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ENVIRONMENTAL
CONSULTANTS

QUARTERLY GROUNDWATER INVESTIGATION

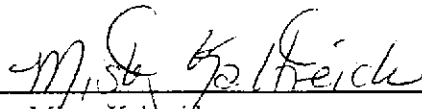
PERALTA COMMUNITY COLLEGE - MAINTENANCE YARD
501 5TH AVENUE
OAKLAND, CALIFORNIA, 94606

Prepared for:

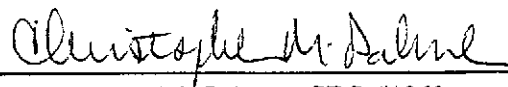
Mr. Thomas Peacock
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Division of Hazardous Materials

June 1994

Prepared by:


Misty Kaltreider
Project Geologist

Reviewed by:


Christopher M. Palmer, CEG #1262
Certified Engineering Geologist

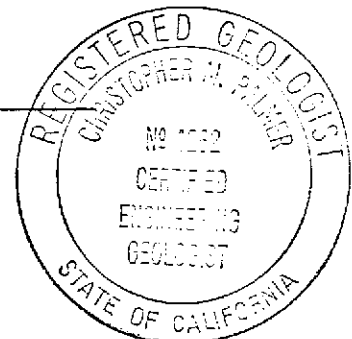


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1.0 INTRODUCTION

This report presents the procedures and findings of quarterly groundwater investigation conducted by ACC Environmental Consultants, Inc., ("ACC") on behalf of the Peralta Community College District, site owner at 501 5th Avenue, Oakland, California. The project objective, as described in the Work Plan prepared on April 27, 1993, was to evaluate the extent of groundwater impact from the previous underground storage of petroleum products using the four monitoring wells on-site.

2.0 BACKGROUND

Five underground storage tanks were installed prior to the 1960's. The tanks were used for storage of fuel and waste oil for the City of Oakland Corporation Yard. The tanks consisted of two 6,000-gallon gasoline, one 2,000-gallon diesel, one 2,000-gallon ethyl (premium) gasoline and one 550-gallon waste oil tank. In 1980 Peralta Community College District acquired the property. The District abandoned the existing five underground tanks by filling with water and installed three fiberglass underground storage tanks. The new tanks consisted of two 6,000-gallon and one 4,000-gallon fiberglass tanks to store gasoline. The new tanks were installed approximately 150 feet from the original tanks.

In 1992, the five originals underground storage tanks were removed. A total of eight soil samples and one grab groundwater sample was collected from the excavation. Laboratory analysis of the soil indicated up to 228 parts per million (ppm) of Total Petroleum Hydrocarbons (TPH) as diesel, 134 ppm to TPH as gasoline, 2,407 parts per billion (ppb) benzene, 4,617 ppb toluene, 7,170 ppb ethylbenzene, 6,147 ppb total xylenes and 5,477 ppm oil and grease. Laboratory analysis of the water collected in the excavation indicated 170 ppm TPH as diesel, 15 ppm TPH as gasoline, 286 ppb benzene, 698 ppb toluene, 300 ppb ethylbenzene, 808 ppb total xylenes and 284 ppm oil and grease.

In September 1992, a preliminary study was performed by Environ of Emeryville to evaluate the soil and groundwater conditions on the site and on neighboring sites. This study indicated that hydrocarbons constituents are regional.

In November of 1992, ACC performed a site assessment of the soil around the former tank excavation. Hydrocarbons as gasoline and motor oil were observed in the soil and groundwater collected from the borings. Laboratory analysis of the soil indicated up to 370 ppm of TPH as gasoline, 12 ppm TPH as diesel, 5,342 ppm motor oil, 76.94 ppm benzene, 73.9 ppm toluene, 30.4 ppm ethylbenzene, and 95.41 ppm xylenes.

In November 1993, three underground gasoline tanks were removed from the property. Soil samples collected from the excavation indicated up to 1.3 ppm TPH as gasoline, 190 ppb benzene, and 18 ppb toluene. Initial groundwater sample collected from the excavation indicated 27 ppm TPH as gasoline, 1,200 ppb benzene, 5,100 ppb toluene, 690 ppb ethylbenzene and 5,700 ppb xylenes.

