAN As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9-30-97	16:05	Rick Gilmore	9-30-97	16:05
Rick Gilmore	9-30-97	18:20	Paula Custodio	9/30/97	18:20

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

PES ENVIRONMENTAL, INC.
1682 NOVATO BLVD. STE. 100
NOVATO, CA 94947

ATTN: WILL MAST
CLIENT PROJ. ID: 10700 MACARTHR

C.O.C. NUMBER: 971009-T1

REPORT DATE: 10/24/97

DATE(S) SAMPLED: 10/09/97

DATE RECEIVED: 10/10/97

AEN WORK ORDER: 9710149

PROJECT SUMMARY:

On October 10, 1997, this laboratory received 1 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

PES ENVIRONMENTAL, INC.

SAMPLE ID: FHS-MW-10
AEN LAB NO: 9710149-01
AEN WORK ORDER: 9710149
CLIENT PROJ. ID: 10700 MACARTHR

DATE SAMPLED: 10/09/97
DATE RECEIVED: 10/10/97
REPORT DATE: 10/24/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	**EPA 8010**				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	10/19/97
Bromoform	75-25-2	ND	0.5	ug/L	10/19/97
Bromomethane	74-83-9	ND	2	ug/L	10/19/97
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	10/19/97
Chlorobenzene	108-90-7	ND	0.5	ug/L	10/19/97
Chloroethane	75-00-3	ND	2	ug/L	10/19/97
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	10/19/97
Chloroform	67-66-3	ND	0.5	ug/L	10/19/97
Chloromethane	74-87-3	ND	2	ug/L	10/19/97
Dibromochloromethane	124-48-1	ND	0.5	ug/L	10/19/97
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	10/19/97
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	10/19/97
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	10/19/97
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	10/19/97
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	10/19/97
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	10/19/97
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	10/19/97
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	10/19/97
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	10/19/97
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	10/19/97
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	10/19/97
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	10/19/97
Methylene Chloride	75-09-2	ND	2	ug/L	10/19/97
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	10/19/97
Tetrachloroethene	127-18-4	ND	0.5	ug/L	10/19/97
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	10/19/97
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	10/19/97
Trichloroethene	79-01-6	ND	0.5	ug/L	10/19/97
Trichlorofluoromethane	75-69-4	ND	2	ug/L	10/19/97
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	10/19/97
Vinyl Chloride	75-01-4	ND	2	ug/L	10/19/97

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9710149

CLIENT PROJECT ID: 10700 MACARTHR

Quality Control Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8010

AEN JOB NO: 9710149
INSTRUMENT: G
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery: Bromochloro-methane	Percent Recovery: 1-Bromo-3-chloro-propane
10/19/97	FHS-MW-10	01	77	99
QC Limits:			70-130	70-130

DATE ANALYZED: 10/18/97
SAMPLE SPIKED: LCS
INSTRUMENT: G

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits: Percent Recovery	QC Limits: RPD
1,1-Dichloroethene	25	86	<1	78-122	20
Trichloroethene	25	87	3	80-128	20
Chlorobenzene	25	90	7	66-120	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES

SITE 10700 MacArthur Blvd.
Oakland, CA

LAB AEN 9710149 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 ENVIRONMENTAL
ATTN: WILL MAST

SAMPLE I.D.	MATRIX (S = SOIL, W = H2O)	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: 8010	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FHS-MW-10 10/9/97 1210	W	3		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1215
SAMPLING PERFORMED BY Mike Toll
RESULTS NEEDED NO LATER THAN PER CLIENT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Mike Toll	10/10/97	1700	Rick Gilmore	10/10/97	1700
Rick Gilmore	10-10-97	19:25	Paul Gustavson	10/10/97	1925

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

Quanterra Environmental Services

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

October 22, 1997

QUANTERRA INCORPORATED PROJECT NUMBER: 095261
PO/CONTRACT: 502.0201.003

Will Mast
PES
1682 Novato Boulevard
Suite 100
Novato, CA 94947

Dear Mr. Mast,

This report contains the analytical results for the seven samples.received under chain of custody by Quanterra Incorporated on September 30, 1997.

