HYDRO
ENVIRONMENTAL
TECHNOLOGIES, INC.

2394 Mariner Square Drive
Suite 2
Alameda, CA 94501

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Massachusetts
New York
Maryland

March 19, 1996 7-284.1

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County
Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, Room 250
Alameda, CA 94502-6577

Re: 2203 and 2227 Mariner Square Loop, Alameda
4th Quarter 1995 Monitoring and Sampling Report

Dear Ms. Shin:

Hydro-Environmental Technologies, Inc. (HETI) is providing the attached Fourth Quarter 1995 monitoring and sampling report. As discussed in our meeting, we have included more details on the tidal channel and on the adjacent Navy site. Additional details are available in the Versar report on the Fleet Industrial Supply Center Alameda Annex.

Please call me at (510) 521-2684, if you have any questions.

Sincerely,

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

Gary Pischke C.E.G.
Senior Geologist

cc: Mr. Ron Doll
Mr. John Beery

HYDRO
ENVIRONMENTAL
TECHNOLOGIES, INC.

QUARTERLY MONITORING REPORT, Fourth Quarter 1995

2203 and 2227 Mariner Square Loop
Alameda, California 94501

Sampling Date: December 20 and 21, 1995

Prepared for:

Mariner Development Company
2236 Mariner Square Drive, Suite 202
Alameda, California 94501

Prepared by:

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
2394 Mariner Square Drive, Suite 2
Alameda, CA 94501
HETI Job No. 7-284.1

March 18, 1996

HYDRO
ENVIRONMENTAL
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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

This report presents the results of work conducted in the fourth quarter of 1995 by Hydro-Environmental Technologies, Inc. (HETI) at the referenced location (Figure 1). All work was performed in accordance with California State Water Resources Control Board and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) recommended guidelines and procedures. A copy of HETI 's standard sampling protocols was previously included in HETI's *Subsurface Investigation Report* dated October 5, 1994.

2.0 BACKGROUND

The subject site is located in Alameda, California in an area of commercial and military usage immediately adjacent to the Alameda Fleet Industrial Supply Center. The site is occupied by Mariner Square Athletic Club which consists of one large building housing a swimming pool, fitness center, dining area and other facilities. A day-care center is also located in the building. Also occupying the site, is a smaller building operated as Denim and Diamonds, a restaurant and dance club. The site is located approximately 1,300 feet from Oakland Inner Harbor. The local geology consists of fine grained fill over fine grained estuarine and marsh sediments derived from the East Bay Hills. Regional ground water flow is predominantly westerly, towards San Francisco Bay.

The site was reclaimed from marshlands in the late 1920's. Available maps indicate tidal channels present in the former marshland now occupied by the site (Figure 2). From approximately 1930 to 1960, the San Francisco Airdrome hanger occupied the site. The hanger used to serve as an operations base for commercial and privately owned planes. The hanger housed shop facilities, offices and passenger waiting rooms. Transformers and a steam heating plant were located near the west end of the hanger. In 1960, the hanger building was cut in half and reassembled on Navy Alameda Annex, Fleet Industrial Supply Center (FISC), property located west of the site. No PCBs detected.

Discussions with the consultant (Versar) for the FISC indicate the primary contaminants for the solid waste management unit #1 (SWMU) adjacent to the site are benzene, motor oil and naphthalene. According to the Remedial Investigation Report by Versar, sources for these compounds have reportedly been found both in soils at the SWMU and in sediments underlying the FISC and the subject site. Naphthalene and associated polynuclear aromatic compounds have been reported as associated with industrial activity (refineries) operating on the Alameda west end in the late 1800's. These compounds are associated with the former tidal channels which were present prior to filling of the area in the early 1900s.

On June 14, 1994, HETI supervised the installation of four two-inch diameter monitoring wells designated MW-1, MW-2, MW-3, and MW-5. A concrete pad encountered beneath the surface asphalt prevented the completion of boring B-4 into well MW-4. Monitoring well locations are shown on Figure 3, the Site Plan.

Sediments encountered during drilling consisted primarily of gravely clay and sandy fill material overlying silty to clayey sand fill material. The sand was underlain by fat clay with sandy gravel and shell fragments (bay mud).

Total Petroleum Hydrocarbons as diesel (TPHd) was detected in all soil samples collected from all the borings. Total Petroleum Hydrocarbons as gasoline (TPHg) was detected in the soil sample collected from MW-2 only. Total Recoverable Petroleum Hydrocarbons (TRPH) was detected in the soil samples collected from MW-2 and MW-5. Benzene was not detected in any soil sample.

No PCB's, VOCs nor PNAs were detected in any of the soil samples collected. No CAM 17 metals were detected in any of the soil samples collected in concentrations exceeding typical background levels for the San Francisco Bay Area as defined in U.S.G.S. Professional Paper 1270 for the Conterminous United States. Soil sampling results were presented in the *Subsurface Investigation Report* by HETI dated October 5, 1994.

3.0 FIELD ACTIVITIES

On December 20, 1995, the monitoring wells were gauged for depth to first encountered ground water to the nearest hundredth of a foot using an electronic water sounder. Following gauging, monitoring wells MW-1, MW-2, MW-3 and MW-5 were purged of a minimum of three well volumes or purged dry while pH, temperature and conductivity measurements were monitored for stabilization. Purged water was stored on-site in 55-gallon DOT drums with tight fitting lids. No separate phase product was detected in any of the wells. Gauging and purging data is included in Table 1 and Appendix A.

Following recovery of water levels, ground water samples were collected from the monitoring wells using dedicated polyethylene bailers. Samples were then labeled, documented on a chain-of-custody form, and stored in a chilled cooler for transport to the analytical laboratory. Ground water samples were analyzed for total petroleum hydrocarbons as diesel (TPHd) total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using the California Leaking Underground Fuel Tank (CA LUFT) Manual protocols and polynuclear aromatics (PNAs) by EPA Method 8310. Also, the ground water sample collected from well MW-1 was analyzed for chromium by EPA Method 3010A. Sample analyses were performed by GTEL Environmental Laboratories, Inc. a state of California DHS-certified laboratory located in Wichita, Kansas.

