

P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.

4020 Panama Court

Oakland, CA 94611

(510) 658-6916

#3887

97 OCT -9 PM 4:01
July 30, 1997
Report 0101.R4

Mr. Michael Liu
c/o Mr. Jeff Hammond
Merritt Environmental Corporation
1044 5th Avenue
Oakland, CA 94606

SUBJECT: MONITORING WELL INSTALLATION REPORT
Former Merritt Environmental Corporation Facility
1044 5th Avenue
Oakland, CA

Dear Mr. Liu:

P&D Environmental, a division of Paul H. King, Inc. (P&D), is pleased to present this report documenting the permitting, installation, development, and sampling of one groundwater monitoring well at the subject site. This work was performed in accordance with P&D's proposal 061197.P1 dated June 11, 1997, and P&D's Report 0101.R3 (Discussion and Recommendations section) dated March 13, 1996. The work plan set forth in the Discussion and Recommendations section of the report was approved by the Alameda County Department of Environmental Health (ACDEH) in a letter from Mr. Barney Chan dated July 3, 1997 addressed to Mr. Michael Liu. A Site Location Map is attached with this report as Figure 1, and a Site Vicinity Map is attached as Figure 2.

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 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.

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 ACDEH in a letter dated February 22, 1996.

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.

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 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 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.

Documentation of the sample collection procedures and laboratory analytical results for boreholes B4 through B9 are presented in P&D's Subsurface Investigation Report 0101.R3 dated March 13, 1996. Based upon the sample results and discussions with Mr. Barney Chan, P&D recommended in the March 13, 1996 report 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. The recommendations were subsequently approved by Mr. Barney Chan of the ACDEH in a letter dated July 3, 1997. It is P&D's understanding that between March, 1996 and July, 1997 the property was sold by Mr. Jeff Hammond of Merritt Environmental Corporation to Mr. Michael Liu of ~~xxxxxxx~~.

FIELD ACTIVITIES

On July 21, 1997 P&D personnel oversaw the installation of one groundwater monitoring well, designated as MW1 at the subject site. The location of the monitoring well is shown on the attached Site Vicinity Map, Figure 2. Prior to performing field work, a permit was obtained from the Alameda County Public Works Agency, notification was provided to the ACDEH of the scheduled drilling date, Underground Service Alert was notified for buried utility location, and a health and safety plan was prepared.

Monitoring Well Installation and Soil Sample Collection

The boring for monitoring well MW1 was drilled using truck-mounted 8-inch outside diameter hollow stem auger drilling equipment. The boring for monitoring well MW1 was drilled to a total depth of 20.0 feet. Groundwater was encountered during drilling in the borehole for the monitoring well at a depth of 16.5 feet.

Soil samples were collected from the borehole at a maximum of five foot intervals, using a California modified split spoon sampler lined with brass tubes driven by a 140 pound hammer falling 30 inches. Blow counts were recorded every six inches. The soil samples were classified lithologically in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. In addition, 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. PID readings were recorded on the boring logs.

Organic vapors were not detected in any of the soil from the borehole except at depths which ranged from 7 to 15 feet, where a moderate to strong gasoline odor was detected. No detectable concentrations of organic vapors were detected with the PID in the borehole for the monitoring well except at a depth of 10 feet where a PID concentration of 20 ppm was detected.

Soil samples were collected at depths of 5.0, 10.0, 15.0, and 18.5 feet in borehole MW1. No staining or organic vapors were detected in soil samples collected at depths of 5.0, and 18.5. Green and gray discoloration were encountered in the 10.0 and 15.0 foot samples associated with the petroleum hydrocarbon odors. In addition, no detectable concentrations of organic vapors were recorded with the PID in the soil samples collected at depths of 5.0, 15.0, and 18.5 feet. Only soil samples collected at depths of 10.0, and 15.0 feet were retained for laboratory analysis in the following manner. After collection of the sample into the brass tube in the California modified split spoon 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. A Copy of the boring log for borehole MW1 is attached with this report.