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

Quanterra
Environmental Services

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 095261

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 095261

There were no anomalies associated with this project.

Quanterra
Environmental Services

Quanterra Environmental Services - 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.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
PES

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
095261-0001-SA	AMW-4	AQUEOUS	29 SEP 97	08:55	30 SEP 97
095261-0002-SA	AMW-6	AQUEOUS	29 SEP 97	12:20	30 SEP 97
095261-0003-SA	AMW-7	AQUEOUS	29 SEP 97	11:44	30 SEP 97
095261-0004-SA	AMW-9	AQUEOUS	29 SEP 97	12:20	30 SEP 97
095261-0005-SA	WGR-MW3	AQUEOUS	29 SEP 97	12:40	30 SEP 97
095261-0006-SA	MW-6	AQUEOUS	29 SEP 97	12:50	30 SEP 97
095261-0007-SA	FHS-MW11	AQUEOUS	29 SEP 97	11:10	30 SEP 97

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970229-KL1

CLIENT PES

SITE 10700 MacArthur Blvd
Oakland, CA

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

LAB Quanterra Environmental Services 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 ENVIRONMENTAL
ATTN: WILL MAST
* CHECK HOLD TIMES NITRATE/SULFATE.

SAMPLE I.D.	Date/Time	MATRIX S=SOIL W=H2O	CONTAINERS TOTAL	CONTAINERS 40ml	Diesel by EPA 8015 Mod.	Aromatics by EPA 8020	Carbon Dioxide + Alkalinity	VOA's by EPA 8240	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-4	9/29/97 11:35	W	4	3 VOAs NO PRES	X	X	X					
AMW-6	12:20	W	4	1 LTR	X	X	X					
AMW-7	11:44	W	4	POLY NO PRES	X	X	X			rec'd in good cond. 9-30-97		
AMW-9	12:25	W	4		X	X	X					
WGR-MW3	12:40	W	4		X	X	X					
MW-6	12:55	W	4		X	X	X					
FHS-MW11	11:10	W	4		X	X	X					

SAMPLING COMPLETED	DATE	TIME
	9/29/97	1630

SAMPLING PERFORMED BY LAD GILCHRIST

RESULTS NEEDED NO LATER THAN AS CONTRACTED

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	9/30/97	1135		9-30-	1135
	9-30 97	14'10		9-30-97	1440

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #
WHITE COTTON DELIVERED	9/30	1135	

CHAIN-OF-CUSTODY

CALLAB- 095261

PROJECT NAME: BLAINE TECH	***QUANTERRA*** *ENVIRONMENTAL SERVICES* 880 Riverside Parkway West Sacramento, CA 95605 Phone #: (916) 374-4383	**DUE:** 12 OCT 97 **TO:** Quanterra Incorporated 18501 East Gale Avenue City of Industry, CA 91748
PO NUMBER: CONTACT PM		
PROJECT MANAGER: Calvin Tanaka		

SAMPLE DESCRIPTION	LAB ID	DATE	TIME	MATRIX	CONTAINERS	ANALYSES: RSK-175									REMARKS/ SPCL INSTR
AMW-4	095261-0001 SA	29 SEP 97	08:55	AQUEOUS	3-VOAs	X									
AMW-6	095261-0002 SA	29 SEP 97	12:20	AQUEOUS		X									
AMW-7	095261-0003 SA	29 SEP 97	11:44	AQUEOUS		X									
AMW-9	095261-0004 SA	29 SEP 97	12:20	AQUEOUS		X									
WGR-MW3	095261-0005 SA	29 SEP 97	12:40	AQUEOUS		X									
MW-6	095261-0006 SA	29 SEP 97	12:50	AQUEOUS		X									
FHS-MW11	095261-0007 SA	29 SEP 97	11:10	AQUEOUS		X									

