P & D ENVIRONMENTAL
4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916

Michael Lee
c/o Jeff Hammond
1044 5th Ave
Oak. 94606

ENVIRONMENTAL PROTECTION
96 MAR 14 PM 2:16

March 13, 1996
Report 0101.R3

Earthlake Assoc (3678) #7
1445 5th Ave
gradient W - NW

Mr. Jeff Hammond
Merritt Environmental Corporation
1044 5th Avenue
Oakland, CA 94606

SUBJECT: SUBSURFACE INVESTIGATION REPORT
Merritt Environmental Corporation Facility
1044 5th Avenue
Oakland, CA

Dear Mr. Hammond:

P&D Environmental (P&D) is pleased to present this report documenting the collection of soil and groundwater grab samples from six exploratory boreholes (designated as B4 through B9) located at or near the subject site. This work was performed in accordance with recommendations set forth in P&D's Subsurface Investigation Report 0101.R2 dated February 21, 1996. A Site Location Map (Figure 1), and a Site Vicinity Map (Figure 2) showing the locations of exploratory boreholes B4 through B9 are attached with this report.

All work was performed under the direct supervision of an appropriately registered professional. This report is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

BACKGROUND

The subject site is located in a developed portion of the City of Oakland approximately 3,000 feet to the south of Lake Merritt. The site and surrounding topography are relatively flat.

It is P&D's understanding that the subject facility was previously used by Merritt Environmental Corporation as a storage yard for equipment and materials. Based upon discussions with Mr. Jeff Hammond of Merritt Environmental Corporation, the underground storage tank was installed some time in the 1950's. The underground storage tank was reported to always have contained gasoline. It is P&D's understanding that the tank was most recently pressure tested in October, 1994 and was reported to have passed the pressure test with no indication of leaks.

Use of the tank was reported to have been discontinued at the end of 1994, at which time the tank was reported to have been emptied of its contents. The tank capacity was 1,000 gallons. The fill port for the gasoline tank was located directly above the tank, at the west end of the tank. One vent line was reported to have been connected to the tank, with one dispenser located adjacent and to the south of the tank. The dispenser line and vent line were also reported to have been connected to the tank at the west end of the tank. The tank was located beneath the sidewalk at the facility on 5th Avenue. The former location of the tank pit at the facility is shown in Figure 2.

On September 14, 1995 Merritt Environmental Corporation uncovered one 1,000 gallon capacity gasoline underground storage tank and prepared the tank for removal. However, because of scheduling difficulties, it was necessary to postpone the removal of the tank from the site.

On October 18, 1995 Merritt Environmental Corporation removed the 1,000-gallon capacity gasoline fuel tank from the tank pit at the subject site. The

tank was constructed of single wall steel. Groundwater was not encountered in the tank pit. Two soil samples were collected from beneath the ends of the tank from the bottom of the tank pit. The bottom of the tank was at a depth of approximately eight feet below grade. The samples, designated as T1-10 and T2-10, were collected at a depth of approximately ten feet below grade, approximately two feet into the native material beneath the former ends of the tank. Sample T1-10 was collected from the end of the pit closest to East 11th Street. Groundwater was not encountered in the tank pit.

The laboratory analytical results of soil samples T1-10 and T2-10 showed that TPH-G was detected at concentrations of 130 and 64 parts per millions (ppm), respectively, and that lead was detected at concentrations of 4.4 and 5.5 ppm, respectively. Benzene was only detected in sample T1-10.0 at a concentration of 0.059 ppm. Review of the laboratory analytical reports indicates that the TPH-G results are aged gasoline. Documentation of the sample collection and laboratory reports are presented in P&D's Underground Storage Tank Removal Report 0101.R1 dated January 22, 1996.

In response to a letter from Mr. Barney Chan dated January 4, 1996, P&D prepared a work plan (Work Plan 0101.W1) dated February 5, 1996 for soil and groundwater investigation. The work plan was subsequently approved by Mr. Chan in a letter dated February 5, 1996.

On February 8, 1996, P&D personnel oversaw the drilling of boreholes B1, B2, and B3 by Vironex of Foster City, California. The locations of boreholes B1, B2, and B3 are shown in Figure 2.