The groundwater monitoring well was constructed using two-inch diameter Schedule 40 PVC pipe with 15 feet of screened PVC (0.010-inch factory slot) which was placed in the bottom of the borehole between the depths of 5 and 20 feet in well MW1. A #2/16 Lonestar sack sand was placed into the annular space surrounding the PVC pipe to two foot above the top of the slotted interval. A one-foot thick layer of bentonite pellets was placed above the sand and hydrated. The remaining annular space was filled with a neat cement grout to approximately one half foot below the ground surface.

The top of the PVC wellpipe for the well MW1 was secured with a water-tight locking plug and enclosed in a water-tight, locking vault. The vault is traffic rated, and was set slightly above grade to diminish the accumulation of surface water inside the vault. A Well Construction Detail diagram for well MW1 is attached with this report. A Well Completion Report for well MW1 was completed and forwarded to the Alameda County Public Works Agency, in accordance with permit requirements.

Soil cuttings generated during drilling activities were stored onsite on a sheet of visqueen and covered with visqueen pending appropriate disposal.

Monitoring Well Development

Well MW1 at the subject site was developed on July 23, 1997 by surging and over-pumping until the water discharged from the well was relatively clear. Prior to development, the well was monitored for depth to water using an electric water level indicator, and for the presence of free product or sheen using a transparent bailer. The measured depth to groundwater in well MW1 prior to development on July 23, 1997 was 11.54 feet. Depth to water was measured

relative to the top of the PVC well casing. No free product, sheen or petroleum hydrocarbon odors were detected in water removed from the well during well development. The depth to water level measurement prior to well development is presented in Table 1.

A total of approximately 30 gallons was removed from the well during well development. Water removed from the well during development was placed into a DOT-approved 55-gallon drum and stored onsite pending appropriate disposal.

Monitoring Well Purging and Sample Collection

On July 24, 1997 well MW1 was monitored for depth to water and the presence of free product and sheen using methods described above. The measured depth to water in well MW1 at the subject site was 11.55 feet. The depth to water level measurement is summarized in Table 1.

After the well had been monitored, the well MW1 at the subject site was purged of a minimum of three casing volumes of water. During purging operations, the field parameters of pH, electrical conductivity and temperature were monitored. Once the field parameters had been observed to stabilize and a minimum of three casing volumes have been purged, a groundwater sample was collected from the well using a Teflon bailer. The bailer was cleaned using an Alconox solution and clean water rinse prior to use. A Copy of the data sheet used to record the field parameters during well purging is attached with this report.

The groundwater sample was transferred from the bailer to 40 milliliter Volatile Organic Analysis (VOA) vials which were sealed with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that air bubbles were not present. The sample bottles were then labeled and placed into a cooler with ice pending delivery to McCampbell Analytical Laboratory. Chain of custody procedures were observed for all sample handling.

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 borehole, the subsurface materials consist predominantly of a brown silty clay with minor fine sand to the total depth explored of approximately 20 feet. A green medium-grained sand was encountered between the depths of approximately 7 and 8 feet below grade.

Although groundwater was initially encountered during drilling at a depth of approximately 16.5 feet below grade, groundwater stabilized in the well at a depth of approximately 11.55 feet below grade. Similar conditions were observed during previous subsurface investigations in boreholes B4 through B9.

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

The soil samples collected from borehole MW1 and groundwater samples collected from groundwater monitoring well MW1 were analyzed for TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015 (GC/FID), and for BTEX and MTBE using EPA Method 8020.

The laboratory analytical results of the soil samples collected from the borehole show that at 10 and 15 foot depths (samples MW1-10.0 and MW1-15.0, respectively) TPH-G was detected at concentrations of 29 and 8.0 ppm, respectively. Benzene was detected at the 10 foot depth at a concentration of 0.048 ppm and was not detected at the 15 foot depth. The laboratory analytical results of the soil samples are summarized in Table 2. Copies of the laboratory analytical report and chain of custody documentation are attached with this report.