Approximately 3,500 gallons of water was removed from the excavation. Subsequent groundwater sample was collected. Analysis of the second groundwater sample from the excavation indicated .21 ppm TPH as gasoline, and 14 ppb xylenes.

Due to the detectable levels reported in the soil and groundwater on-site, additional groundwater investigations were required from the regulatory agencies.

In February, 1994, four additional borings (MW-1, MW-2, MW-3 and MW-4) were drilled and converted into 2-inch monitoring wells, on-site. The monitoring wells were used to evaluate the extent of contamination from the two tank excavations.

Laboratory analysis of the groundwater samples collected in February 1994 from monitoring wells MW-1 and MW-4 (down gradient from the tank excavations) indicated below detectable levels of the constituents evaluated. The groundwater results indicated a downgradient extent of groundwater contamination. Laboratory analysis of groundwater collected from monitoring wells MW-2 and MW-3 (upgradient of the former tank excavations) indicated detectable levels of constituents. Samples collected from borings MW-2 and MW-3 indicated detectable levels of TPH as diesel, TPH as gasoline with BTEX. Motor oil was reported in the soil from boring MW-2. However, the motor oil was not detected in the groundwater sample from monitoring well MW-2 and therefore motor oil does not appear to impact the groundwater. TPH as diesel was only detected in the soil from boring MW-2.

An additional soil and groundwater investigation was conducted on May 9, 1994, to evaluate possible upgradient sources on-site. The investigation included drilling five borings upgradient (east) of existing monitoring wells MW-2 and MW-3.

Laboratory analysis of the soil samples collected indicate detectable levels of diesel up to 11 ppm. Detectable levels of motor oil up to 100 ppm, were reported in soil analyzed from the additional investigation. Below detectable levels of TPH as gasoline, BTEX and kerosene were reported in the soil samples analyzed.

Groundwater was encountered approximately 5 to 6 feet below ground surface (bgs). Laboratory analysis of the groundwater samples collected from the open boreholes, indicated below detectable levels of diesel, kerosene, motor oil and BTEX. Detectable levels of TPH as gasoline up to 61 parts per billion (ppb) were reported in one grab groundwater sample.

Motor oil was not detected in the groundwater samples collected from the borings, therefore motor oil does not appear to currently impact the groundwater.

Results of the analytical data from previous investigations indicate that upgradient sources of TPH and motor oil exist. Finer fill material and Bay Mud appear to restrict the mobility of the contaminants from impacting groundwater. However, groundwater flow direction data suggest that contaminant movement is to the westerly direction, toward the upgradient Peralta monitoring wells.

3.0 SITE DESCRIPTION

The site consists of several warehouse/office buildings surrounded by a fenced parking lot. The older tanks were situated within the fenced yard adjacent to the northern entrance, the newer tanks were situated near the southern entrance (Figure 2).

4.0 FIELD PROCEDURES

4.1 Groundwater Sampling

Groundwater samples were taken on May 23, 1994 from monitoring wells MW-1, MW-2, MW-3 and MW-4. Prior to groundwater sampling the depth to the surface of the water table was measured from the top of the PVC casing using a Solinst Water Level Meter.

Information regarding well elevations and groundwater level measurements is summarized in Table 1.

TABLE 1 - Groundwater Depth Information

<u>Well No.</u>	<u>Date Sampled</u>	<u>TOC Elevation</u>	<u>Depth to Groundwater (Ft)</u>	<u>Groundwater Elevation (Ft.)</u>
<u>MW-1</u>	02/14/94	6.78 MSL	3.69	3.09
	05/16/94		6.80	-.02
<u>MW-2</u>	02/14/94	8.70 MSL	4.70	4.00
	05/16/94		4.74	3.96
<u>MW-3</u>	02/14/94	8.83 MSL	4.57	4.26
	05/16/94		4.78	4.05
<u>MW-4</u>	02/14/94	5.45 MSL	1.69	3.76
	05/16/94		2.36	3.09

Notes: All measurements in feet
MSL = Mean Sea Level
TOC = Top of Casing

After water-level measurements were taken, each on-site well was purged by hand using a designated precleaned disposable Teflon bailer for each well. Groundwater pH, temperature and electrical conductivity were monitored during well purging. Each well was considered to be purged when these parameters stabilized. Three to four well volumes were removed to purge each well. Worksheets of conditions monitored during purging are attached in Appendix C.