Groundwater was initially encountered in boreholes B1, B2, and B3 during drilling at depths of approximately 13, 16, and 16.5 feet, below the ground surface, respectively. Approximately 10 to 15 minutes after completion of borehole drilling in each borehole, and immediately prior to groundwater grab sample collection, groundwater levels were subsequently recorded to have stabilized in boreholes B1, B2, and B3 at depths of 7.5, 7.7, and 8.6 feet below the ground surface, respectively.

The laboratory analytical results of the soil sample collected from borehole B2 show that TPH-G and BTEX were not detected. In boreholes B1, and B3, TPH-G was detected at concentrations of 2,300, and 12 ppm, respectively, and benzene was detected at concentrations of 7.1, and 0.036 ppm, respectively. Review of the laboratory analytical report indicates that the TPH-G results are aged gasoline. The laboratory analytical results of the soil samples are summarized in Table 1.

The laboratory analytical results of the groundwater grab sample collected from borehole B2 show that TPH-G and BTEX were not detected. In boreholes B1, and B3, TPH-G was detected at concentrations of 63, and 60 ppm, respectively; and benzene was detected at concentrations of 1.7, and 1.8 ppm, respectively. The laboratory analytical results of the groundwater grab samples are summarized in Table 2.

Documentation of the sample collection procedures and laboratory analytical results for boreholes B1 through B3 are presented in P&D's Subsurface Investigation Report 0101.R2 dated February 21, 1996. Based upon the sample results, P&D recommended that groundwater grab samples be collected from four boreholes designated as B4 through B7 located to the south and northwest of the subject site to define the extent of petroleum hydrocarbons detected in borings B1 and B3. Provisions were presented to expand the extent of the investigation in the event that petroleum hydrocarbons were encountered in these proposed boreholes. The recommendations were subsequently approved by Mr. Barney Chan of the Alameda County Department of Environmental Health (ACDEH) in a letter dated February 22, 1996.

FIELD ACTIVITIES

On February 27, 1996, P&D personnel oversaw the drilling of boreholes B4, through B9 by Vironex of Foster City, California. The locations of boreholes B4 through B9 are shown in Figure 2.

It is P&D's understanding that prior to performing field work, Merritt Environmental Corporation obtained drilling permits from the Alameda County Water Agency, Zone 7 and encroachment permits from the City of Oakland, and notified underground Safety Alert for buried utility location. Prior to performing field activities, P&D prepared a site health and safety plan and provided notification of the scheduled field activities to Mr. Barney Chan of the ACDEH.

Soil Boring and Sample Collection

The boreholes were drilled using truck-mounted 1.5-inch outside diameter Geoprobe technology drilling equipment. Borehole B9 was drilled to a total depth of 16 feet, boreholes B5 through B8 were drilled to a total depth of 21 feet, and borehole B4 was drilled to a depth of 26 feet. Following the completion of drilling, temporary 3/4-inch diameter slotted PVC pipe was placed into the boreholes for the collection of groundwater grab samples.

Soil samples were collected from the boreholes at five front intervals using a two foot long Geoprobe barrel sampler lined with brass tubes. All of the soil samples were evaluated in the field using a Model 580B OVM Photoionization Detector (PID) equipped with a 10.0 eV bulb and calibrated against a 100 ppm isobutylene standard. Organic vapors were not detected in any of the soil samples with the exception of borehole B5 at a depth of ten feet, where a PID value of 6.0 ppm was detected. Moderate petroleum hydrocarbon odors which were qualitatively identified as old gasoline were encountered in borehole B5 associated with the depth where the detectable PID value was encountered.

The soil samples which were collected at a depth of approximately 10 feet were retained in their brass tubes for laboratory analysis in the following manner. After collection of the sample into the brass tube in the Geoprobe soil sampler, the ends of the brass tubes were wrapped in aluminum foil, covered with plastic endcaps, labeled, and placed in ziplock baggies. The capped brass tubes were then placed into a cooler with ice pending delivery to McCampbell Analytical Laboratory in Pacheco, California. McCampbell Analytical Laboratory is a State-certified hazardous waste testing laboratory. Chain of custody procedures were followed for all sample handling.