The laboratory analytical results of the groundwater sample collected from MW1 show that TPH-G, and benzene were detected at concentrations of 0.50, 0.0037, ppm, respectively. The laboratory analytical results of the soil samples are summarized in Table 3. Copies of the laboratory analytical report and chain of custody documentation are attached with this report.

DISCUSSION AND RECOMMENDATIONS

One groundwater monitoring well was 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.

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 is underlain by a brown silty clay with minor medium fine sand to the total depth explored of approximately 20 feet.

Groundwater was initially encountered during drilling at a depth of approximately 16.5 feet, and later stabilized at a depth of 11.55 feet below grade. Similar conditions were observed during previous subsurface investigations. 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 groundwater sample collected from MW1 show that TPH-G and were detected at concentrations of 0.50 and 0.0037 ppm, respectively.

Based upon the sample results, P&D recommends that the monitoring program to be continued for an additional three quarters.

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 Mr. Michael Liu. 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.

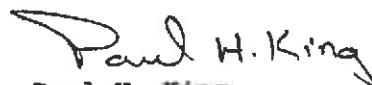
This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the 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
Expiration Date: 6/30/98

Attachments: Tables 1, 2, & 3
Site Location Map - Figure 1
Site Vicinity Map - Figure 2
MW1 Boring Log
MW1 Well Construction Details
Well Sampling Purge Data Sheet
Laboratory Analytical Results
Chain of Custody Documentation

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TABLE 1
WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. (ft.)	Depth to Water (ft.)	Water Table Elev. (ft.)
MW1	07/24/97	Not Surveyed	11.55	Not Calculated
	07/23/97*		11.54	

NOTES:

Elev. = Elevation.

ft. = Feet.

* = Indicates prior to well development.

TABLE 2
SOIL BORING
LABORATORY ANALYTICAL RESULTS
(Samples Collected on July 21, 1997)

Sample Location	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1-10.0	29	ND	0.048	0.026	0.18	0.076
MW1-15.0	8.0	ND	ND	0.016	0.072	0.12

NOTES:

TPH-G = Total Petroleum Hydrocarbons as Gasoline.

MTBE = Methyl tert-Butyl Ether.

ND = Not Detected.

Results are in parts per million (ppm), unless otherwise specified.

TABLE 3
GROUNDWATER
LABORATORY ANALYTICAL RESULTS
(Samples Collected on July 24, 1997)

Sample Location	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1	0.50	ND	0.0037	ND	0.0031	0.023

(mg/l)

NOTES:

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
MTBE = Methyl tert-Butyl Ether.
ND = Not Detected.

