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**QUARTERLY MONITORING REPORT  
CALENDAR QUARTER: APRIL - JUNE 1993**

**Parcel H  
Marina Village Development  
Alameda, California**

**Prepared for**

**Alameda Real Estate Investments  
1150 Marina Village Parkway  
Alameda, California**

**July 1993  
Project No. 1736.10**

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**Geomatrix Consultants**

100 Pine Street, 10th Floor  
San Francisco, CA 94111  
(415) 434-9400 • FAX (415) 434-1365



7 October 1993  
Project 1736.10

Mr. Kevin Tinsley  
Alameda County Health Care Services Agency  
Division of Hazardous Materials  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

Subject: Quarterly Monitoring Report  
Calendar Quarter April - June 1993  
Proposed Buildings 4 and 5, Parcel H  
Marina Village  
Alameda, California

Dear Mr. Tinsley:

On behalf of Alameda Real Estate Investments, Inc. (AREI), Geomatrix Consultants, Inc. (Geomatrix), is submitting the subject report. If you have any questions regarding this report, please call either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Jeff Nelson, P.E.  
Project Manager

Elizabeth Nixon  
Senior Project Engineer

JCN/slr  
1736PRCL.LTR

Enclosure

cc: Mr. Rahn Verhaeghe, AREI  
Mr. Richard Hiatt, Regional Water Quality Control Board



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**Geomatrix Consultants**

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**QUARTERLY MONITORING REPORT  
CALENDAR QUARTER APRIL - JUNE 1993**

**Parcel H  
Marina Village  
Alameda, California**

**1.0 INTRODUCTION**

This report presents a summary of groundwater monitoring activities conducted by Geomatrix Consultants, Inc. (Geomatrix), on behalf of Alameda Real Estate Investments, Inc. (AREI), near the site of proposed Buildings 4 and 5, Parcel H, Marina Village Development, Alameda, California (Figure 1). These activities are part of a quarterly groundwater monitoring program initiated in January 1993 and conducted during April 1993. The purpose of this program is to comply with an Alameda County Department of Environmental Health (ACDEH) request to assess petroleum hydrocarbons in shallow groundwater downgradient of the property. Work at the site was completed in accordance with the proposed site management plan included in the January 1993 report entitled "Phase I and Phase II, Evaluation of Fill Material, Proposed Buildings 4 and 5 - Parcel H" submitted to ACDEH by Geomatrix.

**2.0 QUARTERLY PROGRESS SUMMARY**

The work performed during this quarter is summarized below:

- Water levels were measured in four monitoring wells in the vicinity of the site on 5 April 1993. Water-level measurements and procedures are described in Section 3.0.
- Geomatrix performed the third of four quarterly groundwater sampling events on 5 April 1993. Section 4.0 describes the groundwater sampling activities and analytical procedures and results.

### 3.0 QUARTERLY WATER-LEVEL MEASUREMENTS

Geomatrix measured water levels in four groundwater monitoring wells at or near the site on 5 April 1993. Well construction data for these wells are summarized in Table 1. Monitoring well locations and water-level elevations are shown on Figure 2. Water levels were measured to the nearest 0.01 foot using a Sinco electric well sounder following the Geomatrix protocol previously submitted with the initial quarterly monitoring report for this project. Equipment used by Geomatrix personnel was washed with a detergent-water solution and rinsed with deionized water before each measurement was taken. Water-level measurements from this quarterly monitoring event are summarized in Table 2; field notes are included in Appendix A.

Water-level elevations across the site ranged from -1.83 feet at well GMW-3 to 0.34 feet at well GMW-4 (City of Alameda Datum). Historical water-level elevation data suggest that localized hydraulic gradient direction varies in the site vicinity; this variability may be caused by tidal influences, recharge from surface irrigation, and/or the presence of relatively impermeable subsurface structures, particularly in the vicinity of the shipway structures (see Figure 2). Therefore, interpretation of the hydraulic gradient direction is somewhat uncertain in the immediate vicinity of the site and is not shown on Figure 2. However, based on previous experience in this area, the horizontal hydraulic gradient generally trends to the northwest. Based on this quarter's data, the horizontal hydraulic gradient in the site and vicinity ranges from about 0.002 to 0.01 feet per foot.