4.0 RESULTS

4.1 Ground Water Elevation

On December 20, 1995, depth to first encountered ground water in the wells ranged between 1.91 to 4.29 feet below top of well casing. Depth to water measurements and calculated ground water elevations in the wells are presented on Table 1. The depth to water measurements and the wellhead elevation data were used to calculate ground water elevation contours. These contours are shown on Figure 4, the Ground Water Contour Map. Figure 4 shows that a ground water mound appears to exist around well MW-3. Ground water flows towards the northwest, north of well MW-3 and southeast, south of well MW-3. Previous measurements indicate the ground water flow direction to be towards the west.

4.2 Ground Water Sample Analytical Results

Analytical results indicate that dissolved TPHd was present in all the ground water samples collected from all the wells in concentrations ranging from 90 micrograms per liter (µg/L) (MW-5) to 7,200 µg/L (MW-1). TPHg and BTEX compounds were not detected above the indicated laboratory method detection limit in all ground water samples collected from all the wells. These results are shown on Figure 5, The Hydrocarbon Concentration Map.

Concentrations of polynuclear aromatics were detected above the indicated laboratory method detection limits only in the ground water samples collected from wells MW-1 and MW-2. These results are shown on Figure 6, The Polynuclear Aromatics Concentration Map. Chromium was not detected above the indicated laboratory method detection limit in the water sample collected from well MW-1. Cumulative analytical results are presented in Table 1. The certified laboratory analytical reports and the chain-of-custody for the ground water samples are presented in Appendix B.

5.0 DISCUSSION

The results are consistent with the interpretation of PNAs leaching from the tidal channels within the Bay Mud covered by fill. The TPHd results may indicate an off-site source to the west, based upon higher concentrations in MW-1 and MW-2. However, lab notes for TPHd indicate a possible different compound quantified for diesel.

As discussed within the February meeting, monthly monitoring will be performed for three months to establish the background gradient for the site.

6.0 CERTIFICATION

This report was prepared under the supervision of a registered geologist. All statements, conclusions and recommendations are based solely upon field observations and analytical analyses performed by a state-certified laboratory related to the work performed by Hydro-Environmental Technologies, Inc.

It is possible that variations in the soil or ground water conditions exist beyond the points explored in this investigation. Also, site conditions are subject to change at some time in the future due to variations in rainfall, temperature, regional water usage, or other factors.

The service performed by Hydro-Environmental Technologies, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Hydro-Environmental Technologies, Inc. includes in this report chemical analytical data from a state-certified laboratory. These analyses are performed according to procedures suggested by the U.S. EPA and the State of California. Hydro-Environmental Technologies, Inc. is not responsible for laboratory errors in procedure or result reporting.

Prepared by:

Frances Maroni
Staff Engineer

Reviewed by:

Gary Pischke, C.E.G.
Senior Geologist

REGISTERED GEOLOGIST
GARY PISCHKE
No. 1501
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Table 1

GROUND WATER ELEVATONS AND SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	TPHd (µg/L)	TRPH (µg/L)	Cr (µg/L)
MW-1	8/11/94	98.43	7.30	91.13	390	2.2	0.91	2.1	7.8	15,000	ND<1,000	---
	12/21/95	98.43	3.80	94.63	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	7,200 (1) (2)	---	ND<30
MW-2	8/11/94	96.68	4.59	92.09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	1200	---
	12/20/95	96.68	3.68	93.00	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	390 (1) (2)	---	---
MW-3	8/11/94	96.58	2.63	93.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000	---
	12/20/95	96.58	1.91	94.67	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	320 (1) (2)	---	---
MW-5	8/11/94	98.78	5.14	93.64	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000	---
	12/20/95	98.78	4.29	94.49	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	90 (1) (2)	---	---

Notes:

TOC : Top of well casing referenced to arbitrary elevation. Benchmark elevation approximately 11 feet above sea level.
DTW : Depth to water.
GWE : Ground water elevation.
TPHg : Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified).
BTEX : Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020.
TPHd : Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified).
TRPH : Total Recoverable Petroleum Hydrocarbons by EPA Method 418.1.
Cr : Chromium by EPA Method 3010A.
µg/L : Micrograms per Liter.
ND : Not detected above the indicated laboratory method detection limit.
(1) : Result is estimated because the surrogate spike recovery is outside of acceptability limits.
(2) : The material present is qualitatively uncertain. Therefore, all material in the C9 to C22 range was quantified against diesel fuel without respect to pattern.
--- : Not analyzed.

