A·C·C
ENVIRONMENTAL
CONSULTANTS

QUARTERLY GROUNDWATER SAMPLING

ALAMEDA HISTORICAL HIGH SCHOOL
2200 CENTRAL AVENUE
ALAMEDA, CALIFORNIA

Prepared for:
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Alameda School District
2200 Central Avenue
Alameda, CA 94501

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Reviewed by:

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Exp. June 30, 1993
STATE OF CALIFORNIA

Reviewed by:

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1.0 INTRODUCTION

This report presents the procedures and findings of ACC Environmental Consultants, Inc. ("ACC") quarterly groundwater sampling on September 29, 1992, of the three monitoring wells located at the Alameda Historical High School in Alameda, California. The objective of this project, as described in the Work Plan dated June 9, 1992, is to determine if groundwater has been impacted from the release of petroleum hydrocarbons discovered during removal of two underground heating oil tanks. During drilling and installation of the monitoring wells in June of 1992, groundwater was encountered at approximately 10 feet below ground surface. The wells were sampled and analyzed to determine what impact the release had on the groundwater. Groundwater analysis results from the initial round of sampling performed on July 6, 1992, indicated elevated levels of Total Petroleum Hydrocarbons (TPH) as diesel in monitoring well MW-1. This report documents the procedures and results found during this subsequent round of quarterly sampling.

2.0 BACKGROUND

In December of 1991, Semco of San Mateo removed two heating oil tanks (one 4000-gallon and one 2000-gallon) from Alameda Historical High School campus. During excavation, it was discovered that the tanks were stacked one on top of each other. Analysis of soil samples collected from 11 feet within the excavation revealed non-detectable levels of Total Petroleum Hydrocarbons (TPH) as diesel, benzene, toluene, ethylbenzene and total xylenes. A sample of the groundwater found within the excavation was collected and analyzed. Results indicated the groundwater contained 0.6 parts per billion (ppb) of toluene, 1.2 ppb ethylbenzene and 1.8 ppb total xylenes.

As a result, Alameda County Health Services - Hazardous Materials Division (HAZMAT) requested the installation of one monitoring well in the verified downgradient direction of the former heating oil tanks with verification sampling to determine the impact of groundwater from this release.

In order to verify the groundwater gradient, three monitoring wells (MW-1, MW-2 and MW-3) were installed within 100 feet of the tank excavation on June 26, 1992. The Site Plan, Figure 1, shows the approximate well locations. Soil samples collected while drilling indicated non-detectable levels of the constituents evaluated. Groundwater samples were collected from the newly installed monitoring wells on July 6, 1992. Laboratory analysis of the groundwater samples collected indicated 170 ppb of TPH as diesel in monitoring well MW-1. Laboratory analysis from monitoring wells MW-2 and MW-3 indicated non-detectable concentrations of the constituents evaluated.

3.0 GROUNDWATER SAMPLING

Groundwater sample were taken on September 29, 1992 from monitoring wells MW-1, MW-2 and MW-3. 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 depths of wells, well elevations and groundwater level measurements are summarized in Table 1 below:

Table 1 - Well Information

Monitoring Well MW-1 Well Elevation = 31.50

Date Measured	Static Water Level	Groundwater Elevation
07/06/92	9.49	22.01
09/29/92	10.97	20.53

Monitoring Well MW-2 Well Elevation = 32.16

Date Measured	Static Water Level	Groundwater Elevation
07/06/92	10.05	22.11
09/29/92	11.67	20.49

Monitoring Well MW-3 Well Elevation = 31.02

Date Measured	Static Water Level	Groundwater Elevation
07/06/92	9.03	21.99
09/29/92	10.54	20.48

Notes:

All measurements in feet
Elevations figured per mean sea level
Static water level is measured in feet below ground surface

After water-level measurements were taken, each well was purged by hand using a designated 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. Approximately four well volumes were removed to purge each well.