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

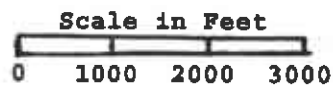
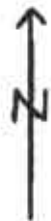
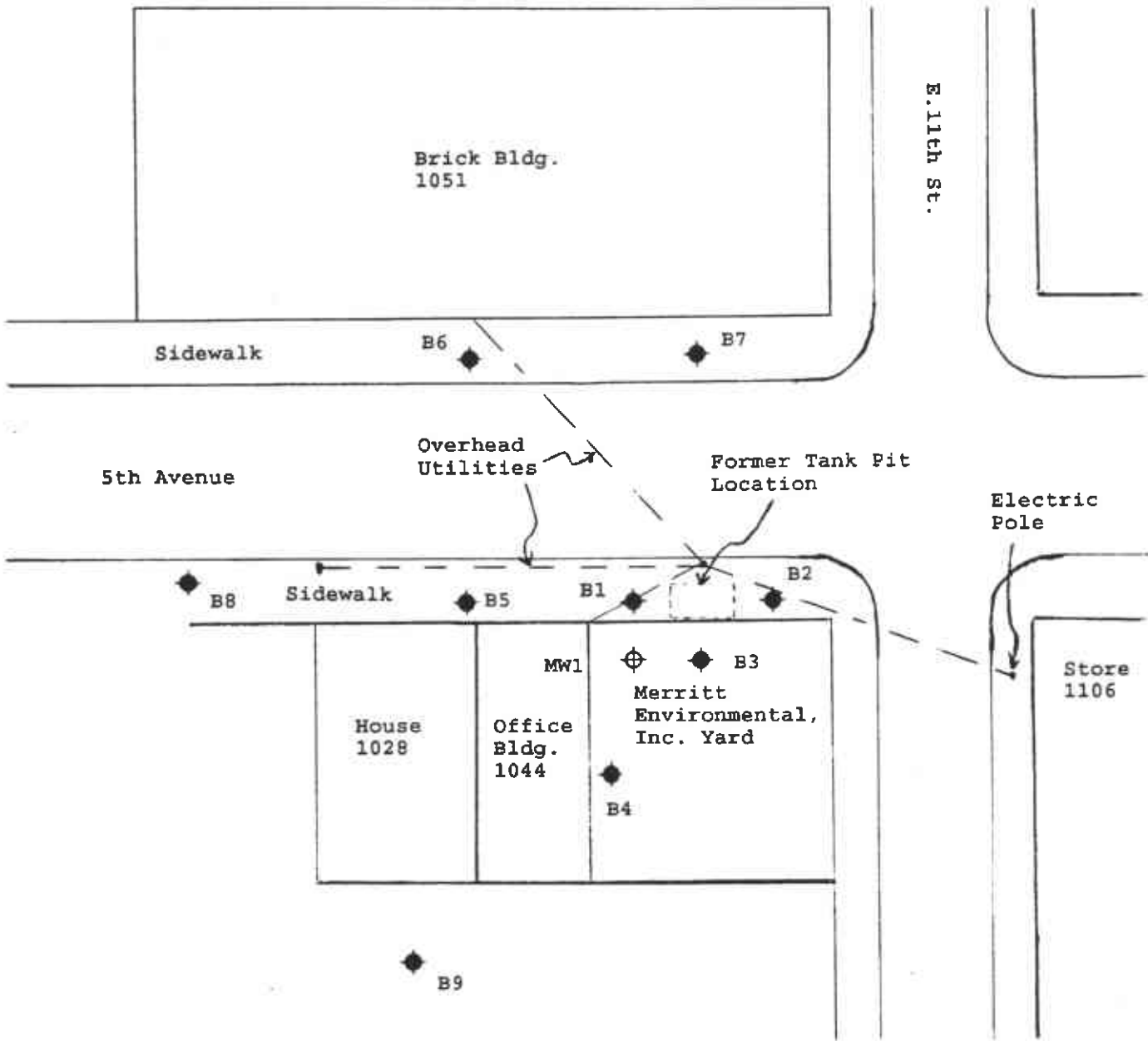


Figure 1
SITE LOCATION MAP
Merritt Construction, Inc.
1044 5th Avenue
Oakland, California

P & D ENVIRONMENTAL

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



LEGEND

- ◆ Existing Soil Boring Location
- ⊕ Existing 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
Corporation Facility
1044 5th Avenue
Oakland, California