Table 2

POLYNUCLEAR AROMATICS SAMPLE ANALYTICAL RESULTS

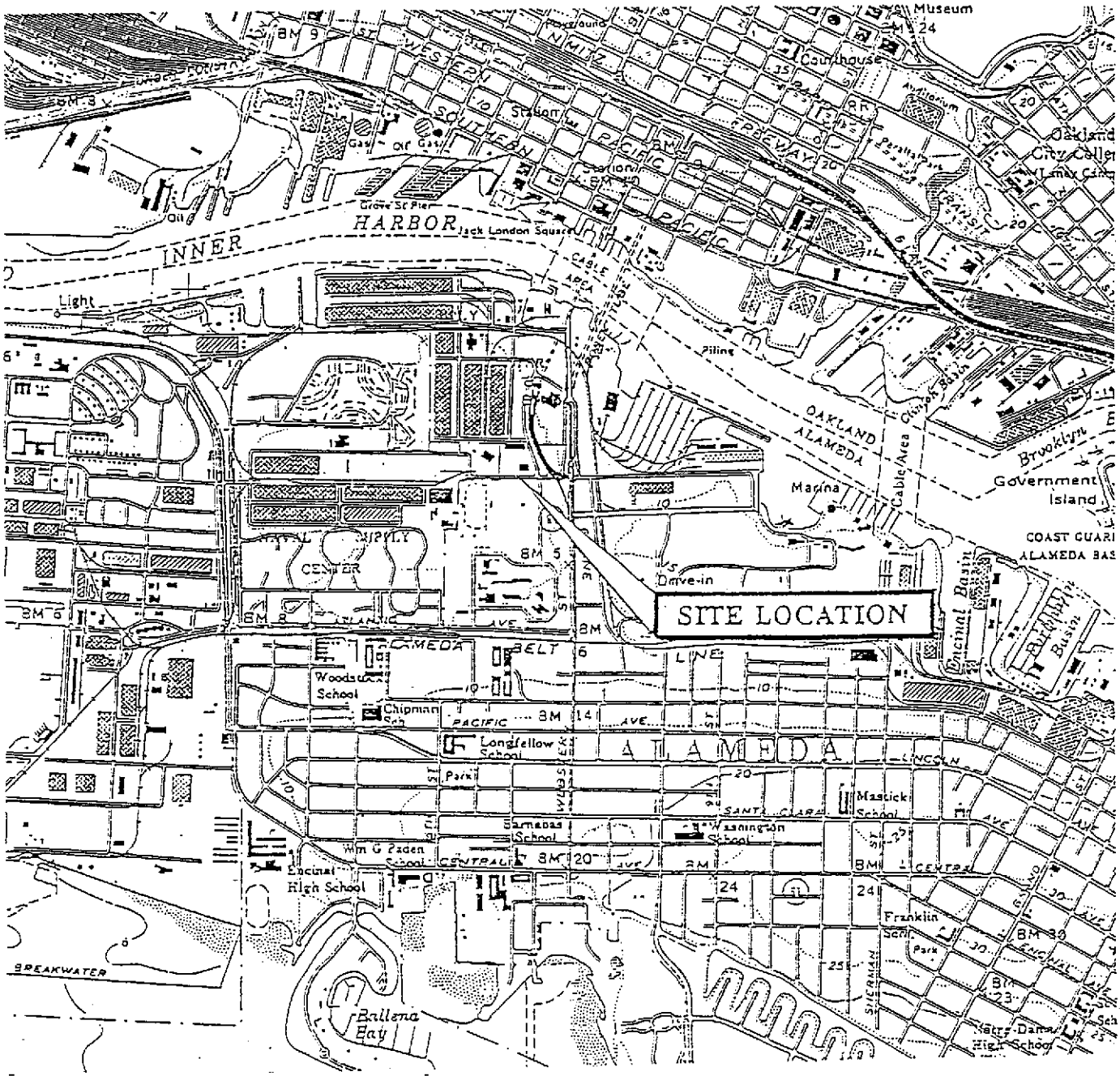
Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sampling Date	Naph-thalene µg/L	Acenaph-thalene µg/L	Acenaph-thene µg/L	Fluorene- µg/L	Phenan-threne µg/L	Anthra-cene µg/L	Fluoran-thene µg/L	Pyrene µg/L
MW-1	12/20/95	390	33	93	57	31	6.1	9.8	7.4
MW-2	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	0.59
MW-3	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
MW-5	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5

Notes:

Well I.D. # : Well identification number used by HETI.
Sampling Date : Date ground water sample was collected.
µg/L : Micrograms per liter.
ND : Not deteccted in concentrations exceeding the laboratory method detection limit.
Polynuclear Aromatics : Polynuclear Aromatics by EPA Method 8310.

FIGURES

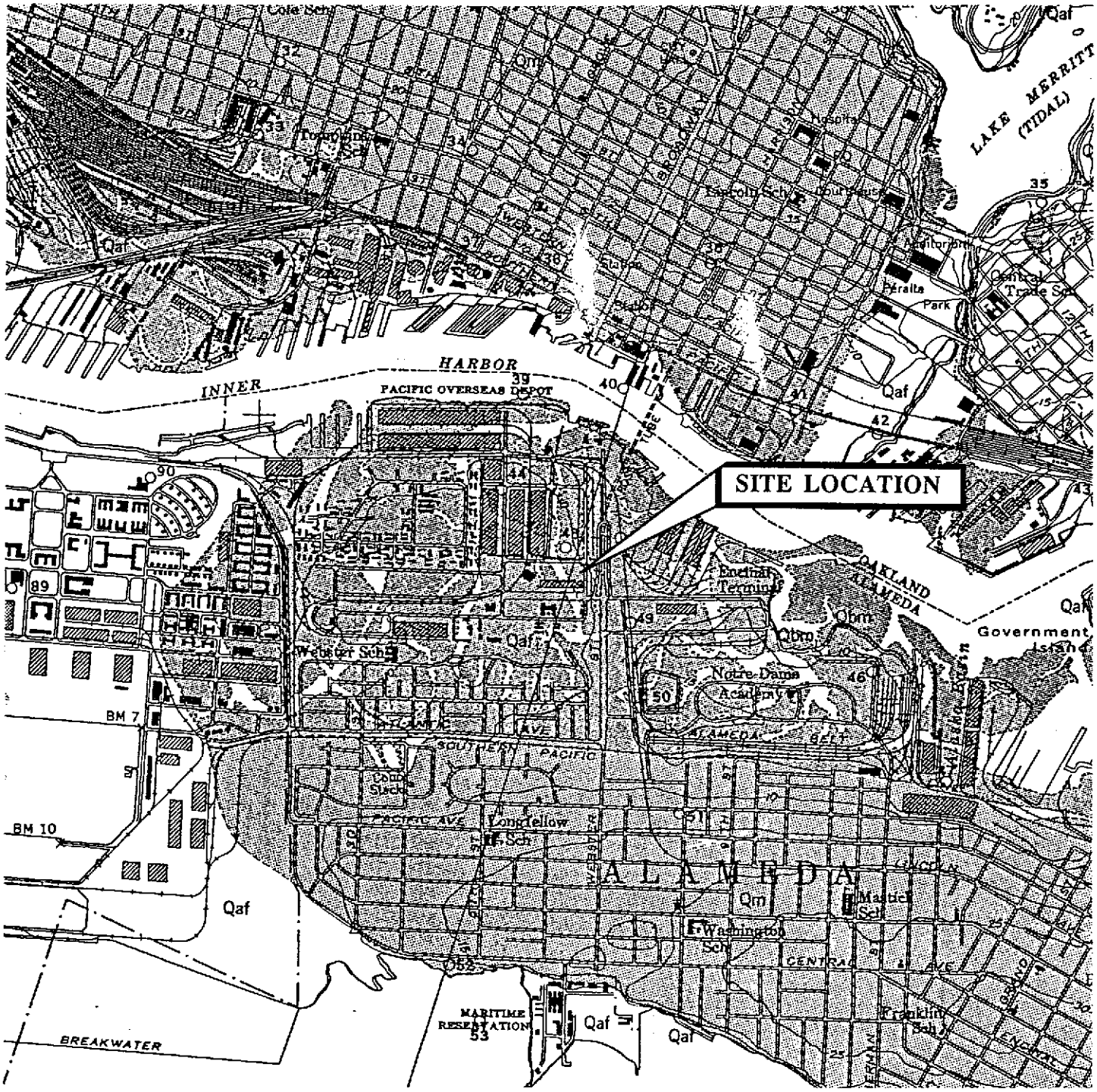


HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SITE LOCATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