### 4.0 QUARTERLY GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from monitoring wells GMW-3 and GMW-5 on 5 April 1993. Samples were collected in accordance with the Geomatrix protocol previously submitted for this project. Immediately after collection, groundwater samples were placed in an ice-chilled cooler and transported under Geomatrix chain-of-custody procedures to Quanteq Laboratories (Quanteq) of Pleasant Hill, California, a state-certified analytical laboratory.

Samples were analyzed by Quanteq for TPH as motor oil, according to Environmental Protection Agency (EPA) Method 3510 GCFID. Copies of chain-of-custody records are included in Appendix A. TPH as motor oil was detected at a concentration of 0.4 mg/l in the samples collected from both wells GMW-3 and GMW-5. Laboratory results are presented in Table 3; laboratory reports are included in Appendix A.

## 5.0 RECOMMENDATIONS

We recommend that the groundwater monitoring program proceed as outlined in our January 1993 report. The monitoring plan includes quarterly monitoring for petroleum hydrocarbons for 1 year, then reducing the sampling frequency to annually or biennially, subject to the approval of the ACDEH and RWQCB.

TABLE 1

 WELL CONSTRUCTION DATA  
 Parcel H  
 Marina Village  
 Alameda, California

Well Number	Date Constructed	Well Depth (ft. below grade)	Screened Interval (ft. below grade)	Filter Pack Interval (ft. below grade)	Measuring Point Elevation <sup>1</sup> (feet)	Ground Surface Elevation <sup>1,2</sup> (feet)
GP-1	4/15/92	17	7-17	6-17	6.66	6.07
GMW-3	4/16/92	13.5	3.5-13.5	2.5-14	4.39	4.55
GMW-4	4/16/92	13.5	3.5-13.5	2.5-14	7.36	6.80
GMW-5	2/1/93	20	5-20	4-20	5.37	5.6 <sup>2</sup>

<sup>1</sup> Top of PVC casing elevations were surveyed by Luk, Milani & Associates (formerly Stedman & Associates, Inc.) of Walnut Creek, California. Elevations are relative to City of Alameda Datum (6.4 feet above Mean Sea Level).

<sup>2</sup> Ground surface elevation is approximate.



TABLE 2

## WATER-LEVEL MEASUREMENTS

 Parcel H  
 Marina Village  
 Alameda, California

Well Number	Date Water-Level Measured	Measuring Point (MP) Elevation <sup>1</sup> (feet)	Depth to Water Below MP (feet)	Water-Level Elevation <sup>1</sup> (feet)
GP-1	5/6/92	6.66	8.29	-1.63
GMW-3	5/6/92	4.39	6.42	-2.03
GMW-4	5/6/92	7.36	7.20	0.16
GP-1	2/8/93	6.66	7.77	-1.11
GMW-3	2/8/93	4.39	5.50	-1.01
GMW-4	2/8/93	7.36	6.31	1.05
GMW-5	2/8/93	5.37	5.49	-0.12
GP-1	4/5/93	6.66	7.84	-1.18
GMW-3	4/5/93	4.39	6.22	-1.83
GMW-4	4/5/93	7.36	7.02	0.34
GMW-5	4/5/93	5.37	6.15	-0.78

<sup>1</sup> Top of PVC casing elevations were surveyed by Luk, Milani & Associates (formerly Stedman & Associates, Inc.) of Walnut Creek, California. Elevations are relative to City of Alameda Datum (6.4 feet above Mean Sea Level).