Groundwater was initially encountered in boreholes B5 through B8 during drilling at a depth of approximately 15 below the ground surface. Groundwater was initially encountered during drilling in borehole B9 at a depth of approximately 12 feet below grade, and groundwater was not observed during drilling activities in borehole B4. Approximately 5 to 15 minutes after completion of borehole drilling in each borehole, and immediately prior to groundwater grab sample collection, groundwater levels were subsequently recorded to have stabilized in boreholes B4, B5, B6, B7, B8 and B9 at depths of 7.7, 9.0, 8.7, 3.3, 8.0, and 11.0 feet below grade, respectively. In borehole B6, it was necessary to wait approximately 3 hours for suspended particulates to settle for adequate sample collection.

Groundwater grab samples were collected with a Teflon bailer from 1-inch diameter slotted Schedule 40 PVC pipe which was placed into each of the boreholes to a depth of 10 to 15 feet. New PVC pipe was used in each borehole. Following sample collection the boreholes were backfilled with neat cement grout. The groundwater samples from the boreholes were collected approximately 10 to 15 minutes after completion of drilling each boring. At the time of sample collection, petroleum hydrocarbon sheen was not observed on the water collected

from any of the boreholes. Mild petroleum hydrocarbon odors which were quantitatively identified as old gasoline were encountered in boreholes B4 and B5.

The water samples collected from the boreholes were transferred from the Teflon bailer to 40-milliliter glass Volatile Organic Analysis (VOA) vials which were sealed with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that no air bubbles were present. The VOA vials were labeled and then transferred to a cooler with ice, until they were transported to McCampbell Analytical, Inc. Chain of custody documentation accompanied the samples to the laboratory.

The solid stem Geoprobe technology equipment, and Teflon bailer were washed with an Alconox solution followed by a clean water rinse prior to each use. Soil cuttings were not generated using the Geoprobe technology methodology. Soil samples which were not retained for laboratory analysis were stored onsite with stockpiled soil which it is P&D's understanding was excavated from the bottom of the tank pit following soil sample collection associated with the tank removal. The stockpiled soil is covered with a sheet of visqueen.

GEOLOGY AND HYDROGEOLOGY

Based on review of regional geologic maps from U.S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E.J. Helley and K.R. Lajoie, 1979 the subject site is underlain by Pleistocene beach and dune sand deposits (Merrit Sand). The deposits are described as typically consisting of loose, well-sorted fine to medium sand.

Based on observations of the subsurface materials encountered in the boreholes, the subsurface materials consist predominantly of a brown silty clay with minor fine sand to the total depth explored of approximately 26 feet. In borehole B9, brown fine sand was encountered beginning at a depth of approximately 7 feet below grade and extended to the total depth explored in this borehole of approximately 16 feet below grade.

Although groundwater was initially encountered during drilling in boreholes B5 through B8 at a depth of approximately 15 feet below grade, groundwater levels had risen to approximately 8 to 9 feet below grade within 5 to 15 minutes of borehole drilling completion (with the exception of borehole B7, where groundwater was measured at a depth of approximately 3.3 feet below grade). Similar conditions were observed during the previous investigation in boreholes B1 through B3. In borehole B4, groundwater was not initially encountered during drilling, but was measured at a depth of approximately 7.7 feet below grade approximately 10 to 15 minutes after completion of drilling. In borehole B9, groundwater was initially encountered during drilling at a depth of approximately 12 feet below grade, and was measured at a depth of approximately 11.0 feet below grade approximately 10 to 15 minutes after completion of drilling.

The site groundwater flow direction is unknown. However, based upon site vicinity topography, the groundwater flow direction has been inferred to be southerly or westerly, towards the channel separating Oakland from Alameda. The channel is connected to San Francisco Bay, and is tidally influenced. It is possible that the groundwater flow direction at the site may be tidally influenced.

LABORATORY ANALYTICAL RESULTS

Soil and groundwater samples collected from boreholes B4 through B9 were analyzed for TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015 (GC/FID), and for BTEX using EPA Method 8020.

The laboratory analytical results of the soil samples collected from the boreholes show that TPH-G and BTEX were not detected, with the exception of borehole B5 at a depth of 10 feet, where TPH-G was detected at a concentration of 27 ppm, and toluene, ethylbenzene and xylenes were detected at concentrations of 0.035, 0.22 and 0.60 ppm, respectively. Review of the laboratory analytical report indicates that the TPH-G results are interpreted as aged gasoline. The laboratory analytical results of the soil samples are summarized in Table 1. Copies of the laboratory analytical reports are attached with this report.