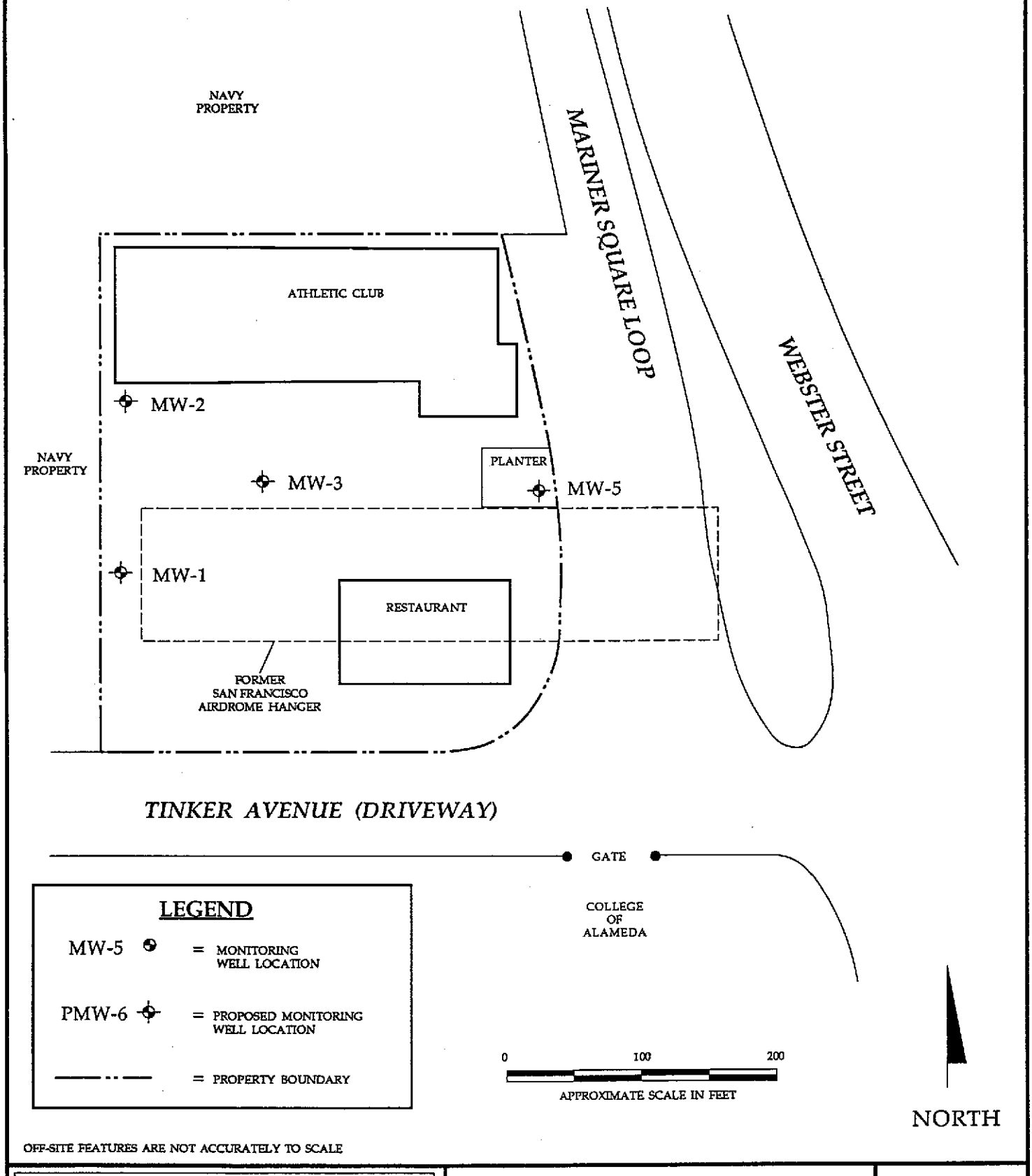
Figure 1

7-284 1/94



Source: Radbruch, 1957

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.	FORMER TIDAL CHANNELS MAP Mariner Development Company 2203 and 2227 Mariner Square Loop Alameda, California	Figure 2 7-284.1 3/96



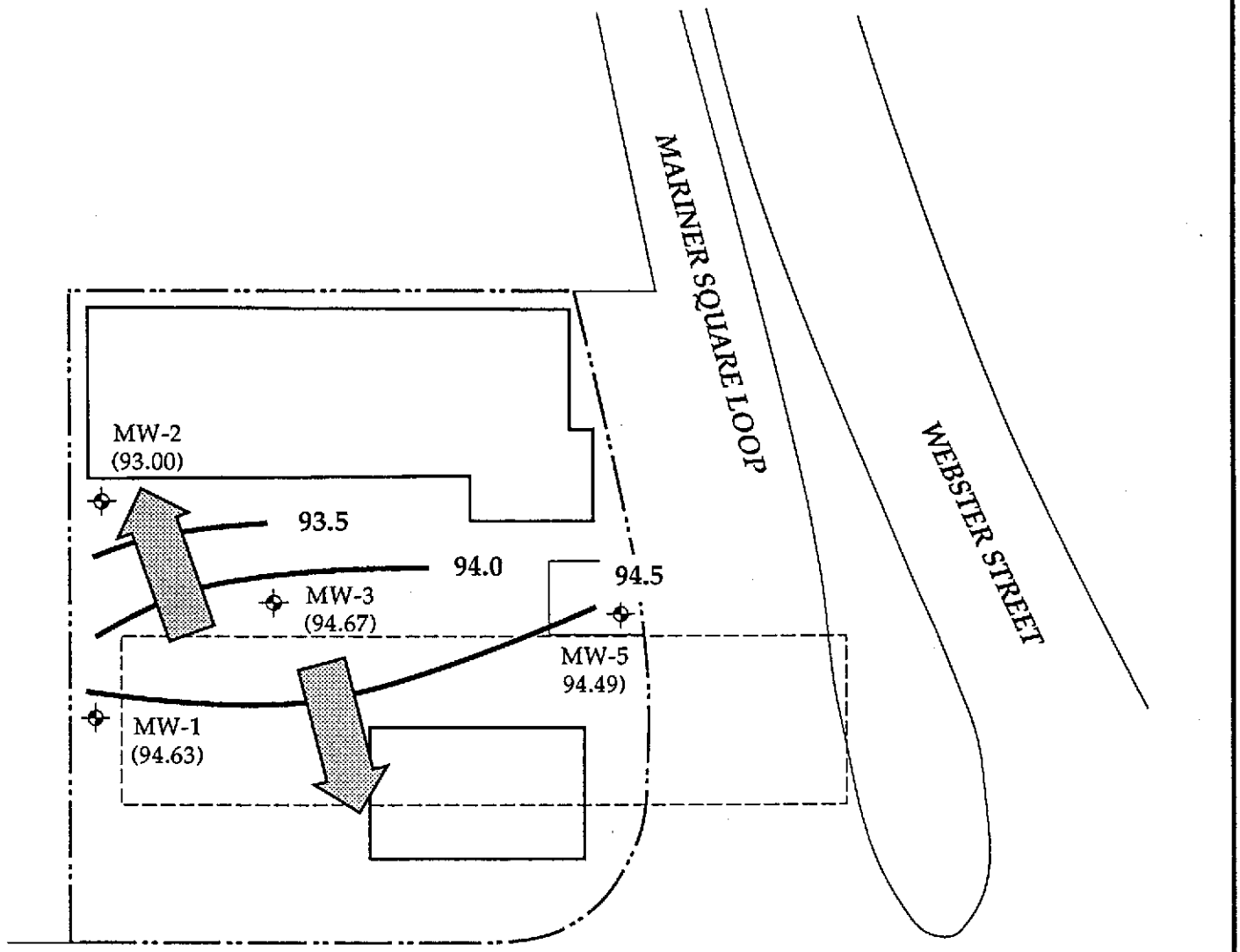
OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SITE PLAN
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 3