After the groundwater level had recovered to a minimum of approximately 80 percent of its static level, water samples were obtained using designated disposable Teflon bailers. Two 40 ml VOA vials, without headspace, and two 1-liter amber jars were filled from the water collected from each monitoring well.

The samples were preserved on ice and submitted to Chromalab Inc. under chain of custody protocol. Laboratory results with chain of custody forms are attached in Appendix B.

5.0 FINDINGS

5.1 Analytical Results - Groundwater

One groundwater sample each from monitoring wells MW-1, MW-2, MW-3, and MW-4 was collected and submitted to Chromalab for analysis for TPH as gasoline by EPA test method 5030 and BTEX by EPA test method 602 and TEPH as diesel, kerosene, and motor oil by EPA Test Method 8015-Modified. Analysis results from the groundwater samples are summarized in Table 3. Analytical results are attached in Appendix B.

TABLE 2 - Analytical Results - Groundwater

Well No.	Date Sampled	TPH-g (ppb)	TEPH (ppb)	Benzene (ppb)	Toluene (ppb)	E. benzene (ppb)	Xylene (ppb)
MW-1	02/14/94	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5
	05/23/94	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5
MW-2	02/14/94	200	< 50	1.7	< 0.5	1.1	1.1
	05/23/94	600	< 50	1.8	0.9	0.7	2.1
MW-3	02/14/94	780	< 50	0.6	0.6	1.7	2.7
	05/23/94	680	< 50	< 0.5	< 0.5	2.2	2.2
MW-4	02/14/94	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5
	05/23/94	93	< 50	< 0.5	< 0.5	< 0.5	< 0.5

Notes: TPH-g = Total Petroleum Hydrocarbons as gasoline
 TEPH = Total Extractable Petroleum Hydrocarbons as diesel, kerosene, and motor oil
 ppb = parts per billion

5.2 Groundwater Gradient

Prior to calculating the groundwater gradient, elevations for the on-site monitoring wells were surveyed by Ron Archer Civil Engineer, Inc. to an accuracy of one-hundredth of a foot. The well elevations were surveyed at the top of the PVC well casing. The elevations of the monitoring wells were established relative to a nearby benchmark located in the intersection of 7th Street and 5th Avenue.

The groundwater gradient was calculated using the on-site monitoring wells. The location of the wells is shown on Figure 1 - Site Plan. Groundwater elevations were collected from the wells on May 23, 1994. The gradient was evaluated by triangulation using the elevation of the potentiometric surface measured with respect to Mean Sea Level datum. As shown in Figure 2, general direction of flow is west to southwest at a gradient of 0.025 foot per foot.

6.0 CONCLUSION

The data and observations discussed herein indicate that groundwater has been impacted due to an unauthorized hydrocarbon release. The analytical parameters used for groundwater sampling performed were in accordance with the guidance document "Tri-Regional Water Quality Control Boards Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990.