The laboratory analytical results of the groundwater grab samples collected from boreholes B6 through B8 show that TPH-G and BTEX were not detected. In boreholes B4, B5 and B9, TPH-G was detected at concentrations of 1.9, 1.3 and 1.8 ppm, respectively; and benzene was detected at concentrations of 0.62, 1.3 and 0.84 ppm, respectively. Review of the laboratory analytical report indicates that the TPH-G results are interpreted as aged gasoline. The laboratory analytical results of the groundwater grab samples are summarized in Table 2. Copies of the laboratory analytical reports are attached with this report.

DISCUSSION AND RECOMMENDATIONS

Soil and groundwater grab samples were collected from a total of six boreholes designated as B4 through B9 to evaluate soil and groundwater quality in the vicinity of the subject site.

Review of relevant literature concerning the local geology indicates that the subject site overlies beach and dune sand deposits (Merrit Sand). The subsurface materials encountered in the boreholes drilled during this investigation indicate that the site and site vicinity is underlain by a brown silty clay with minor fine sand to the total depth explored of approximately 26 feet. However, fine grained sand was encountered in borehole B9 between the depths of approximately 7 feet below grade, and the total depth explored in this borehole of approximately 16 feet below grade.

Although groundwater was initially encountered during drilling at a depth of approximately 15 feet in boreholes B5 through B8, and at a depth of approximately 12 feet below grade in borehole B9, groundwater levels generally rose to between approximately 8 and 9 feet below grade within 10 to 15 minutes of borehole drilling completion. Similar conditions were observed during the previous investigation in boreholes B1 through B3. In boreholes B7 and B9, groundwater rose to a depth of approximately 3.3 and 11 feet below grade, respectively, within 10 to 15 minutes of borehole drilling completion. The site groundwater flow direction is unknown. However, based upon interpretation of topography in the vicinity of the site, the groundwater flow direction has been inferred to be southerly or westerly.

The results of the soil sample analysis showed that TPH-G was only detected in borehole B5 at a depth of 10 feet at a concentration of 27 ppm. Benzene was not detected in this soil sample. Review of the laboratory analytical report indicates that the TPH-G results are aged gasoline. Similarly, the results of the groundwater grab samples showed that TPH-G and BTEX were not detected in boreholes B6, B7 and B8. In boreholes B4, B5 and B9, TPH-G was detected at concentrations of 1.9, 1.3 and 1.8 ppm, respectively; and benzene was detected at concentrations of 0.62, 1.3 and 0.84 ppm, respectively. Review of the laboratory analytical report indicates that the TPH-G results are interpreted as aged gasoline.

Organic vapors which were detectable with the PID were only encountered in borehole B5 at a depth of 10 feet below grade. Moderate petroleum hydrocarbon odors which were qualitatively identified as old gasoline were encountered in borehole B5 at a depth of 10 feet below grade. Similarly, no evidence of free product or sheen were observed in any of the groundwater grab samples. However,

a mild petroleum hydrocarbon odor which was qualitatively identified as old gasoline was encountered in boreholes B4 and B5.

Based upon the analytical results of the soil samples, the extent of petroleum hydrocarbons in soil at a depth of approximately 10 feet appears to have been defined. Based upon the analytical results of the groundwater grab samples, the extent of petroleum hydrocarbons in groundwater appears to have been defined to the north and west of the former tank pit at the subject site. Based upon the TPH-G and benzene concentrations detected in groundwater grab samples from boreholes B4, B5 and B9, the petroleum hydrocarbons in groundwater appear to extend in a southerly direction relative to the former tank pit at the subject site. These groundwater quality results may imply a southerly to southwesterly groundwater flow direction.

Based upon the sample results and conversations with Mr. Barney Chan, P&D recommends that one groundwater monitoring well be installed adjacent to the office building at the subject site between the office building and the former tank pit to evaluate potential risk to sensitive receptors. Soil samples should be collected from the borehole for the monitoring well at depths of 5 and 10 feet below grade for laboratory analysis of TPH-G and BTEX using procedures identified in P&D's work plan 0101.W1 dated February 5, 1996. The proposed groundwater monitoring well location is shown in Figure 2.