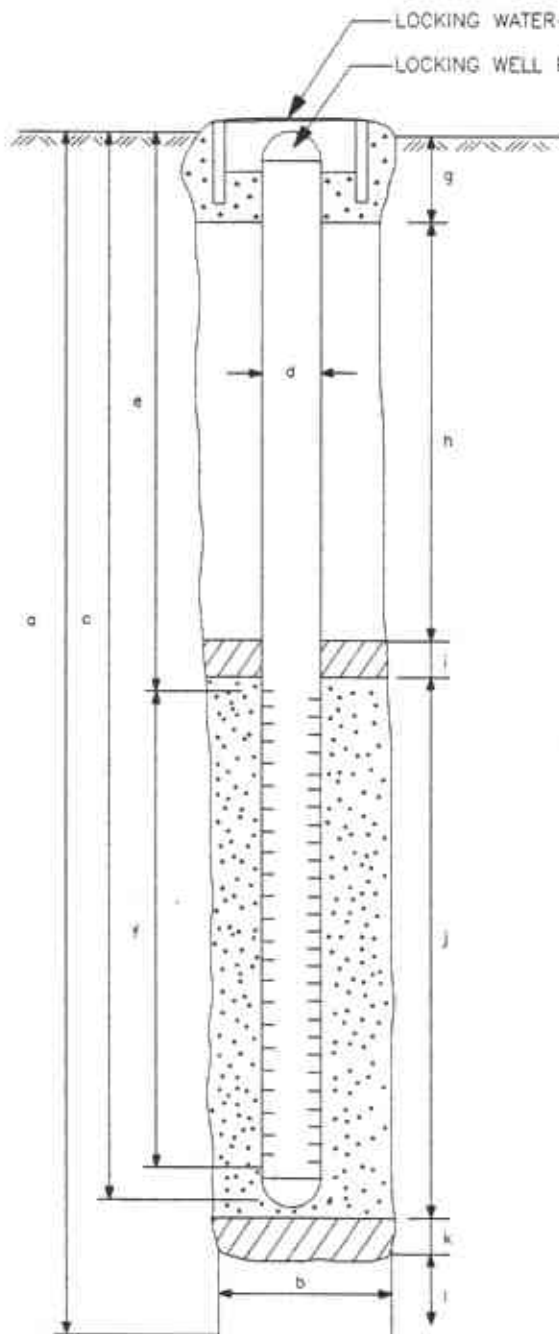
BORING NO.: MW1		PROJECT NO.: 0101		PROJECT NAME: MERRITT ENVIRONMENTAL CORPORATION		
BORING LOCATION: INSIDE YARD ADJACENT TO OFFICE				ELEVATION AND DATUM: N/A		
DRILLING AGENCY: EXPLORATION GASERVICES, INC. DRILLER: JOHN & MIKE				DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: 8" OD HOLLOW STEM AUGER				7/21/97	7/21/97	
COMPLETION DEPTH: 20 FEET		BEDROCK DEPTH: UNKNOWN		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 16.5 FEET		NO. OF SAMPLES: 2		AOG	PHK	
DEPTH (FT)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PHC/ppm	REMARKS
0	Gravel					
1	Dark brown SILTY CLAY (CL); with some brick fragments, dry.	CL				
2	No Petroleum Hydrocarbon (PHC) odor.					
3	Light brown SILTY CLAY (CL); with medium sand, minor gravel 1/4" in diameter, hard, very dry.	CL				
4	No PHC odor.					
5				34	0	
6				50		
7				4		
7	Green SAND (SP); medium sand, very moist.	SP				
8	Strong PHC odor.					
9	Green CLAY (CL); minor medium sand, dark brown mottling, medium stiff, moist.	CL				
10	Strong PHC odor.			4	20	
11				10		
12				10		
12	Green CLAY (CL); minor sand, moist.	CL				
13	Moderate PHC odor.					
14						
15				6	0	
15	Green CLAY (CL); brown mottling, medium stiff, very moist.	CL		10		
16	No PHC odor.			12		
17			▽			Groundwater first encountered at 16.5 feet on 7/21/97.
17	Brown SILTY SAND (SM); medium sand, dark brown mottling, very stiff, moist.	SM				
18	No PHC odor.			14	0	
19				20		
20				23		
21						Borehole terminated at 20 feet below grade.
22						Groundwater monitoring well constructed on 7/21/97.
23						
24						
25						
26						
27						
28						
29						
30						

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4020 Panama Court
Oakland, CA 94611
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WELL CONSTRUCTION DETAILS