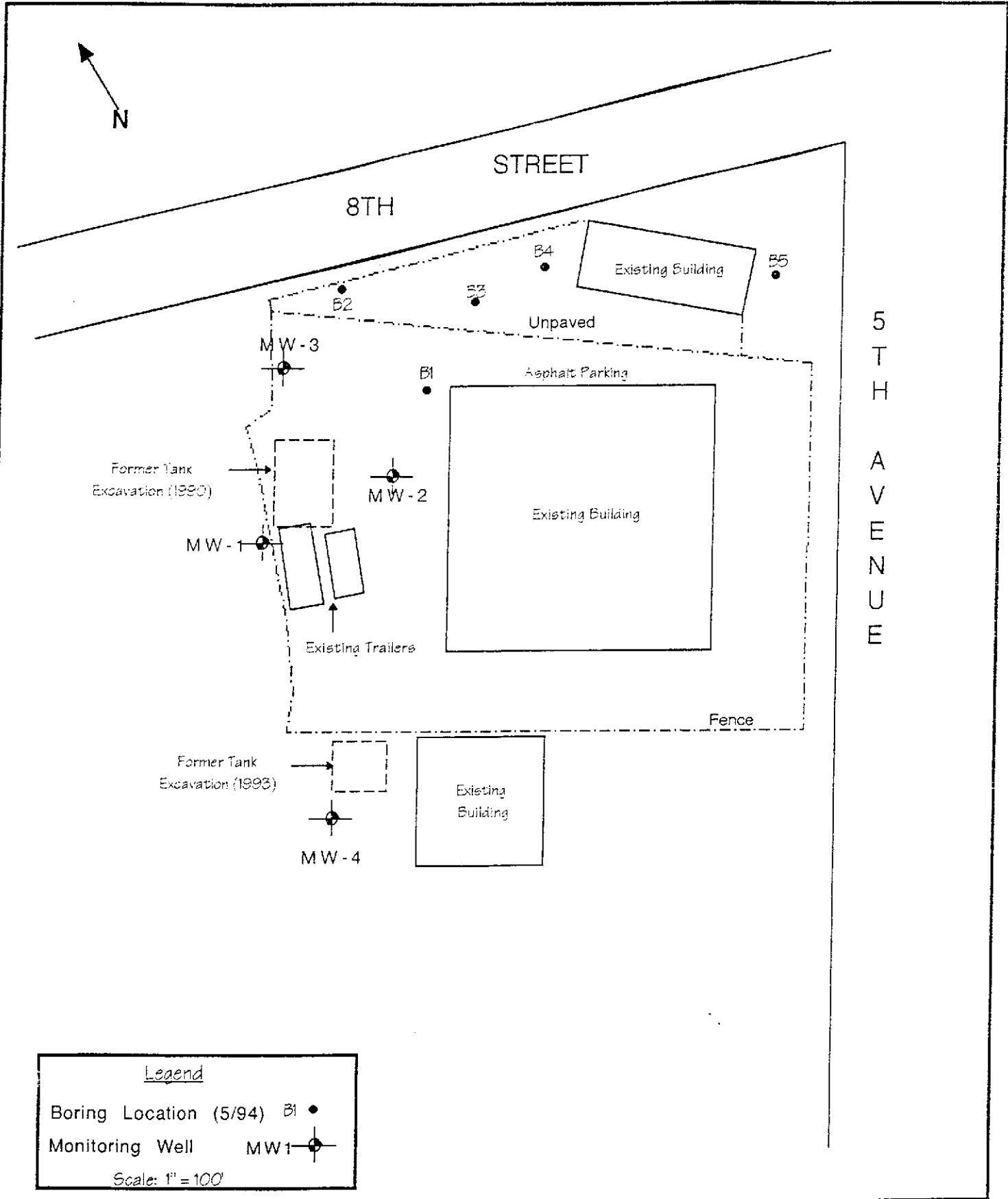
The initial groundwater investigation conducted in February 1994 and the additional subsurface investigation conducted in May 1994 indicated detectable levels of TPH as diesel and motor oil in the soil, upgradient (east) of the former underground storage tank excavations.

Laboratory analysis of the groundwater samples collected from monitoring wells and open boreholes indicated below detectable levels of Total Extractable Petroleum Hydrocarbons (TEPH) as diesel, motor oil and kerosene, therefore TEPH apparently do not impact the groundwater.