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
Relinquished by:	[signature]	Mary Dyas	Quanterra	093097	1500
Received by:	[signature]	F. Luafalemana	Quanterra COC	10/1/97	1100
Relinquished by:					
Received by:					

Comments: PLEASE CONTACT CALVIN TANAKA IF YOU HAVE ANY QUESTIONS. Log 4159

QA373 4/96 CMD

AB #00

Quanterra
Environmental
Services

General Inorganics - Method 300.0

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW-4
Lab ID: 095261-0001-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	3.8	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	54.9	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW-6
Lab ID: 095261-0002-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	5.3	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	45.9	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW-7
Lab ID: 095261-0003-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	6.1	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	92.2	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: AMW-9
Lab ID: 095261-0004-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	3.5	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	39.7	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: WGR-MW3
Lab ID: 095261-0005-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	0.054	mg/L	0.050	300.0	NA	30 SEP 97
Sulfate	28.7	mg/L	1.0	300.0	NA	30 SEP 97

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: MW-6
Lab ID: 095261-0006-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	4.3	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	37.5	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

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

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: FHS-MW11
Lab ID: 095261-0007-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: See Below

Received: 30 SEP 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	5.8	mg/L	0.50	300.0	NA	30 SEP 97 o
Sulfate	67.1	mg/L	10.0	300.0	NA	30 SEP 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Lori Ann Upton

The cover letter is an integral part of this report.
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Quanterra
Environmental Services

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)
095261-0001-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0002-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0003-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0004-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0005-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0006-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA
095261-0007-SA	AQUEOUS	IC-A	-	30 SEP 97-B	30 SEP 97-BA

Quanterra
Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation
Project: 095261

Test: IC-SCAN-2-A Ion Chromatography Scan, Multiple elements
Method: 300.0
Matrix: AQUEOUS
QC Lot: 30 SEP 97-BX QC Run: 30 SEP 97-B

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

Test: IC-SCAN-2-A Ion Chromatography Scan, Multiple elements
Method: 300.0
Matrix: AQUEOUS
QC Lot: 30 SEP 97-BX QC Run: 30 SEP 97-B

Analyte	Result	Units	Reporting Limit
Sulfate	ND	mg/L	1.0

ND = Not Detected

Quanterra
Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 095261

Category: IC-A Ion Chromatography Inorganics
Test: IC-SCAN-2-A
Matrix: AQUEOUS
QC Lot: 30 SEP 97-BX QC Run: 30 SEP 97-B
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits	
Fluoride	5.00	4.92	98	90-110	
Chloride	10.0	9.61	96	90-110	
Nitrite (as N)	1.00	0.973	97	90-110	
Bromide	5.00	4.68	94	90-110	
Nitrate (as N)	1.00	0.941	94	90-110	
Orthophosphate (as P)	2.00	1.79	89	90-110	#
Sulfate	20.0	19.1	95	90-110	

= Outside of control limits.

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 095261

Category: IC-A Ion Chromatography Inorganics
Test: IC-SCAN-2-A Method: 300.0
Matrix: AQUEOUS
Sample: 095261-0007
MS Run: 30 SEP 97-BA
Units: mg/L

	Concentration								
Analyte	Sample Result	MS Result	MSD Result	Spiked MS/MSD	%Recovery MS	%Recovery MSD	Control Limits	%RPD	RPD Limit
Nitrate (as N)	5.80	15.8	15.7	10.0	99	99	75-125	0.17	20
Sulfate	67.1	216	216	150	100	100	75-125	0.0	20

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

Quanterra
Environmental Services

Subcontracted Analysis
Quanterra, City of Industry
Dissolved Gasses
- Method RSK-175