PROJECT NUMBER 0101 BORING/WELL NO. MW1
PROJECT NAME Merritt Environmental Corp. TOP OF CASING ELEV. NA
COUNTY Alameda GROUND SURFACE ELEV. NA
WELL PERMIT NO. 97WR003 DATUM NA



EXPLORATORY BORING

a. Total depth 20.0 FT.
b. Diameter 8.0 IN.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 20.0 FT.
Material Schedule 40 PVC
d. Diameter 2 IN.
e. Depth to top perforations 5.0 FT.
f. Perforated length 15 FT.
Perforated interval from 5 to 20 FT.
Perforation type Factory Slot
Perforation size 0.010 inch
g. Surface sanitary seal 0.5 FT.
Seal material Concrete
h. Sanitary seal 2.0 FT.
Seal material Neat Cement
i. Filter pack seal 1.0 FT.
Seal material Bentonite Pellet
j. Filter pack length 17.0 FT.
Filter pack interval from 3.0 to 20.0 FT.
Pack material #2/12 Lonestar Sack Sand
k. Bottom seal 0 FT.
Seal material None
l. Sluff in bottom of borehole 0 FT.

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GROUNDWATER MONITORING/WELL PURGING
DATA SHEET

Site Name Merritt Environmental Corporation Well No. mwi
 Job No. C101 Date 7/24/97
 TOC to Water (ft.) 11.55 Sheen None
 Well Depth (ft.) 20' Free Product Thickness φ
 Well Diameter 2" Sample Collection Method Teflon Beaker
 Gal./Casing Vol. 1.4

<u>TIME</u>	<u>GAL. PURGED</u>	<u>pH</u>	<u>TEMPERATURE (F)</u>	<u>ELECTRICAL CONDUCTIVITY (μs/cm)</u>
<u>9:20</u>	<u>0.7</u>	<u>7.36</u>	<u>62.1</u>	<u>2.48 x 1000</u>
<u>9:22</u>	<u>1.4</u>	<u>7.32</u>	<u>62.4</u>	<u>2.10</u>
<u>9:24</u>	<u>2.1</u>	<u>7.30</u>	<u>62.6</u>	<u>1.79</u>
<u>9:26</u>	<u>2.8</u>	<u>7.25</u>	<u>63.2</u>	<u>1.78</u>
<u>9:28</u>	<u>3.5</u>	<u>7.22</u>	<u>63.1</u>	<u>1.77</u>
<u>9:30</u>	<u>4.2</u>	<u>7.20</u>	<u>63.4</u>	<u>1.77</u>
<u>9:45</u>	<u>Sampled</u>			

NOTES:
Ac6
Well purged using Honda pump & Ferrvalve



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553
Telephone : 510-798-1620 Fax : 510-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

P&D Environmental 4020 Panama Court Oakland, CA 94611	Client Project ID: #0101: Merritt Environmental Corporation	Date Sampled: 07/21/97 *
	Client Contact: Paul King	Date Received: 07/21/97
	Client P.O:	Date Analyzed: 07/21/97
		Date Extracted: 07/21/97

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & 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	Ethylbenzene	Xylenes	% Recovery Surrogate
78815	MWI-10.0	S	29,b,j	ND	0.048	0.026	0.18	0.076	102
78816	MWI-15.0	S	8.0,b,j	ND	ND	0.016	0.072	0.12	94
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, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/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.