TABLE 3

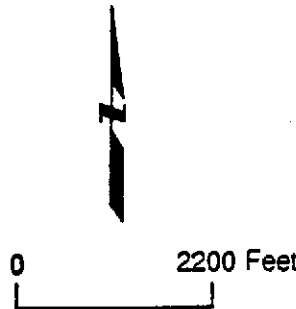
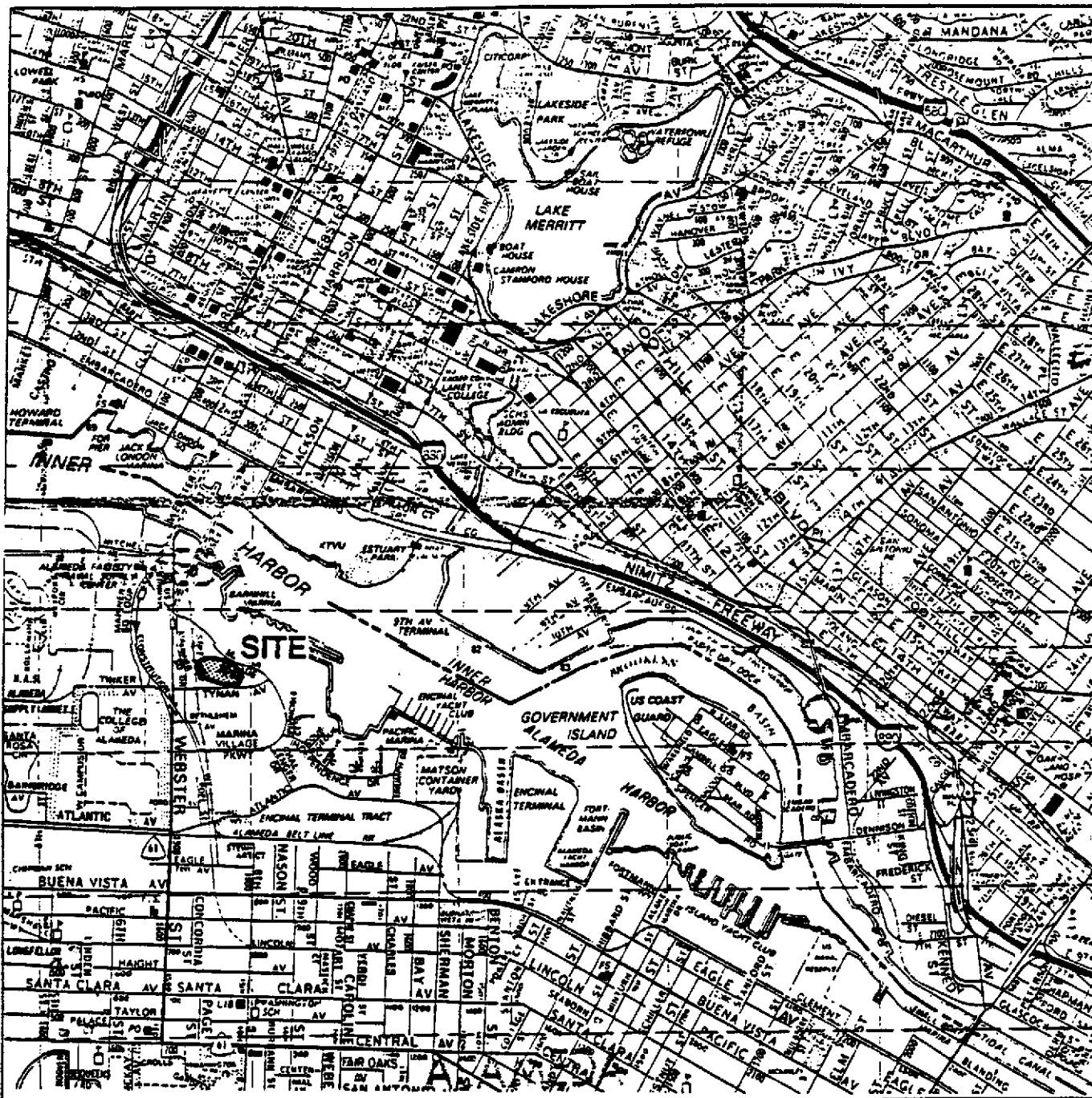
## ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Parcel H  
Marina Village  
Alameda, California

Results in milligrams per liter (mg/l)