After the groundwater had recovered to a minimum of approximately 80 percent of its static level, water samples were obtained using the disposal Teflon bailer for each well. Two (2) 40 ml VOA vials, without headspace, and two (2) liter bottles were filled with water from each well using the Teflon Bailer. These samples were preserved on ice and submitted to Chroma Lab analytical laboratory, an accredited Cal/EPA analytical laboratory the same day under chain of custody protocol (forms are provided in Appendix A).

4.0 FINDINGS

One sample from each groundwater monitoring well was submitted to Chroma Lab for analysis of TPH as diesel, heating oil and kerosene using EPA test method 8015 modified with benzene, toluene, ethylbenzene and total xylenes

(BTEX) using EPA test method 602. The laboratory analyses results indicated non-detectable concentrations of the constituents evaluated. Table 2 summarized the analytical results of the groundwater samples collected from each monitoring well to date. Copies of the analytical results are provided in Appendix A.

Table 2 - Analytical Results

Well No.	Date Sampled	TPH-d (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)
MW-1	07/06/92	170	ND	ND	ND	ND
	09/29/92	ND	ND	ND	ND	ND
MW-2	07/06/92	ND	ND	ND	ND	ND
	09/29/92	ND	ND	ND	ND	ND
MW-3	07/06/92	ND	ND	ND	ND	ND
	09/29/92	ND	ND	ND	ND	ND

Notes:

ug/L = micrograms per liter or parts per billion
ND = Non-detect

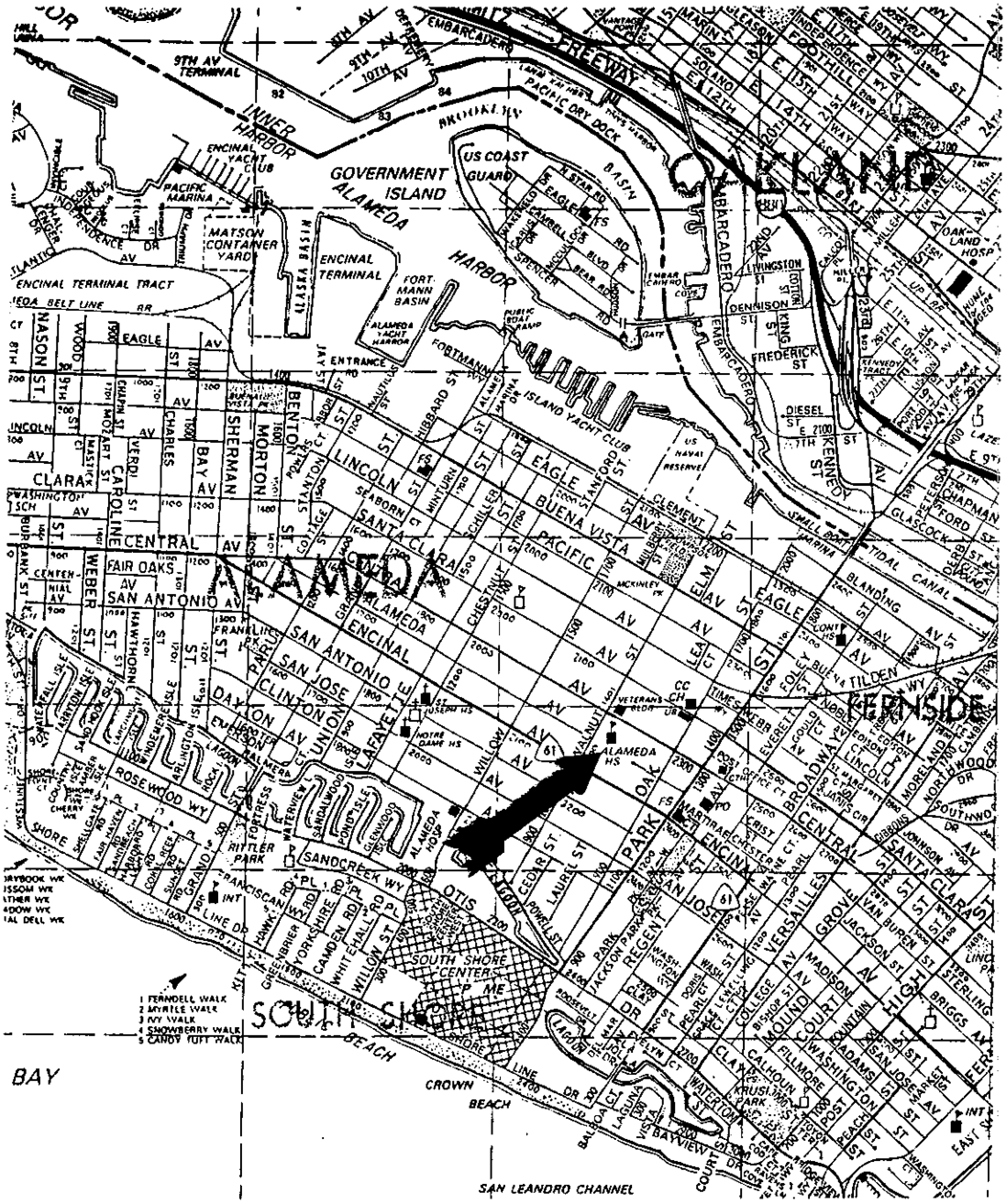
4.1 Groundwater Gradient

The groundwater gradient at the site was evaluated by triangulation using the elevations of the tops of the well casings measured with respect to Mean Sea Level datum. As shown on Figure 2, the groundwater gradient direction at the time of measurement was approximately due east with the actual gradient being 5.1×10^{-4} foot per foot.

5.0 CONCLUSION

The data and observations provided herein allow the technical evaluation that an impact to groundwater, derived from the unauthorized release of hydrocarbons, has apparently been mitigated by natural degradation of the contaminants.

Pursuant to the guidelines, groundwater monitoring of the on-site wells will continue for four consecutive quarters. Upon acceptable monitoring results, a request for site closure shall be submitted for the regulatory agencies' approval.



(Source: Thomas Bros)

ACC Environmental Consultants, Inc. 1000 Atlantic Avenue, Suite 110 Alameda, California 94501	Vicinity Map Alameda Historical High School 2200 Central Ave. Alameda, CA

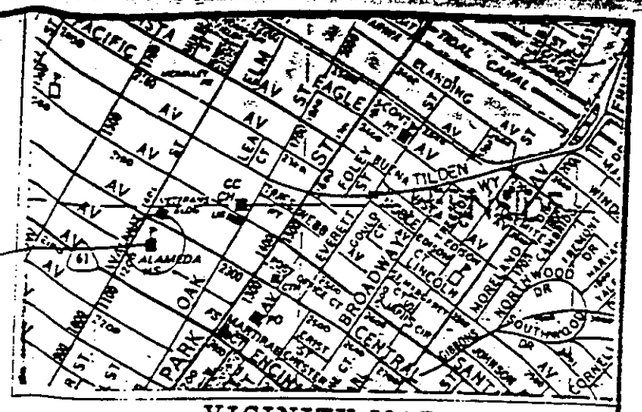
Project No. 6029-2	Date: 6/01/92	Dn by: MCK	Figure No. 1

JUNE 30, 1992 JOB NO. 1941

PLAT SHOWING EXISTING MONITOR WELLS BEHIND THE GIRLS GYMNASIUM BUILDING AT THE ALAMEDA HIGH SCHOOL FACILTY, LOCATED AT 2200 CENTRAL AVENUE, BETWEEN OAK STREET AND WALNUT STREET, CITY OF ALAMEDA, ALAMEDA COUNTY, CALIFORNIA.