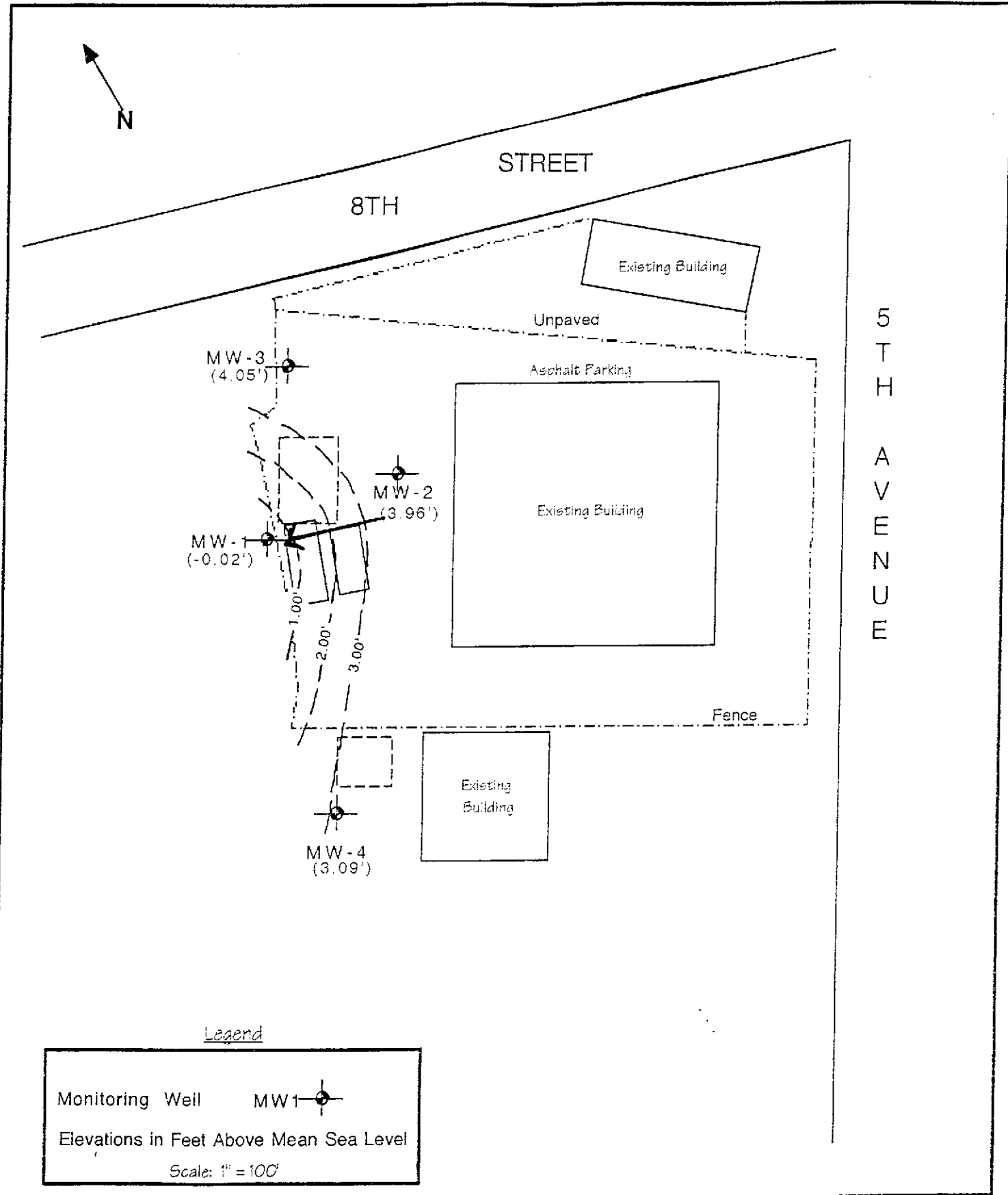
The groundwater results indicate groundwater contamination is not observed in well MW-1 directly downgradient from the original tank removal (1991). Laboratory analysis of groundwater collected from monitoring wells MW-2 and MW-3 (upgradient of the former tank excavations) indicated detectable levels of constituents indicating upgradient source(s). Only very low concentration of TPH as gasoline were observed in the groundwater collected from monitoring well MW-4.

7.0 RECOMMENDATIONS

Groundwater samples collected on-site indicated below detectable levels of TEPH as diesel, kerosene, and motor oil. Pursuant to the Tri-Regional Board guidelines, groundwater sampling and monitoring of the on-site wells should continue on a quarterly basis. On behalf of Peralta Community College District, ACC requests a **reduction in groundwater monitoring and analysis**. ACC proposes to monitor and sample all four groundwater monitoring wells on-site for **TPH as gasoline with BTEX only**. Since TEPH as diesel, kerosene and motor oil are not detected, these constituents will not be tested in the groundwater.