The well should be constructed of 2-inch diameter PVC pipe to a depth of 20 feet below grade with the lowermost 15 feet of the well screened using a 0.010 factory slot. A filter pack of Lonestar #2/16 sand should be placed in the borehole annulus to a height of approximately one foot above the screened interval, and a one foot thick layer of bentonite pellets should be placed in the annular space on top of the sand. The remaining borehole annular space should be filled with a neat cement grout, and the top of the well should be placed in a water tight locking vault.

The well should be developed at least 48 hours after well construction by surging and overpumping. At least 48 hours after well development, the well should be purged and sampled for TPH-G and BTEX. Following receipt of the soil and groundwater sample results, an ASTM Risk Based Corrective Action evaluation should be performed to evaluate potential risk to potential sensitive receptors.) wait until GW results stabilized

DISTRIBUTION

Copies of this report should be sent to Mr. Barney Chan at the ACDEH and to Mr. Kevin Graves at the San Francisco Bay Regional Water Quality Control Board.

LIMITATIONS

This report was prepared solely for the use of Merritt Environmental Corporation. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgement based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly-revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental

Paul H. King
Hydrogeologist

Don R. Braun
Certified Engineering Geologist
Registration No. : 1310
Expires: 6/30/96

PHK
0101.R3

Attachments: Tables 1 & 2
Site Location Map (Figure 1)
Site Vicinity Map (Figure 2)
Laboratory Analytical Reports
Chain of Custody Documentation

TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS
BOREHOLE SOIL SAMPLES

Sample No.	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes
(Samples Collected on February 8, 1996)					
B1-10.0	2,300	7.1	26	45	200
B2-10.0	ND	ND	ND	ND	ND
B3-10.0	12	0.036	0.009	0.067	0.039
(Samples Collected on February 27, 1996)					
B4-10.0	ND	ND	ND	ND	ND
B5-10.0	27	ND	0.035	0.22	0.60
B6-10.0	ND	ND	ND	ND	ND
B7-10.0	ND	ND	ND	ND	ND
B8-10.0	ND	ND	ND	ND	ND
B9-10.0	ND	ND	ND	ND	ND

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
ND = Not Detected.
Results are in parts per million (ppm), unless otherwise indicated.

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS
GROUNDWATER GRAB SAMPLES (mg/L)

Sample No.	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes
		(Samples Collected on February 8, 1996)			
B1	63	1.7	0.054	3.6	6.5
B2	ND	ND	ND	ND	ND
B3	60	1.8	3.4	2.6	12
		(Samples Collected on February 27, 1996)			
B4	1.9	0.00062	0.0013	0.019	0.021
B5	1.3	0.0013	0.00065	0.012	0.044
B6	ND	ND	ND	ND	ND
B7	ND	ND	ND	ND	ND
B8	ND	ND	ND	ND	ND
B9	1.8	0.00084	0.0012	0.020	0.011

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
ND = Not Detected.
Results are in parts per million (ppm), unless otherwise indicated.

P & D Environmental

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916

Base Map From:
U.S. Geological Survey
Oakland West, Calif.
7.5 Minute Quadrangle
Photorevised, 1980