7-284.1 12/95



LEGEND

MW-5	=	MONITORING WELL LOCATION.
(94.63)	=	GROUND WATER ELEVATION - IN FEET.
94.00	=	INFERRED GROUND WATER ELEVATION CONTOUR - IN FEET.
	=	APPROXIMATE GROUND WATER FLOW DIRECTION.

0 100 200

APPROXIMATE SCALE IN FEET

NORTH

OFF-SITE FEATURES ARE NOT TO SCALE

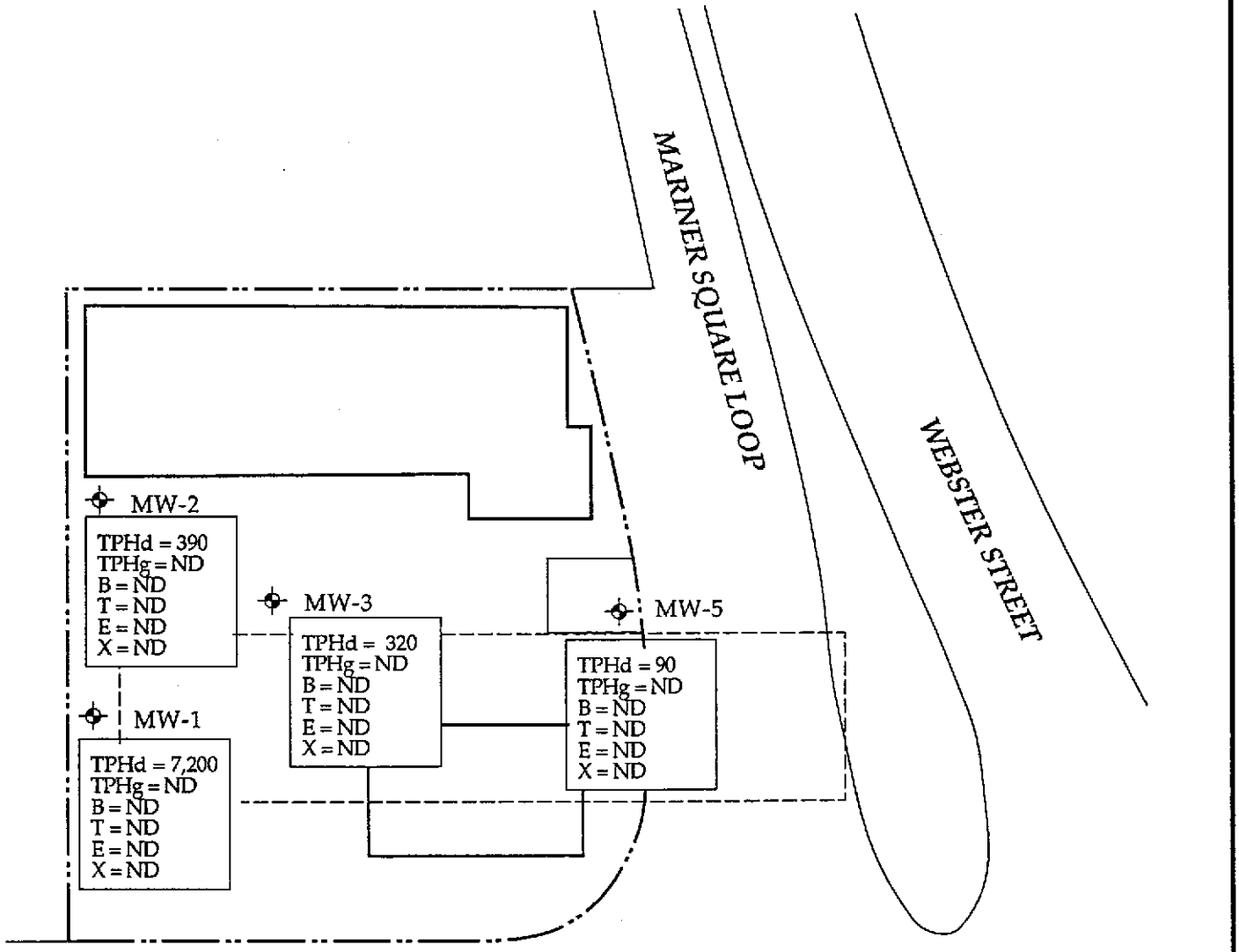
BASED ON DATA COLLECTED ON DECEMBER 20, 1995

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

GROUND WATER CONTOUR MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 4

7-284.1 12/95



LEGEND

MW-5 = MONITORING WELL LOCATION

TPHd = 7,200
TPHg = ND
B = ND
T = ND
E = ND
X = ND

= CONCENTRATIONS OF: TOTAL PETROLEUM HYDROCARBONS AS DIESEL (TPHd), TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg), BENZENE (B), TOLUENE (T), ETHYLBENZENE (E), AND TOTAL XYLENES (X) DISSOLVED IN WATER SAMPLES COLLECTED FROM MONITORING WELL - IN µg/L.