06/16/1994	Drawn By: MCK	Project: 6045-11	Figure 1:	Site Plan Peralta Maintenance Yard, Oakland, CA
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05/16/1994	Drawn By: MCK	Project: 6045-11	Figure 2: Groundwater Gradient Peralta Maintenance Yard, Oakland, CA
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Well Sampling Well Development check one

Well Number: MN-1

Job Number: 6045-4

Job Name: PARALTA MAINTAINANCE

Date: 5/23/94

Sampler: BOB WILBERT

Depth to Water (measured from TOC): 6.80'

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: Bail

Amount of Water Bailed/Pumped from well: 6 g

Depth to Water after well development: _____

Depth to water prior to sampling: 12' - EXTREMELY Slow RECHARGE

Bailed water stored on-site ? How ? Drums

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New

Water Appearance:

	yes	no
froth		✓
irridescence		✓
oil		✓
smell	✓	
product		✓
other, describe		✓

Gallons Removed	pH	EC	Temp
5	6.89	7.46	66.5
10	7.08	7.27	66.7
15	7.11	7.92	66.7
20	7.10	6.92	66.8
25	7.11	6.75	66.7
30			
35			
40			
45			
50			

Samples Obtained:

- TPH (gasoline)
- TPH (diesel)
- TPH (motor oil)
- BTXE
- EPA 624
- EPA 625
- EPA 608
- PCBs only
- Metals
- Other, specify
- Field Blank

Well Sampling Well Development check one

Well Number: MW-2

Job Number: 6045-4

Job Name: PARALTA MAINTENANCE

Date: 5/23/94

Sampler: BRET CULBERT

Depth to Water (measured from TCC): 4.74

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: BAIL

Amount of Water Bailed/Pumped from well: 7 g

Depth to Water after well development: _____

Depth to water prior to sampling: 7.81 - EXTREMELY slow Recharge

Bailed water stored on-site ? How ? DRUMS

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New

Water Appearance:

	yes	no
froth		✓
irridescence		✓
oil		✓
smell	✓	
product		✓
other, describe		✓

Gallons Removed	pH	ED	Temp
5	7.16	18.00	68.1
10	7.21	17.97	68.1
15	7.22	18.10	67.9
20	7.27	18.14	68.0
25	7.27	17.25	67.9
30	7.25	17.24	67.9
35	7.28	17.22	67.9
40			
45			
50			

Samples Obtained:

- TPH (gasoline)
- TPH (diesel)
- TPH (motor oil)
- BTXE
- EPA 624
- EPA 625
- EPA 608
- PCBs only
- Metals
- Other, specify
- Field Blank

Well Sampling Well Development check one

Well Number: MW-3

Job Number: 6045-4

Job Name: PARALTA MAINTAINANCE

Date: 5/23/94

Sampler: BRET ULBERT

Depth to Water (measured from TOC): 4.78

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: Bail

Amount of Water Bailed/Pumped from well: 7 g

Depth to Water after well development: _____

Depth to water prior to sampling: 5.00

Bailed water stored on-site ? How ? DAMS

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New

Water Appearance:

	yes	no
froth		<input checked="" type="checkbox"/>
irridescence		<input checked="" type="checkbox"/>
oil		<input checked="" type="checkbox"/>
smell	<input checked="" type="checkbox"/>	
product		<input checked="" type="checkbox"/>
other, describe		<input checked="" type="checkbox"/>

Gallons Removed	pH	ED	Temp
5	7.00	1.07	67.0
10	6.85	1.05	67.1
15	6.90	1.06	66.9
20	7.16	1.11	67.1
25	7.15	1.10	67.1
30	7.20	1.13	67.1
35			
40			
45			
50			

Samples Obtained:

- TPH (gasoline)
- TPH (diesel)
- TPH (motor oil)
- BTXE
- EPA 624
- EPA 625
- EPA 608
- PCBs only
- Metals
- Other, specify
- Field Blank

CHROMALAB, INC.

Environmental Services (SDB)

June 1, 1994

ChromaLab File#: 9405315

ACC ENVIRONMENTAL CONSULTANTS

Atten: Misty Kaltreider

Project: PARALTA MAINTENANCE YARD

Project#: 6045-4

Received: May 24, 1994

re: 4 samples for Gasoline and BTEX analysis.