N

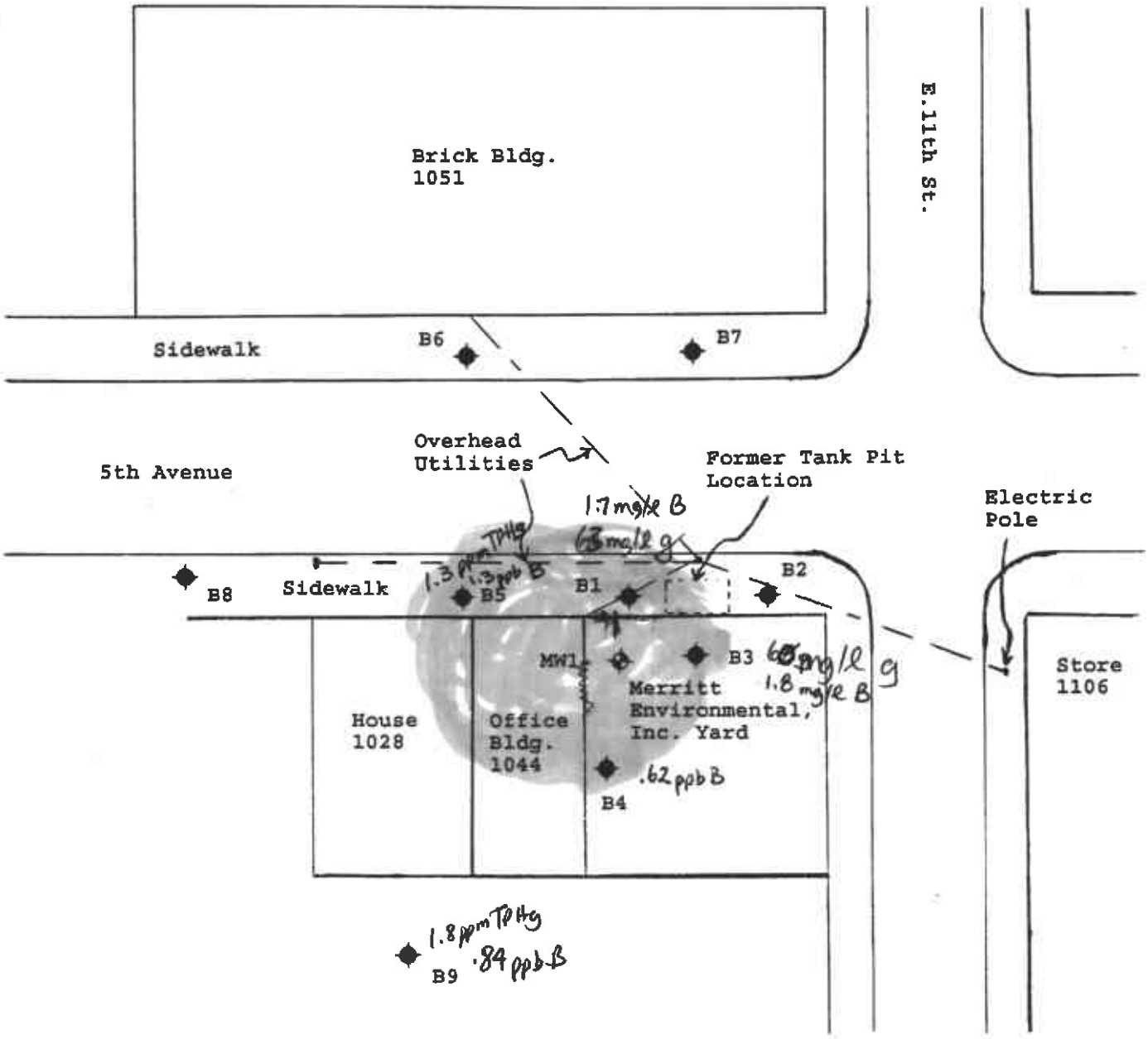
Scale in Feet

0 1000 2000 3000

Figure 1
SITE LOCATION MAP
Merritt Environmental, Inc.
1044 5th Avenue
Oakland, California

P & D Environmental

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916



LEGEND
- Existing Soil Boring Location
- Proposed Groundwater Monitoring Well Location

North

0 40

Scale in Feet

Base Map From
P&D Environmental
October, 1995

Figure 2
SITE VICINITY MAP
Merritt Environmental, Inc.
1044 5th Avenue
Oakland, California

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

P & D Environmental 4020 Panama Court Oakland, CA 94611	Client Project ID: #0101; Merritt Env. Corp-Oakland	Date Sampled: 02/27/96
		Date Received: 02/28/96
	Client Contact: Paul King	Date Extracted: 02/28/96
	Client P.O:	Date Analyzed: 02/28/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
61917	B4-10.0	S	ND	ND	ND	ND	ND	ND	103
61918	B5-10.0	S	27,b,d	ND	ND	0.035	0.22	0.60	116#
61919	B6-10.0	S	ND	ND	ND	ND	ND	ND	106
61920	B7-10.0	S	ND	ND	ND	ND	ND	ND	106
61921	B8-10.0	S	ND	ND	ND	ND	ND	ND	106
61922	B9-10.0	S	ND	ND	ND	ND	ND	ND	106
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