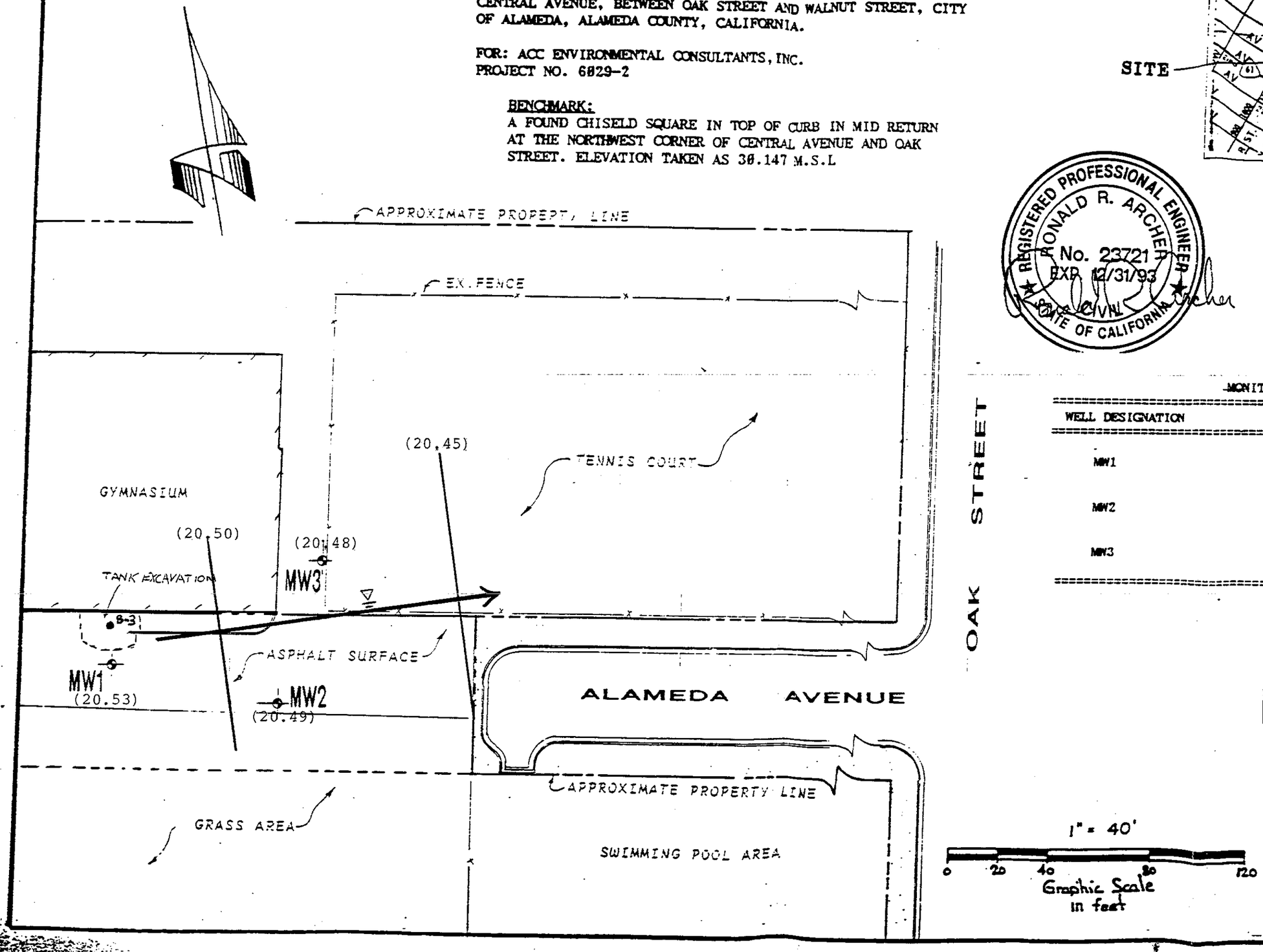
FOR: ACC ENVIRONMENTAL CONSULTANTS, INC.
PROJECT NO. 6029-2

BENCHMARK:
A FOUND CHISELD SQUARE IN TOP OF CURB IN MID RETURN AT THE NORTHWEST CORNER OF CENTRAL AVENUE AND OAK STREET. ELEVATION TAKEN AS 30.147 M.S.L



VICINITY MAP
N.T.S

REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
EXP. 12/31/93
CIVIL
STATE OF CALIFORNIA



MONITOR WELL DATA TABLE

WELL DESIGNATION	ELEV	DESCRIPTION
MW1	31.58'	TOP OF PVC CASING
	32.21	TOP OF BOX
MW2	32.16	TOP OF PVC CASING
	32.56	TOP OF BOX
MW3	31.82	TOP OF PVC CASING
	31.60	TOP OF BOX

1" = 40'

0 20 40 80 120
Graphic Scale
in feet

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Alameda High School
Groundwater Map
Figure 2

APPENDIX A

CC ENVIRONMENTAL CONSULTANTS, INC.