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: AMW-4
Lab ID: 095261-0001-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	0.0029	mg/L	0.0010
Carbon Dioxide, Free	8.4	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: AMW-6
Lab ID: 095261-0002-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	11	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: AMW-7
Lab ID: 095261-0003-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	33	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: AMW-9
Lab ID: 095261-0004-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	7.7	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: WGR-MW3
Lab ID: 095261-0005-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	0.032	mg/L	0.0010
Carbon Dioxide, Free	23	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: MW-6
Lab ID: 095261-0006-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	11	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: FHS-MW11
Lab ID: 095261-0007-SA
Matrix: AQUEOUS
Authorized: 30 SEP 97

Sampled: 29 SEP 97
Prepared: NA

Received: 30 SEP 97
Analyzed: 09 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	0.0019	mg/L	0.0010
Carbon Dioxide, Free	0.30	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Organic Subcontracted Test to Quanterra Santa Ana

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (LCS/BLANK)
095261-0001-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0002-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0003-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0004-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0005-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0006-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E
095261-0007-SA	AQUEOUS	RSKSOP175G	09 OCT 97-A1E	09 OCT 97-A1E

Quanterra
Environmental Services

METHOD BLANK REPORT
Organic Subcontracted Test to Quanterra Santa Ana
Project: 095261

Test: RSKSOP-175-G RSKSOP-175 - Dissolved Gases in Water by GC
Method: RSKSOP-175
Matrix: AQUEOUS
QC Lot: 09 OCT 97-A1E QC Run: 09 OCT 97-A1E

Analyte	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	ND	mg/L	0.040

ND = Not Detected

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Organic Subcontracted Test to Quanterra Santa Ana
Project: 095261

Category: RSKSOP17 Dissolved Gases in Water by GC
Testcode: RSKSOP-175-G Method: RSKSOP-175
Matrix: AQUEOUS Concentration Units: mg/L
QC Lot: 09 OCT 97-A1E Analyzed Date: 09 OCT 97 Time: 12:22

Analyte	Concentration Spiked	Concentration Measured DCS1	Concentration Measured DCS2	Concentration Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Methane	0.326	0.340	0.337	0.338	104	40-160	0.8	30
Carbon Dioxide, Free	71.8	67.2	68.3	67.8	94	40-160	1.6	30

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

Quanterra
Environmental
Services

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

October 23, 1997

QUANTERRA INCORPORATED PROJECT NUMBER: 095481
PO/CONTRACT: 502.0201.006

Will Mast
PES
1682 Novato Boulevard
Novato, CA 94947

Dear Mr. Mast,

This report contains the analytical results for the one sample received under chain of custody by Quanterra Incorporated on October 10, 1997. This sample is associated with your Foothill Square project.

The case narrative is an integral part of this report.

Preliminary results were sent via facsimile on October 23, 1997.

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

Sincerely,

Calvin Tanaka
Project Manager

Quanterra
Environmental Services

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 095481

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 095481

There were no anomalies associated with this project.

Quanterra
Environmental Services

Quanterra Environmental Services - 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.

Quanterra
Environmental
Services

SAMPLE DESCRIPTION INFORMATION
for
PES

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
095481-0001-SA	FSH-MW-10	AQUEOUS	09 OCT 97	12:10	10 OCT 97

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES

SITE 10700 MacArthur Blvd.
Oakland, CA

LAB Cambria DHS #

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

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

- 48 hour hold time
INVOICE & REPORT TO PES ENVIRONMENTAL ATTN: WILL MAST

SAMPLE I.D.			MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: 5xTPH-g, BTEX, MTBE, TPH-d, 8350	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FSH-MW-10	10/9/97	1210	W	11		X		rec'd in good cond.		
									cold 101097	

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN
	10/9/97	1210	M. LeTo11	PER CLIENT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
M. LeTo11	10/9/97	1700	Client/Hertz	101097	1245
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	10/9/97	1700		2748848115

CALLAB-095487

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 97009-T1

CLIENT PES

SITE 10700' Mac-Arthur Blvd.
Oakland, CA

LAB Quanterra

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 ENVIRONMENTAL
ATTN: WILL MAST

SAMPLE I.D.			MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: Cal Title 22 Metals (CAM 17)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FSH-MW-10	10/9/97	1215	W	3		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1215