QC REPORT FOR HYDROCARBON ANALYSES

Date: 07/21/97

Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#75872)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.000	2.200	1.942	2.03	108	96	12.5
Benzene	0.000	0.192	0.172	0.2	96	86	11.0
Toluene	0.000	0.202	0.186	0.2	101	93	8.2
Ethylbenzene	0.000	0.206	0.176	0.2	103	88	15.7
Xylenes	0.000	0.596	0.514	0.6	99	86	14.8
TPH(diesel)	0	278	280	300	93	93	0.6
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

CHAIN OF CUSTODY RECORD

9069 XPD 230

PROJECT NUMBER: 0101		PROJECT NAME: Merritt Environmental Corporation			NUMBER OF CONTAINERS	ANALYSIS(ES): TH-60, BIEY KBE	PRESERVATIVE	REMARKS
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmad Ghandour <i>Ahmad Ghandour</i>								
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION				
MW1-10.0	7/21/97		soil		1	X	ICE	Normal Turn Around
MW1-15.0	"		"		1	X		" " "
								78815
								78816
ICE/T <input checked="" type="checkbox"/> GOOD CONDITION <input checked="" type="checkbox"/> PRESERVATIVE APPROPRIATE CONTAINERS <input checked="" type="checkbox"/> MESSAGE ABSENT <input checked="" type="checkbox"/>								
RELINQUISHED BY: (SIGNATURE) <i>Ahmad Ghandour</i>		DATE 7/21/97	TIME 10 ²⁵	RECEIVED BY: (SIGNATURE) <i>SAW 673</i>		TOTAL NO. OF SAMPLES (THIS SHIPMENT) 2	LABORATORY: McCrumbell Analytical	
RELINQUISHED BY: (SIGNATURE) <i>SAW 673</i>		DATE 7/21	TIME 11:10	RECEIVED BY: (SIGNATURE) <i>Wick River</i>		TOTAL NO. OF CONTAINERS (THIS SHIPMENT) 2	LABORATORY CONTACT: El. Hamilton	
RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>OR</i>		LABORATORY PHONE NUMBER: (510) 748-1620		
REMARKS:					SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES <input checked="" type="checkbox"/> NO			



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553
Telephone : 510-798-1620 Fax : 510-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

P&D Environmental 4020 Panama Court Oakland, CA 94611	Client Project ID: #0101; Merritt Environmental Corporation	Date Sampled: 07/24/97
	Client Contact: Paul King	Date Received: 07/25/97
	Client P.O:	Date Extracted: 07/26/97
		Date Analyzed: 07/26/97

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & 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	Ethylbenzene	Xylenes	% Recovery Surrogate
79006	MW1	W	500,b,c	ND	3.7	ND	3.1	23	97
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, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/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

P & D ENVIRONMENTAL

A Division of Paul H. King, Inc.
4020 Panama Court
Oakland, CA 94611
(510) 658-6916

CHAIN OF CUSTODY RECORD

9112XPD232 PAGE 1 OF 1

PROJECT NUMBER: 0101		PROJECT NAME: Meritt Environmental Corporation			NUMBER OF CONTAINERS	ANALYSIS(ES): TPH, GAs, BTEX, PCBs				PRESERVATIVE	REMARKS
SAMPLED BY: (PRINTED AND SIGNATURE) Ahmad Ghandour <i>Ahmad Ghandour</i>											
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION							
MW1	7/24/97		Water		2	X				ICE	Normal Turn Around 
 											
RELINQUISHED BY: (SIGNATURE) <i>Ahmad Ghandour</i>		DATE 7/24/97	TIME 5:00	RECEIVED BY: (SIGNATURE) <i>Darryl Smith</i>		TOTAL NO. OF SAMPLES (THIS DEPARTMENT)	1	LABORATORY: McCampbell Analytical, Inc.			
RELINQUISHED BY: (SIGNATURE) <i>Darryl Smith</i>		DATE 7/25	TIME 7:30	RECEIVED BY: (SIGNATURE) D. Lowe		TOTAL NO. OF CONTAINERS (THIS DEPARTMENT)	2	LABORATORY CONTACT: Ed. Hamilton			
RELINQUISHED BY: (SIGNATURE) D. Lowe		DATE 7/25	TIME 9:23	RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>Ahmad Ghandour</i>		LABORATORY PHONE NUMBER: (510) 798-1620					
REMARKS: VOA's preserved with HCL											