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~~9[illegible]~~ 992323

CHAIN OF CUSTODY RECORD

PROJ. NO	PROJECT NAME
6029-2	Alameda High School

SAMPLERS: (Signature) Carl Soane

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TPH-D / BTEX / TPH-gasoline	REMARKS
MW-1	9/29/92	11:45			MW-1		✓ ✓ ✓	standard turnaround
MW-2	"	12:44			MW-2		✓ ✓ ✓	
MW-3	"	1:55			MW-3		✓ ✓ ✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Carl Soane	9/29/92						
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks	
			B. Ghezzi	9-30-92	1635		

CHROMALAB, INC.

Environmental Laboratory (1094)

5 DAYS TURNAROUND

October 7, 1992 ChromaLab File No.: 0992323

ACC ENVIRONMENTAL CONSULTANTS, INC.

Attn: Carl Soane

RE: Three water samples for TEPH and BTEX Analysis

Project Name: Alameda High School
Project Number: 6029-2
Date Sampled: Sept. 29, 1992 Date Submitted: Sept. 30, 1992
Date Analyzed: Oct. 5, 1992

RESULTS:

Sample I.D.	Diesel (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)	Motor Oil (mg/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	84%	92	97	93	93	----
DUP SPIKE RECOVERY	97%	93	98	94	94	----
DETECTION LIMIT	50	0.5	0.5	0.5	1.5	0.5
METHOD OF ANALYSIS	3510/8015	602	602	602	602	3510/8015

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Well Sampling [✓] Well Development [ ] check one

Well Number: MW-1

Job Number: 6029-2

Job Name: Fairoaks #5

Date: 9/29/92

Sampler: Carl Scane

Depth to Water (measured from TOC): [illegible]

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: Bailer

Amount of Water Bailed/Pumped from well: [illegible]

Depth to Water after well development: —

Depth to water prior to sampling: 11.71'

Bailed water stored on-site ? How ? Drums

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New rope

Water Appearance:

	yes	no
froth		✓
irridesence		
oil		
smell		
product		
other, describe		

Gallons Removed	pH	EC	Temp
5	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]
15	7.20	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]
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: 6029-2

Job Name: Alameda HS

Date: 9/29/92

Sampler: Carl Soave

Depth to Water (measured from TOC): 11.67'

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: bail.

Amount of Water Bailed/Pumped from well: 5.5 gals

Depth to Water after well development: —

Depth to water prior to sampling: 11.90'

Bailed water stored on-site ? How ? drums

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New rope

Water Appearance:

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

Gallons Removed	pH	EC	Temp
5	7.22	8.44	68.3
10	7.03	8.42	67.7
15	6.96	8.21	67.5
20	6.97	8.00	67.4
25	6.97	8.05	62.3
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-3

Job Number: 6029-2

Job Name: Alameda HS

Date: 9/20/92

Sampler: Carl Soano

Depth to Water (measured from TOC): 10.51'

Inside Diameter of Casing: 2"

Depth of Boring: 15'

Method of well development/purging: Pump

Amount of Water Bailed/Pumped from well: [illegible]

Depth to Water after well development: —

Depth to water prior to sampling: 10.56'

Bailed water stored on-site ? How ? drums

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? New rope

Water Appearance:

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

Gallons Removed	pH	EC	Temp
5	7.37	2 [illegible]	72.1
10	7.42	[illegible]	72.9
15	7.47	[illegible]	72.2
20	7.[illegible]	[illegible]	71.[illegible]
25	7.36	[illegible]	71.[illegible]
30	7.[illegible]	[illegible]	71.2
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	