0 100 200

APPROXIMATE SCALE IN FEET

NORTH

OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE

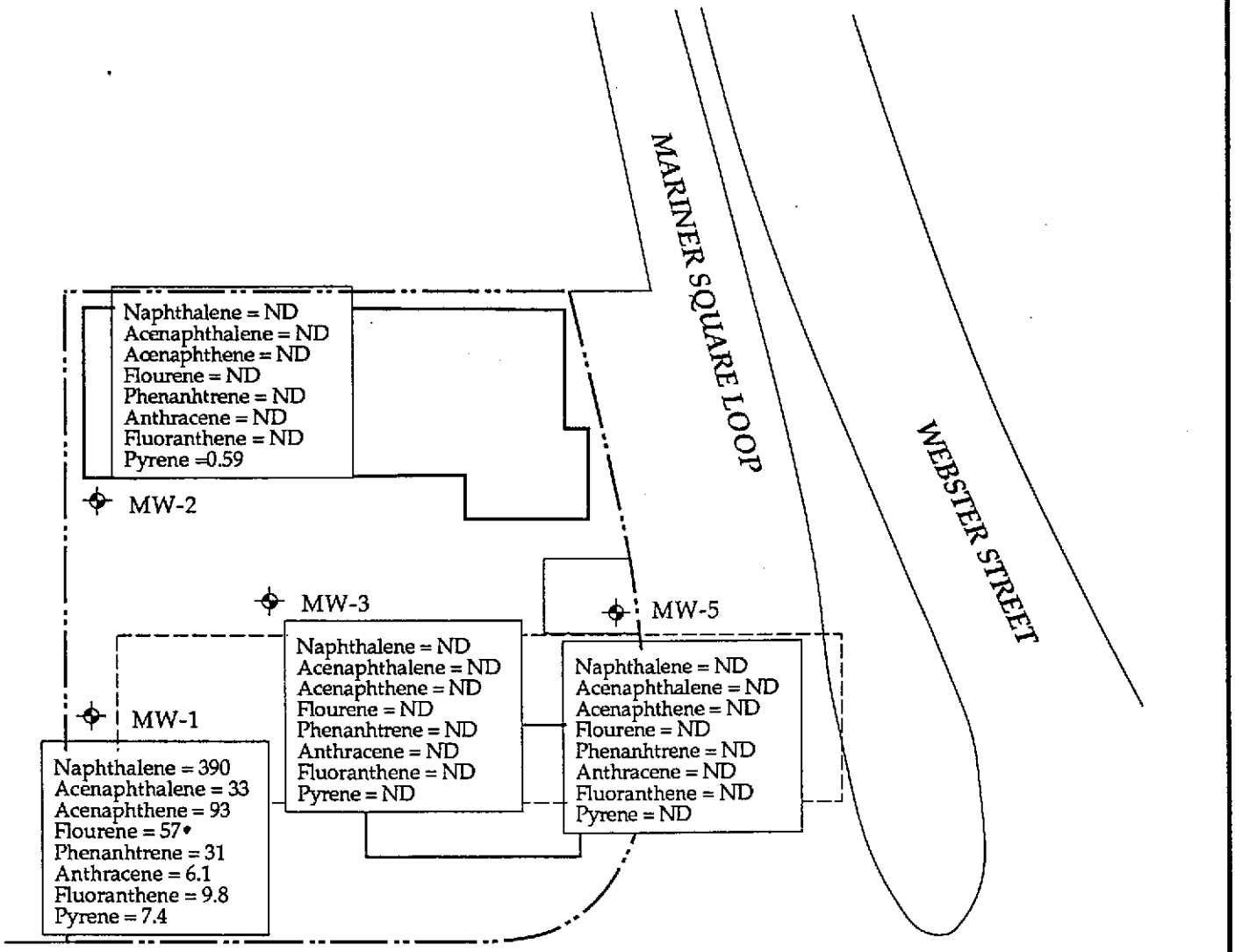
BASED ON DATA COLLECTED DECEMBER 20 AND 21, 1995

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

HYDROCARBON CONCENTRATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 5

7-284.1 12/95



LEGEND

MW-5 = MONITORING WELL LOCATION

Naphthalene = ND
Acenaphthalene = ND
Acenaphthene = ND
Flourene = ND
Phenanhtrene = ND
Anthracene = ND
Fluoranthene = ND
Pyrene = ND

= CONCENTRATIONS OF: POLUNUCLEAR AROMATICS (PNAs) AS NAPHTHALENE, ACENAPHTHALENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE AND PYRENE DISSOLVED IN WATER SAMPLES COLLECTED FROM MONITORING WELL - IN µg/L.

0 100 200

APPROXIMATE SCALE IN FEET

NORTH

OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE

BASED ON DATA COLLECTED DECEMBER 20 AND 21, 1995

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

POLYNUCLEAR AROMATICS CONCENTRATION MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure 6

7-284.1 12/95

APPENDIX A

MONITORING WELL GAUGING DATA SHEET

GAUGED BY: GP DATE: 12/20/95

GAUGED USING: MMC I/P, ORS I/P, Solinst: #1, (#2) #3

Monitoring Well I.D.	Depth to Water (feet)	Depth to Bottom (feet)	Separate-phase Hydrocarbons Thickness (feet)	Replaced Parts	Condition/ Comments
				(need locks)	
MW-1	3.80	14.15	Stain on bailer		carbon blocks lower ~~1/2~~ of bailer
MW-2	3.68	14.11	Stain on bailer	Lock in road box	
MW-3	1.91	14.02	Stain on bailer	Lock in road box	Gold level fluctuates 1/2'
~~MW-4~~					
MW-5	4.29	13.96			OK, Dolphin

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

LOCATION: Mariner Development
Mariner Sq - Loop

Job No. 7-284.1
SHEET 1 of 1

PURGED/SAMPLED BY: GP DATE: 12/20/95

GAUGING DATA:

Depth to bottom: 13.94 ft. 13.80

Depth to water: ~~4.34~~ ft.