P & D Environmental 4020 Panama Court Oakland, CA 94611	Client Project ID: # 0101; Merritt Env. Corp -Oakland	Date Sampled: 02/27/96
		Date Received: 02/28/96
	Client Contact: Paul King	Date Extracted: 02/28/96
	Client P.O:	Date Analyzed: 02/28/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with MTBE & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
61911	B4-Water	W	1900,b,d	ND	0.62	1.3	19	21	---#
61912	B5-Water	W	1300,b,d,f	5.7	1.3	0.65	12	44	115#
61913	B6-Water	W	ND	ND	ND	ND	ND	ND	86
61914	B7-Water	W	ND	ND	ND	ND	ND	ND	100
61915	B8-Water	W	ND	ND	ND	ND	ND	ND	105
61916	B9-Water	W	1800,b,d	10	0.84	1.2	20	11	117#
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?), c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 02/28/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#61110)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.880	1.825	2.03	93	90	3.0
Benzene	0.000	0.168	0.166	0.2	84	83	1.2
Toluene	0.000	0.184	0.178	0.2	92	89	3.3
Ethylbenzene	0.000	0.180	0.176	0.2	90	88	2.2
Xylenes	0.000	0.550	0.538	0.6	92	90	2.2
TPH (diesel)	0	291	292	300	97	97	0.6
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 02/28/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#61842)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	109.1	107.6	100.0	109.1	107.6	1.4
Benzene	0.0	9.1	9.4	10.0	91.0	94.0	3.2
Toluene	0.0	10.2	10.4	10.0	102.0	104.0	1.9
Ethyl Benzene	0.0	10.5	10.9	10.0	105.0	109.0	3.7
Xylenes	0.0	32.2	33.2	30.0	107.3	110.7	3.1
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

P & D ENVIRONMENTAL
4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916

CHAIN OF CUSTODY RECORD

41 5915 ApdX 163 PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0101	Merritt Environmental Corp-Oakland

SAMPLED BY: (PRINTED AND SIGNATURE)
Paul H. King Paul H. King

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES): TPH-Gas BTEX (8020)	PRESERVATIVE	REMARKS
B4-10.0	2/27/96	3rd	Soil	Borehole B4	1	X	ICE	Normal Turn Around
B5-10.0	"	4th	"	" B5	1	X	"	" " "
B6-10.0	"	2nd	"	" B6	1	X	"	" " "
B7-10.0	"	1st	"	" B7	1	X	"	" " "
B8-10.0	"	5th	"	" B8	1	X	"	" " "
B9-10.0	"	6th	"	" B9	1	X	"	" " "

61917
61918
61919
61920
61921
61922

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Paul H. King	2/27/96	1042	Dan Serio
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Dan Serio	2/28/96	1200	Heidi Rocca
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT)	6
TOTAL NO. OF CONTAINERS (THIS SHIPMENT)	6
LABORATORY:	McCampbell Analytical
LABORATORY CONTACT:	Ed Hamilton
LABORATORY PHONE NUMBER:	(510) 798-1620

SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (X)NO

REMARKS: Results to P&D and Merritt Env. Corp
Invoice to " " "

P & D ENVIRONMENTAL

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916

CHAIN OF CUSTODY RECORD

5714 Apdx 162 PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0101	Merritt Environmental Corp - Oakland

SAMPLED BY: (PRINTED AND SIGNATURE)
Paul H. King Paul H. King

	SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES): TPH-Gas, BTEX, MTBE	PRESERVATIVE	REMARKS
+5	B4 - Water	2/27/98	3rd	water	Borehole B4	2	X	TCE	Normal Turn Around
+5	B5 - Water	"	4th	"	" B5	2	X	"	" " "
70%	B6 - Water	"	2nd	"	" B6	2	X	"	" " "
10+	B7 - Water	"	1st	"	" B7	2	X	"	" " "
10+	B8 - Water	"	5th	"	" B8	2	X	"	" " "
20+	B9 - Water	"	6th	"	" B9	2	X	"	" " "

61911
61912
61913
61914
61915
61916

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Paul H. King	2/28/98	1045	Dan Deir
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Dan Deir	2/28/98	1200	Heidi Buca
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT): 6
TOTAL NO. OF CONTAINERS (THIS SHIPMENT): 12

LABORATORY: McCampbell Analytical
LABORATORY CONTACT: Ed Hamilton
LABORATORY PHONE NUMBER: (510) 798-1620

SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (X)NO

REMARKS: VOAs preserved with HCl
Results to P&D and Merritt Env. Corp.
Invoice to " " "