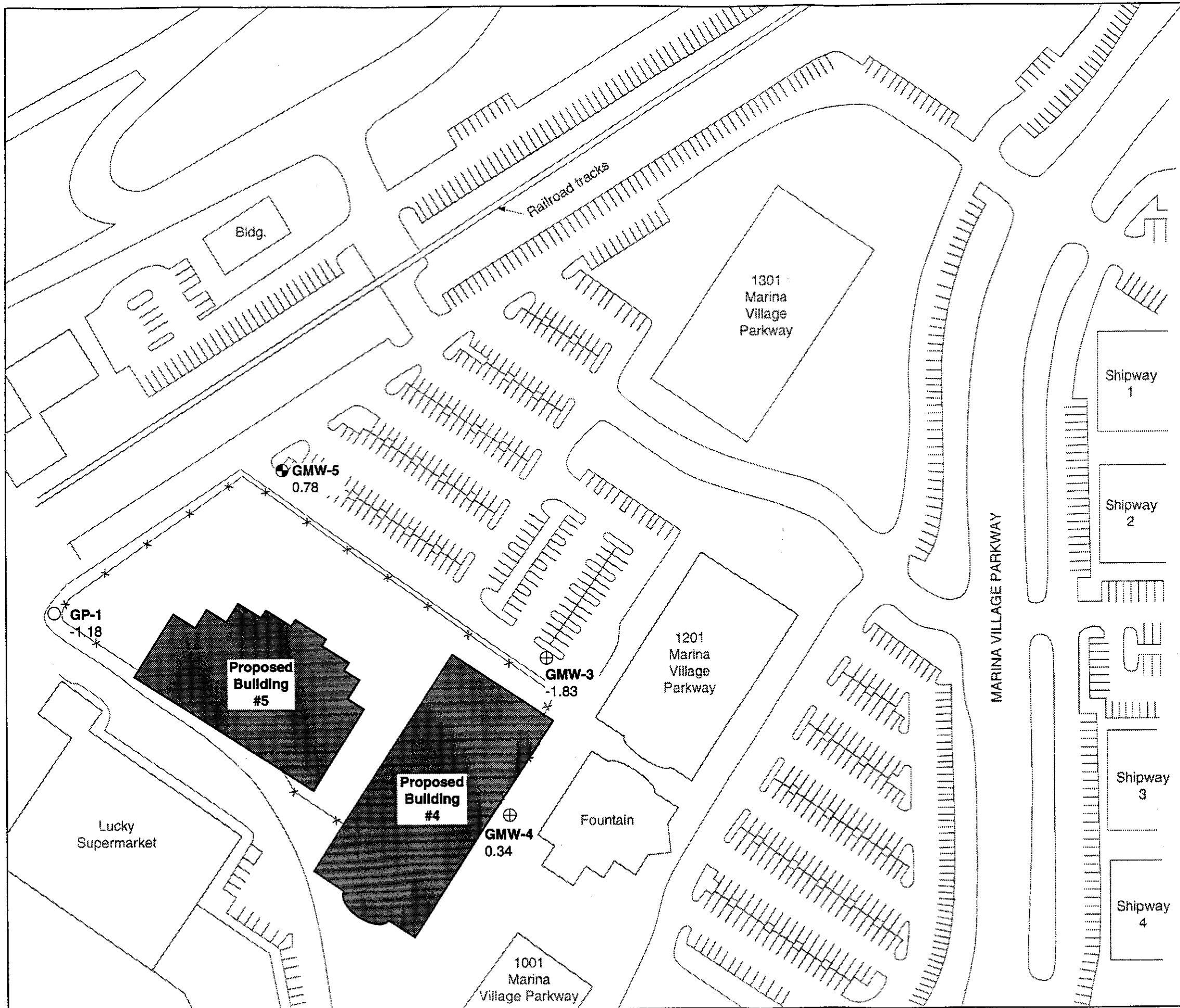
Well Number	Sample Date	Extractable Petroleum Hydrocarbons as Motor Oil <sup>1</sup>
GMW-3	2/11/93	0.2
GMW-5	2/11/93	0.4
GMW-3	4/5/93	0.4
GMW-5	4/5/93	0.4

<sup>1</sup> Samples analyzed by Quanteq Laboratories of Pleasant Hill, California according to EPA Methods 3510/3520 GCFID.