Matrix: WATER

Sampled: May 23, 1994

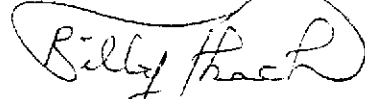
Lab Run#: 2978

Analyzed: May 31, 1994

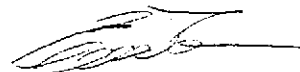
Method: EPA 5030/8015/602

Lab #	SAMPLE ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
52237	MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
52238	MW-2	600	1.8	0.90	0.70	2.1
52239	MW-3	680	N.D.	N.D.	2.2	2.2
52240	MW-4	93	N.D.	N.D.	N.D.	N.D.
DETECTION LIMITS		50	0.5	0.5	0.5	0.5
BLANK		N.D.	N.D.	N.D.	N.D.	N.D.
BLANK SPIKE RECOVERY(%)		115	99	96	84	91

ChromaLab, Inc.



Billy Thach
Chemist



Eric Tam
Laboratory Director

CHROMALAB, INC.

Environmental Services (SDB)

June 1, 1994

ChromaLab File No.: 9405315

ACC ENVIRONMENTAL CONSULTANTS

Attn: Misty Kaltreider

RE: Four water samples for TEPH analysis

Project Name: PARALTA MAINTENANCE YARD

Project Number: 6045-4

Date Sampled: May 23, 1994

Date Submitted: May 24, 1994


Date Extracted: May 27, 1994

Date Analyzed: May 28, 1994

RESULTS:

Sample I.D.	Kerosene ($\mu\text{g/L}$)	Diesel ($\mu\text{g/L}$)	Motor Oil (mg/L)
MW-1	N.D.	N.D.	N.D.
MW-2	N.D.	N.D.	N.D.
MW-3	N.D.	N.D.	N.D.
MW-4	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.
BLANK SPIKE RECOVERY	---	86%	---
DETECTION LIMIT	50	50	0.5
METHOD OF ANALYSIS	3510/8015	3510/8015	3510/8015

ChromaLab, Inc.


Alex Tam
Analytical Chemist


Eric Tam
Laboratory Director

CHROMALAB, INC.

DOHS 1094

SUB# #: 9405315
 CLIENT: ACC
 DUE: 06/01/94
 REF: 16572

Order #16572
 311/42227 - 102110

Chain of Custody

DATE May 24, 1994 PAGE 1 OF 1

PROJ. MGR. <u>Misty Kalthrador</u> COMPANY <u>ACC Environmental Cons.</u> ADDRESS <u>1000 Atlantic Ave, Ste 110</u> <u>Alameda, CA 94501</u>					ANALYSIS REPORT															NUMBER OF CONTAINERS				
SAMPLERS (SIGNATURE) <u>Bret Culbert</u>		(PHONE NO.) <u>(510) 522-8188</u>			TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5320, B+F, E+F)	PCB (EPA 608, 8080)	PESTICIDES (EPA 608, 8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	TEPH	METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)		TOTAL LEAD	EXTRACTION (TCLP, STLC)		
SAMPLE ID	DATE	TIME	MATRIX	PRESERV.																				
MW-1	5/23/94	5 PM	H ₂ O	Cold		✓																		4
MW-2	↓	↓	↓	↓		✓																		4
MW-3	↓	↓	↓	↓		✓																		4
MW-4	↓	↓	↓	↓		✓																		4

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NAME: <u>Paralta Maintenance Yard</u>	TOTAL NO. OF CONTAINERS <u>16</u>	HEAD SPACE	
PROJECT NUMBER: <u>6045-4</u>	REC'D GOOD CONDITION/COLD	CONFORMS TO RECORD	
P.O. #	TAT	STANDARD <u>5-DAY</u>	24 48 72 OTHER

RELINQUISHED BY 1. <u>Bret Culbert</u> 10 AM (SIGNATURE) (TIME) <u>BRET CULBERT</u> 5/24/94 (PRINTED NAME) (DATE) <u>ACC Environmental</u> (COMPANY)	RELINQUISHED BY 2.	RELINQUISHED BY 3.
RECEIVED BY 1. (SIGNATURE) (TIME) (PRINTED NAME) (DATE) (COMPANY)	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3. <u>B. M... 5-24-94</u> (SIGNATURE) (TIME) (PRINTED NAME) (DATE) <u>Chromalab</u> (LAB)