SAMPLING PERFORMED BY M. McTOLL

RESULTS NEEDED NO LATER THAN — PER CLIENT —

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	10/13/97	1530			
			[signature]	10/14/97	10:55

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	
AIRBORNE EXPRESS	10/13/97	1530		AIRBORNE EXP # 2748848012

Quanterra
Environmental
Services

General Inorganics - Method 300.0

Quanterra
Environmental Services

GENERAL INORGANICS

(Water)

Client Name: PES
Client ID: FSH-MW-10
Lab ID: 095481-0001-SA
Matrix: AQUEOUS
Authorized: 10 OCT 97

Sampled: 09 OCT 97
Prepared: See Below

Received: 10 OCT 97
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate (as N)	4.3	mg/L	0.50	300.0	NA	13 OCT 97 o
Sulfate	44.6	mg/L	10.0	300.0	NA	13 OCT 97 o

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

ND = Not detected
NA = Not applicable

Reported By: John Disney

Approved By: Barry Votaw

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

Quanterra
Environmental Services

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)
095481-0001-SA	AQUEOUS	IC-A	-	13 OCT 97-A	13 OCT 97-AA
095481-0001-SA	AQUEOUS	NO3-A	-	10 OCT 97-A	10 OCT 97-AA

Quanterra
Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation
Project: 095481

Test: IC-SCAN-2-A Ion Chromatography Scan, Multiple elements
Method: 300.0
Matrix: AQUEOUS
QC Lot: 13 OCT 97-AX QC Run: 13 OCT 97-A

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

Test: IC-SCAN-2-A Ion Chromatography Scan, Multiple elements
Method: 300.0
Matrix: AQUEOUS
QC Lot: 13 OCT 97-AX QC Run: 13 OCT 97-A

Analyte	Result	Units	Reporting Limit
Sulfate	ND	mg/L	1.0

Test: NO3-A Nitrate (as N)
Method: 353.2
Matrix: AQUEOUS
QC Lot: 10 OCT 97-AX QC Run: 10 OCT 97-A

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

ND = Not Detected

Quanterra
Environmental Services

LABORATORY CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 095481

Category: IC-A Ion Chromatography Inorganics
Test: IC-SCAN-2-A
Matrix: AQUEOUS
QC Lot: 13 OCT 97-AX QC Run: 13 OCT 97-A
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Fluoride	5.00	4.89	98	90-110
Chloride	10.0	9.55	95	90-110
Nitrite (as N)	1.00	0.958	96	90-110
Bromide	5.00	4.74	95	90-110
Nitrate (as N)	1.00	0.929	93	90-110
Orthophosphate (as P)	2.00	1.93	97	90-110
Sulfate	20.0	19.1	96	90-110

Category: NO3-A Nitrate
Test: NO3-A
Matrix: AQUEOUS
QC Lot: 10 OCT 97-AX QC Run: 10 OCT 97-A
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured	Accuracy(%) LCS	Limits
Nitrate (as N)	0.250	0.260	104	85-110

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

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 095481

Category: IC-A Ion Chromatography Inorganics
Test: IC-SCAN-2-A Method: 300.0
Matrix: AQUEOUS
Sample: 095450-0008
MS Run: 13 OCT 97-AA
Units: mg/L

Analyte	Sample Result	MS Result	MSD Result	Spiked MS/MSD	%Recovery MS	%Recovery MSD	Control Limits	%RPD	RPD Limit
	---------- Concentration ----------								
Chloride	151	1100	1100	1000	95	95	75-125	0.091	20
Nitrate (as N)	2.75	12.8	12.2	10.0	100	94	75-125	4.8	20
Sulfate	180	345	346	150	110	111	75-125	0.29	20

Category: NO3-A Nitrate
Test: NO3-A Method: 353.2
Matrix: AQUEOUS
Sample: 095471-0003
MS Run: 10 OCT 97-AA
Units: mg/L