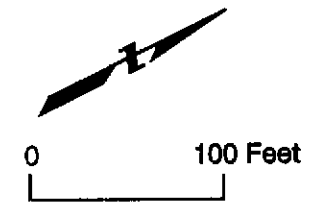
SITE LOCATION MAP  
 Marina Village Buildings 4 and 5 Project  
 Alameda, California

Figure  
 1  
 Project No.  
 1736.10



EXPLANATION

- GMW-5 ● Groundwater monitoring well, Geomatrix, February 1993
- GMW-4 ⊕ Groundwater monitoring well, Geomatrix, April 1992
- GP-1 ○ Groundwater piezometer, Geomatrix, April 1992
- 0.34 Groundwater elevation, feet, relative to City of Alameda datum



SITE PLAN SHOWING MONITORING WELLS AND WATER-LEVEL ELEVATIONS (APRIL 1993)  
 Marina Village Development, Parcel H  
 Alameda, California

	Project No.	Figure
	1736.10	2

**APPENDIX A**

**Laboratory Analytical Results  
and Chain-of-Custody Records  
for Groundwater Sampling Analyses;  
Field Notes**

# Quanteq Laboratories

An Ecologics Company

## Certificate of Analysis

PAGE 1 OF 3

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

GEOMATRIX CONSULTANTS  
100 PINE STREET  
10TH FLOOR  
SAN FRANCISCO, CA 94111  
ATTN: JEFF NELSON

CLIENT PROJ. ID: 1736.10  
C.O.C. NO: 542

REPORT DATE: 04/16/93

DATE SAMPLED: 04/05/93

DATE RECEIVED: 04/05/93

QUANTEQ JOB NO: 9304032

### PROJECT SUMMARY:

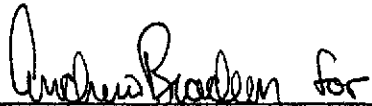
On April 5, 1993, this laboratory received two (2) water samples.

Client requested samples be analyzed for Total Petroleum Hydrocarbons as Oil by EPA Method 3510 GCFID. Sample identification, results and dates analyzed are summarized on the following pages.

Sample extracts for Extractable Hydrocarbons as Oil were treated with silica gel prior to analysis.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

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

  
Larry Klein  
Laboratory Manager

Results FAXed 04/14/93

GEOMATRIX CONSULTANTS

DATE SAMPLED: 04/05/93  
DATE RECEIVED: 04/05/93  
CLIENT PROJ. ID: 1736.10

REPORT DATE: 04/16/93  
QUANTEQ JOB NO: 9304032

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Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Oil (mg/L)
GMW-3	01A	0.4
GMW-5	02A	0.4
Reporting Limit		0.2
EPA Method: 3510 GCFID		
Instrument: C		
Date Extracted: 04/08/93		
Date Analyzed: 04/09-12/93		

QUALITY CONTROL DATA

DATE EXTRACTED: 04/08/93  
 DATE ANALYZED: 04/09/93  
 CLIENT PROJ. ID: 1736.10

QUANTEQ JOB NO: 9304032  
 SAMPLE SPIKED: D.I. WATER  
 INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY  
 TPH EXTRACTABLE WATER  
 EPA METHOD 3510 GCFID

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	2.00	ND	1.79	1.83	90.5	2.2

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Diesel	(49.3-101.4)	29

MS = Matrix Spike  
 MSD = Matrix Spike Duplicate  
 RPD = Relative Percent Difference  
 ND = Not Detected



R-1, S-E

9304032

Chain-of-Custody Record			N2 542		Date: 04/05/93		Page 1 of 1								
Project No.: 1736.10			ANALYSES						REMARKS						
Samplers (Signatures): James M. Carolan			EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	TPH oil	Cooled	Soil (S) or water (W)	Acidified	Number of containers	Additional comments
Date	Time	Sample Number													
04/05	13:00	GMW-3	OKAB							X	X	W		2	Please check when get cleanup before analysis
04/05	12:25	GMW-5	OKAB							X	X	W		2	
<del>Empty grid rows</del>															
			Turnaround time: Standard			Results to: Jeff Nelson			Total No. of containers: 4						
Relinquished by:			Date:	Relinquished by:			Date:	Relinquished by:			Date:	Method of shipment: Lab Pickup			
Signature: James M. Carolan			04/05/93	Signature: Robert W. Mann			04/05/93	Signature:			Laboratory comments and Log No.: 9304032				
Printed name: Jim Carolan				Printed name: Robert W. Mann				Printed name:							
Company: Geomatrix				Company: AEN				Company:							
Received by:			Time:	Received by:			Time:	Received by:			Time:				
Signature: Robert W. Mann			7:10	Signature: Gina Gillespie			18:00	Signature:							
Printed name: Robert W. Mann				Printed name: Gina Gillespie				Printed name:							
Company: AEN				Company: Quantec (AEN)				Company:							
				1-5-93 1800											