Saturated Thickness: 10.35 ~~9.07~~ ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.7 gallons

volumes to purge x 3 vols. 5

*Total volume to purge = ~~4.6~~ gallons

* unless chemical parameters do not stabilize

PURGING DATA:

Purge method: PVC bailer/ Submersible pump/ Suction lift pump/ _____ (circle one) bailer

Temp/Conductivity/pH Instrument: Hydac-

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH	
5:16p	0	—	—	—	
5:18	2.5	62.5	16.39	8.08	runs dry.
5:26	4.0	54.8	19.39	8.05	
5:~~46~~	5.0	60.1	17.05	8.1	
very slow recharge)					

Color: dk brn. Turbidity: mod. - silt.

Recharge: slow. SPP ~~0~~ ft. Sheen: on bailer - coating

SAMPLING DATA:

Sampling method: Dedicated bailer / Disposable bailer

Sample for: (circle) dissolved Cr

TPHg/BTEX METALS TOG 8010

TPHd Cr-Pb TEL 8020

TPH ms Total Pb EDB 8240

601 602 Nitrates 8260

Other: PNAs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PURGE/SAMPLE DATA SHEET

WELL # MW-~~5~~1

LOCATION: Maunies Develop.

Job No. 7-284.1

SHEET 1 of 1

PURGED/SAMPLED BY: GP DATE: 12.2095

GAUGING DATA:

Depth to bottom: 14.11 ft.

Depth to water: 3.68 ft.

Saturated Thickness: 10.43 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.7 gallons

volumes to purge x 3 vols.

*Total volume to purge = 5 gallons

* unless chemical parameters do not stabilize

PURGING DATA:

Purge method: PVC bailer/ Submersible pump/ Suction lift pump/ _____ (circle one)

Temp/Conductivity/pH Instrument: _____

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
4:32	0	—	—	—
4:34	2.5	60.1	14.07 x1000	7.96
4:59	4.5	60.7	15.29	8.10
goes dry, sample on recharge.				

Color: lt. brn. Turbidity: mod

Recharge: v. slow. <5 min SPP ϕ ft. Sheen ϕ

SAMPLING DATA:

Sampling method: Dedicated bailer / Disposable bailer

Sample for: (circle)

(TPHg/BTEX) METALS TOG 8010

(TPHd) O-Pb TEL 8020

TPH mo Total Pb EDB 8240

601 602 Nitrates 8260

Other: PNAs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PURGE/SAMPLE DATA SHEET

WELL # MW-2

LOCATION: Marina Develop.

Job No. 7-284.1

SHEET 1 of 1

PURGED/SAMPLED BY: GP DATE: 12/20/95

GAUGING DATA:

Depth to bottom: 14.07 ft.

Depth to water: 1.91 ft.

Saturated Thickness: 12.16 ft.

Conversion	
diam.	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.9 gallons

volumes to purge x 3 vols.

*Total volume to purge = 6 gallons

* unless chemical parameters do not stabilize

PURGING DATA:

Purge method: PVC bailer/ Submersible pump (battery)/ Suction lift pump/ _____ (circle one)

Temp/Conductivity/pH Instrument: Hydac

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
3:29p	0	—	—	—
3:31	2	66.3	5.83 x100	7.7
3:36	4.7	63.7	6.06	7.9
3:43	6.5	62.8	4.85	7.9
	slow recharge.			

Color: Lt brn Turbidity: low to mod.

Recharge: slow-mod. SPP 0 ft. Sheen 0 silt/bits on bailer

SAMPLING DATA:

Sampling method: Dedicated bailer /Disposable bailer

Sample for: (circle)

(TPHg/BTEX) METALS TOG 5010

(TPHd) O-Pb TEL 8020

TPH ano Total Pb EDB 8240

601 602 Nitrates 8260

Other: N.A.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PURGE/SAMPLE DATA SHEET

WELL # MW-3

LOCATION: Marina Develop.

Job No. 7-284.1

SHEET 1 of 1

PURGED/SAMPLED BY: GP DATE: 12/20/95

GAUGING DATA:

Depth to bottom: 14.15 ft. (4.29)

Depth to water: 3.80 ft. (9.67)

Saturated Thickness: 10.35 ft.

Conversion	
diam	gals/ft.
2 in.	x 0.16
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.5 (5) gallons

volumes to purge x 3 vols. (4.6)

*Total volume to purge = (5) gallons

* unless chemical parameters do not stabilize

PURGING DATA:

Purge method: PVC bailer / Submersible pump / Suction lift pump / battery. (circle one)

Temp/Conductivity/pH Instrument: Hydac

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
2:51	0	—	—	—
2:52	1.7	68	13.04	7.6
2:57	2.5	67.1	13.5	7.1
3:05	4.0	64.9	15.6	7.2
3:12	4.5	65.5	17.3	7.7
	slow recharge - runs dry.			

Color: Lt. brn. Turbidity: Slight

Recharge: Slow SPP 0 ft. Sheen 0

SAMPLING DATA:

Sampling method: Dedicated bailer / Disposable bailer

Sample for: (circle) dissolved Cr

TPHg/BTEX	METALS	TOC	8010
TPHd	Cr-Pb	TEL	8020
TPH mo	Total Pb	EDB	8240
601	602	Nitrates	8260

Other: PNAs

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

PURGE/SAMPLE DATA SHEET

WELL # MW-5

LOCATION: Mariner Develop.

Job No. 7-284.1

SHEET 1 of 1

HYDRO
ENVIRONMENTAL
TECHNOLOGIES, INC.

APPENDIX B

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Midwest Region
4211 May Avenue
Wichita, KS 67209
(316) 945-2624
(800) 633-7936
(316) 945-0506 (FAX)

January 9, 1996

Gary Pischke
HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC
2363 Mariner Square Dr.
Suite 243
Alameda, CA 94501

RE: GTEL Client ID: HYE01HYE01
Login Number: W5120493
Project ID (number): 7-284.1
Project ID (name): MARINA DEVELOPMENT

Dear Gary Pischke:

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 12/22/95.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This report is to be reproduced only in full.