Analyte	Sample Result	MS Result	MSD Result	Spiked MS/MSD	%Recovery MS	%Recovery MSD	Control Limits	%RPD	RPD Limit
	---------- Concentration ----------								
Nitrate (as N)	ND	0.262	0.257	0.250	105	103	75-125	1.9	20

ND = Not Detected

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

Quanterra
Environmental Services

Subcontracted Analysis
Quanterra, City of Industry
Dissolved Gasses
- Method RSK-175

Quanterra
Environmental Services

RSKSOP-175 - Dissolved Gases in Water by GC

Method RSKSOP-175

Client Name: PES
Client ID: FSH-MW-10
Lab ID: 095481-0001-SA
Matrix: AQUEOUS
Authorized: 10 OCT 97

Sampled: 09 OCT 97
Prepared: NA

Received: 10 OCT 97
Analyzed: 21 OCT 97

Parameter	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	27	mg/L	0.040

ND = Not detected
NA = Not applicable

Reported By: DMAI

Approved By: JKITTLESON

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

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Organic Subcontracted Test to Quanterra Santa Ana

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (LCS/BLANK)
095481-0001-SA	AQUEOUS	RSKSOP175G	21 OCT 97-A1E	21 OCT 97-A1E

Quanterra
Environmental Services

METHOD BLANK REPORT
Organic Subcontracted Test to Quanterra Santa Ana
Project: 095481

Test: RSKSOP-175-G RSKSOP-175 - Dissolved Gases in Water by GC
Method: RSKSOP-175
Matrix: AQUEOUS
QC Lot: 21 OCT 97-A1E QC Run: 21 OCT 97-A1E

Analyte	Result	Units	Reporting Limit
Methane	ND	mg/L	0.0010
Carbon Dioxide, Free	ND	mg/L	0.040

ND = Not Detected

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Organic Subcontracted Test to Quanterra Santa Ana
Project: 095481

Category: RSKSOP17 Dissolved Gases in Water by GC
Testcode: RSKSOP-175-G Method: RSKSOP-175
Matrix: AQUEOUS Concentration Units: mg/L
QC Lot: 21 OCT 97-A1E Analyzed Date: 21 OCT 97 Time: 12:48

Analyte	Concentration Spiked	Concentration Measured DCS1	Concentration Measured DCS2	Concentration Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Methane	0.326	0.357	0.346	0.352	108	40-160	3.1	30
Carbon Dioxide, Free	71.8	71.8	71.7	71.8	100	40-160	0.1	30

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 944947

Sample of: monitor well water
Project #: 502.0201.003

Date: October 7, 1997
Lab #: 97-09-0420 thru -07-0426
Received: September 30, 1997
Tech(s): C. Lawrence
Lab Supervisor: D. Jacobson
Lab Director: G.S. Conrad, Ph.D.
Sample ID(s): MW-6, AMW-4, AMW-6, AMW-7, AMW-9, WGR-MW-3 & FHS-MW-11

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

RESULTS

SAMPLE ID	FERROUS IRON
MW-6	<0.01 mg/l
AMW-4	0.18 mg/l
AMW-6	0.19 mg/l
AMW-7	0.01 mg/l
AMW-9	0.90 mg/l
WGR-MW-3	1.41 mg/l
FHS-MW-11	0.17 mg/l

COMMENTS

While most samples had a low ferrous iron content, two were relatively high; and two other samples was very low with one of them being barely detectable and the other one was non-detect. The two lowest samples indicate either very total low iron or good oxidation. The low level samples suggest more total iron and/or low oxygen tension. And the two highest samples suggests yet more iron and a more reduced environment.

QC DATA - Ferrous & Redox Tests 10/7/97

Test	Lab Standard	Result	Percent Recovery
Ferrous Iron*	1.000 mg/l	0.900 mg/l	90.0%
Redox Test ¤	474.0 mV	450.3 mV	95.0%

* Ferrous Ammonium Sulfate = $(Fe(NH_4)_2(SO_4)_2 6H_2O$; ¤ SMEWW 2580

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., ç 1992: Ferrous Iron (Fe^{+2}) - Phenanthroline Method (modified SMEWW 3500-Fe D); Redox - ASTM D 1498.