**Geometrix Consultants**

100 Pine Street, 10th Floor  
San Francisco, California 94111  
(415) 434-9400

**MONITORING WELL SAMPLING RECORD  
AND WELL DEVELOPMENT DATA**

Well ID: GMW-3  
Sample ID: GMW-3 Duplicate ID.: \_\_\_\_\_  
Sample Depth: 8  
Project No: 1736.10  
Project Name: Marina Village  
Date: 04/05/93  
Sampled By: J. Carolan

Initial Depth to Water: 6.22  
Depth to Water after Purging: \_\_\_\_\_  
Total Depth of Well: 13.5  
Well Diameter: 2"  
1 Casing Volume = 1  
4 Casing Volumes = 5  
Method of Purging: Diaphragm Pump  
Method of Sampling: Teflon Bailor

TIME	INTAKE DEPTH	RATE (gpm)	CUM. VOL (gal)	TEMP. (°C)	pH (units)	CONDUCTIVITY (µmhos/cm)	REMARKS (color, turbidity & sediment)
12:47	10'		1	22.5	7.3	-	Clear
12:49	10'		2	21.2	7.1	-	"
12:50	10'		3	21.5	7.2	-	"
12:52	10'		4	20.7	7.3	-	"
12:55	10'		6	20.3	7.3	-	"
13:00	SAMPLE			19.8	7.3	-	Clear

**pH CALIBRATION (CHOOSE TWO)**

Model or Unit No.:

Buffer Solution	pH 4.0	pH 7.0	pH 10.0
Temp. °C			
Instrument Reading			

**SPECIFIC CONDUCTANCE - CALIBRATION:**

Model or Unit No.:

KCL Solution (µmhos/cm at 20°C)	1409	12856
Temp. °C		
Instrument Reading		

Notes



**Geomatrix Consultants**

100 Pine Street, 10th Floor  
San Francisco, California 94111  
(415) 434-3400

**MONITORING WELL SAMPLING RECORD  
AND WELL DEVELOPMENT DATA**

Well ID: GMW-5  
Sample ID: GMW-5 Duplicate ID.: \_\_\_\_\_  
Sample Depth: 15'  
Project No: 1736.10  
Project Name: Marina Village  
Date: 04/05/93  
Sampled By: JMC

Initial Depth to Water: 6.15  
Depth to Water after Purging: \_\_\_\_\_  
Total Depth of Well: 20'  
Well Diameter: 2"  
1 Casing Volume = 2.26  
4 Casing Volumes = 10  
Method of Purging: Diaphragm Pump  
Method of Sampling: Teflon Bailor

TIME	INTAKE DEPTH	RATE (gpm)	CUM. VOL (gal)	TEMP. (°C)	pH (units)	CONDUCTIVITY (µmhos/cm)	REMARKS (color, turbidity & sediment)
12:07	18'	—	2	22.3	6.7	<del>2.38</del>	Clear
12:11	18'		4	21.0	6.7	—	Clear, pumped dry
12:14	18'		5	20.8	6.7	—	Clear, pumped dry
12:25	SAMPLE			20.4	6.8	—	Clear

**pH CALIBRATION (CHOOSE TWO)**

Model or Unit No.:

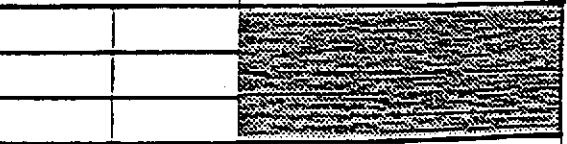
Buffer Solution	pH 4.0	pH 7.0	pH 10.0
Temp. °C			
Instrument Reading			



**SPECIFIC CONDUCTANCE - CALIBRATION:**

Model or Unit No.:

KCL Solution (µmhos/cm at 20°C)	1409	12856
Temp. °C		
Instrument Reading		



Notes Conductivity meter malfunctioning