GTEL is certified by the Department of Health Service under Certification Number 1845.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Terry R. Loucks
Laboratory Director

Project Number: HYE01.HYE01
7-284.1
Marina
Develpment
Work Order Number: W5-12-0493
Date Reported: 01-09-96

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Diesel Fuel In Water
GC/FID[a]

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Concentration, ug/L	Reporting Limit, ug/L
GTEL No.	Client ID					
01	MW-5	12-20-95	12-23-95	01-03-96	90[bc]	50
02	MW-3	12-20-95	12-23-95	01-03-96	320[bc]	50
03	MW-2	12-20-95	12-23-95	01-03-96	390[bc]	50
04	MW-1	12-21-95	12-23-95	01-03-96	7200[bc]	50

a ASTM Method D3328(modified) is used for qualitative identification of fuel patterns. The method has been modified to include quantitation by applying calibration and quality assurance guidelines outlined in EPA's publication, Test Methods For Evaluating Solid Waste, SW846, Third Edition, Revision 0, November 1986. Extraction by EPA Method 3510. This method is equivalent to the California LUFT manual DHS method for diesel fuel.

b Result is estimated because the surrogate spike recovery is outside of acceptability limits.
c The material present is qualitatively uncertain. Therefore, all material is the C_9 to C_{22} range was quantified against diesel fuel without respect to pattern.

ANALYTICAL RESULTS
Volatile Organics

GTEL Client ID: HYE01HYE01
Login Number: W5120493
Project ID (number): 7-284.1
Project ID (name): MARINA DEVELOPMENT

Method: EPA 8020
Matrix: Aqueous

GTEL Sample Number	W5120493-01	W5120493-02	W5120493-03	W5120493-04
Client ID	MW-5	MW-3	MW-2	MW-1
Date Sampled	12/20/95	12/20/95	12/20/95	12/20/95
Date Analyzed	01/04/96	01/04/96	01/04/96	01/04/96
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting Limit	Units	Concentration:			
Benzene	0.5	ug/L	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	1.0	ug/L	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	1.0	ug/L	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes (total)	2.0	ug/L	< 2.0	< 2.0	< 2.0	< 2.0
TPH as Gasoline	100	ug/L	< 100	< 100	< 100	< 100

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8020:

Gasoline range hydrocarbons (TPH) quantitated by GC/FID with purge and trap and modified EPA Method 8015. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition including Update 1.

ANALYTICAL RESULTS
Polynuclear Aromatics

GTEL Client ID: HYE01HYE01
Login Number: W5120493
Project ID (number): 7-284.1
Project ID (name): MARINA DEVELOPMENT

Method: EPA 8310
Matrix: Aqueous

GTEL Sample Number	W5120493-01	W5120493-02	W5120493-03	W5120493-04
Client ID	MW-5	MW-3	MW-2	MW-1
Date Sampled	12/20/95	12/20/95	12/20/95	12/20/95
Date Prepared	12/24/95	12/24/95	12/24/95	12/24/95
Date Analyzed	01/07/96	01/07/96	01/07/96	01/07/96
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting Limit	Units	Concentration:			
Naphthalene	2.0	ug/L	< 2.0	2.0	< 2.0	390
Acenaphthylene	2.0	ug/L	< 2.0	< 2.0	< 2.0	33.
Acenaphthene	2.0	ug/L	< 2.0	< 2.0	< 2.0	93.
Fluorene	2.0	ug/L	< 2.0	< 2.0	< 2.0	57.
Phenanthrene	1.0	ug/L	< 1.0	< 1.0	< 1.0	31.
Anthracene	1.0	ug/L	< 1.0	< 1.0	< 1.0	6.1
Fluoranthene	0.50	ug/L	< 0.50	< 0.50	< 0.50	9.8
Pyrene	0.50	ug/L	< 0.50	< 0.50	0.59	7.4
Benzo[a]anthracene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzo[a,h]anthracene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Indeno[1,2,3-cd]pyrene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8310:

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition including Update 1.

W5120493-04:

The recovery for Indole was outside of control limits due to probable matrix effects. However, the method recommended surrogate, p-Terphenyl, is within acceptability limits, therefore demonstrating method control. The qualitative identification for Acenaphthylene is uncertain due to matrix interferences.

ANALYTICAL RESULTS
Metals

GTEL Client ID: HYE01HYE01
Login Number: W5120493
Project ID (number): 7-284.1
Project ID (name): MARINA DEVELOPMENT

Method: EPA 6010A
Matrix: Aqueous

GTEL Sample Number	W5120493-04	--	--	--
Client ID	MW-1	--	--	--
Date Sampled	12/20/95	--	--	--
Date Prepared	12/28/95			
Date Analyzed	12/28/95	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting Limit	Units	Concentration:			
Chromium	30	ug/L	< 30	--	--	--

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 6010A:

Digestion for Total Metals by EPA Method 3010A. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition including Update 1.

CHAIN OF CUSTODY RECORD

SAMPLER
Printed Name: Gary Pischke
Signature: Gary Pischke

DELIVER TO: GTEL
Concord
ATTENTION: sample receipt

SEND RESULTS TO:
HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
2363 MARINER SQUARE DR., SUITE 243
ALAMEDA, CA 94501
(510) 521-2684, (FAX) 521-5078
ATTENTION: Gary Pischke

SEND INVOICE TO:
above
(Mariner Development)
quote # QC950027

HETICAL JOB No.: 7-284.1

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Gary Pischke	John Welch	12/21	3:28pm
Relinquished by:	Received by:		
Relinquished by:	Received by: LABORATORY		

PROJECT NAME: Mariner Development, Alameda

PAGE 1 OF 1

Sample Number	DATE & TIME	No. & Type Container	Analysis Requested: TPH(g+BTEX) (DHS mod)	TPH (DHS mod)	Organic Lead	PNAs 8310	Chromium (Trivalent/Hexavalent)			Lab Remarks
MW-5	12/20 4:03p	VOA -2	X							
MW-5	12/20 4:10p	1 ltr. 1 G		X		8270				
MW-5	12/20 4:15p	1 ltr G				X				
MW-3	12/20 4:51p	2 VOA	X							
MW-3	12/20 4:54p	1 ltr G		X						
MW-3	12/20 4:58p	1 ltr G				X				
MW-2	12/20 5:14p	2 VOA	X							
MW-2	12/20 5:21p	1 ltr G		X						
MW-2	12/20 5:25p	1 ltr G				X				
MW-1	12/21 2:40p	2 VOA	X							
MW-1	12/21 2:44p	1 ltr. G		X						
MW-1	12/21 2:48p	1 ltr G				X				
MW-1	12/21 2:52p	500ml P					X			

Special Instructions: _____

Turnaround:
- ☐ 5 DAY
- ☒ 10 DAY
- ☐ 72 HOURS
- ☐ 24 HOURS