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 970929-L1

CLIENT PES

SITE 10700 MACARTHUR BLVD, OAKLAND CA

LAB E.T.S. DHS #

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

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S=SOIL W=H2O	CONTAINERS TOTAL		C	IRON BY SM 3500 D (Low specific for Fe^{2+} in WW)								ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
AMW-4	9/29	1155	W	3	40ml		X											
AMW-6		1220 ~~1250~~	W	3	VOAS		X											
AMW-7		1144	W	3	NO HCL		X											
AMW-9		1220	W	3			X											
WGR-MW3		1240	W	3			X											
MW-6		1250	W	3			X											
~~FHS-MW11~~	↓	1110	W	3	↓		X				warm 9.29.97							

SAMPLING COMPLETED DATE 9-29-97 TIME 1250

SAMPLING PERFORMED BY LAD GILCHRIST

RESULTS NEEDED NO LATER THAN AS CONTRACTED

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	9-29-97	1515		9-29-97	1515
William D Most	9-30-97	1130	David R. Jamison	9-30-97	11:29

SHIPPED VIA | DATE SENT | TIME SENT | COOLER # |

E T S

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Petaluma, CA 94954
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WATER ANALYSIS REPORT

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

Date: October 17, 1997
Lab #: 97-09-0122
Received: October 10, 1997
Tech(s): C. Lawrence
Lab Supervisor: D. Jacobson
Lab Director: G.S. Conrad, Ph.D.
Sample ID(s): FHS-MW-10

Sample of: monitor well water
Project #: 502.0201.003

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

RESULTS

SAMPLE ID	FERROUS IRON
FHS-MW-10	**0.18 mg/l**

COMMENTS

This sample is in the generally moderate range for ferrous iron suggesting modest total iron (in which case the redox level could be anything); or, if total iron is high, indicating that there is some level of oxidation. Also note that this sample's ferrous iron level is essentially the same as FHS-MW-11 from this site.

QC DATA - Ferrous & Redox Tests 10/7/97

Test	Lab Standard	Result	Percent Recovery
Ferrous Iron*	1.000 mg/l	0.900 mg/l	90.0%
Redox Test ¤	474.0 mV	450.3 mV	95.0%

* Ferrous Ammonium Sulfate - $(Fe(NH_4)_2(SO_4)_2 \cdot 6H_2O$; ¤ SMEWW-2580

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., ç 1992: Ferrous Iron (Fe^{++}) - Phenanthroline Method (modified SMEWW 3500-Fe D); Redox - ASTM D 1498.

BLAINE TECH SERVICES INC.

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

CHAIN OF CUSTODY 971009-T1

CLIENT PES @

SITE 10700 MacArthur
Oakland, CA

LAB ETS

DHS #

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

☐ EPA ☐ LIA ☐ OTHER ☐ RWQCB REGION

SPECIAL INSTRUCTIONS

- 24 Hour Hold

- Invoice & Report to Will Mast @ PES Environmental.

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: TPH as Diesel by SW 3550D	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
FHS-MW-10 10/9/97 1210	W	1		X				

SAMPLING COMPLETED DATE 10/9/97 TIME 1215

SAMPLING PERFORMED BY Mike Toll

RESULTS NEEDED NO LATER THAN PER CLIENT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Mike Toll	10/9/97	1300	Chris Rossitt	10-9-97	1300
Chris Rossitt	10-9-97	1827	W. Mast	10-9-97	1827
William Mast	10-10-97	0815	[illegible] Conrad	10/10/97	8:15 am

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

DISTRIBUTION

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JANUARY 22, 1998

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QUALITY CONTROL REVIEWER

Robert S. Creps, P.E.

5020201R.003