aqua science engineers inc.

February 5, 1996

1585

WORKPLAN
for a
SOIL AND GROUNDWATER ASSESSMENT
at
Lim Family Property
250 8th Street
Oakland, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

REGISTERED PROFESSIONAL ENGINEER
DAVID M. SCHULTZ
No. 38738
Exp 4-97
CIVIL
STATE OF CALIFORNIA

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INTRODUCTION

This submittal outlines Aqua Science Engineer's, Inc. (ASE) workplan for a soil and groundwater assessment for the Lim family property located at 250 8th Street in Oakland, California (Figure 1). The proposed site assessment activities are being performed to satisfy the requirements outlined in the December 5, 1995 letter from the Alameda County Health Care Services Agency (Appendix A).

SITE HISTORY

A gasoline service station previously occupied the site. In May 1992, ASE removed ten underground fuel storage tanks from the site. The tanks consisted of one (1) 10,000-gallon gasoline tank, one (1) 5,000-gallon diesel tank, three (3) 2,000-gallon gasoline tanks, one (1) 2,000-gallon diesel tank, three (3) 500-gallon gasoline tanks and one (1) 250-gallon waste oil tank. Up to 10,000 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G) and 5,900 ppm total petroleum hydrocarbons as diesel (TPH-D) were detected in soil samples collected during the tank removal.

Between December 1992 and March 1993, All Environmental of San Ramon, California overexcavated 1,762 cubic yards of soil from the site and off-hauled the soil to the BFI Landfill in Livermore, California. Analytical results show that all on-site soil with hydrocarbon concentrations greater than 10 ppm was removed from the site with the exception of soil along the 8th Street shoring. Up to 1,800 ppm TPH-G and 120 ppm TPH-D were detected in soil samples collected along the shoring indicating that contamination likely extends below 8th Street. This contamination left in place may still be a source for groundwater contamination.

In January 1995, ASE installed monitoring wells MW-1 and MW-2 at the site. High hydrocarbon concentrations were detected in monitoring well MW-2, downgradient of the site. Moderate hydrocarbon concentrations were detected in on-site monitoring well MW-1.

Since April 1995, the site has been on a quarterly groundwater monitoring program. Analytical results for these sampling periods are presented in Tables One and Two.

PROPOSED SCOPE OF WORK (SOW)

Based on the requirements of the Alameda County Health Care Services Agency (ACHCSA), ASE's proposed SOW is as follows:

1) Obtain a subsurface drilling permit from the Alameda County Flood Control and Water Conservation District (Zone 7) and an excavation permit from the City of Oakland;

2) Drill two soil borings at the site in the location shown on Figure 2, and collect soil samples for analyses;

3) Collect groundwater samples from the borings;

4) Backfill the borings with neat cement to the ground surface;

5) Analyze the soil and groundwater samples;

6) Prepare a report detailing the methods and findings of this assessment.

Details of the assessment are presented below.

TASK 1 - OBTAIN NECESSARY PERMITS

Prior to drilling, ASE will obtain a drilling permit from the Alameda County Flood Control and Water Conservation District (Zone 7) and an excavation permit from the City of Oakland. ASE will also notify Underground Service Alert (USA) to have underground utility lines marked in the site vicinity.

TASK 2 - DRILL TWO SOIL BORINGS AT THE SITE

ASE will drill two soil borings at the location shown on Figure 2 using a Geoprobe drill rig. These boring will be placed in locations appropriate to assess the width of the hydrocarbon plume. Since a building occupies the block downgradient of the site, the downgradient extent of the plume can not be determined during this assessment. The drilling will be directed by a qualified ASE geologist. Undisturbed soil samples will be collected at least every 5-feet, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The samples will be described by the ASE geologist according to the Unified Soil Classification System. The samples will be collected in brass tubes using a drive sampler advanced ahead of the boring as the

boring progresses. Each sample will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, secured with duct tape, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed into an ice chest containing wet ice for delivery under chain of custody to a CAL-EPA certified analytical laboratory.

Soil from the remaining tubes not sealed for analysis will be removed for hydrogeologic description and will be screened for volatile compounds with an organic vapor meter (OVM). The soil will be screened by emptying soil from one of the tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole, punched in the bag. These OVM readings will be used as a screening tool only since these procedures are not as rigorous as those used in an analytical laboratory.

All sampling equipment will be cleaned in buckets with brushes and a TSP or Alconox solution, then rinsed twice with tap water. Rinsates will be contained on-site in 55-gallon DOT 17H drums for future disposal by the client.

TASK 3 - COLLECT GROUNDWATER SAMPLES FROM THE BORINGS

A groundwater sample will be collected from each boring. Drilling will be halted at the water table and a Powerpunch or similar type device will be utilized to collect groundwater samples from the boring. The groundwater samples to be analyzed for TPH-G and methyl t-butyl ether (MTBE), benzene, ethylbenzene, toluene and total xylenes (MBTEX) will be contained in 40-ml volatile organic analysis (VOA) vials without headspace and preserved with hydrochloric acid. The groundwater samples to be analyzed for TPH-D will be contained in 1-liter amber glass bottles. All samples will be labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples, placed in protective foam sleeves, and cooled in an ice chest with wet ice for transport to a state-certified analytical laboratory under chain-of-custody.

TASK 4 - BACKFILL THE BORINGS WITH NEAT CEMENT

Following collection of the soil and groundwater samples, the boreholes will be backfilled with neat cement placed by tremie pipe.

TASK 5 - ANALYZE THE SOIL AND GROUNDWATER SAMPLES

At least one (1) soil and one (1) groundwater sample from each boring will be analyzed at a CAL-EPA certified analytical laboratory for TPH-G by modified EPA Method 5030/8015, TPH-D by modified EPA Method 3510/8015 and MBTEX by EPA Method 8020. The soil sample analyzed will be chosen based on field observations such as odors, staining and OVM readings. If no field indications of contamination are present, the unsaturated sample closest to the water table will be analyzed.

TASK 6 - PREPARE A SUBSURFACE ASSESSMENT REPORT

ASE will submit a report outlining the methods and findings of the assessment. The report will be submitted under the seal of state registered civil engineer or geologist. This report will include a summary of all work completed during this assessment including tabulated soil and groundwater analytical results, conclusions and recommendations. Copies of the analytical report and chain of custody will be included as appendices.

SCHEDULE

This work will be scheduled when directed by the client. The client is currently waiting for funds to be reimbersed by the State Underground Storage Tank Cleanup Fund.

Should you have any questions or comments, please call us at (510) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay, R.E.A.
Project Geologist

TABLE ONE

Summary of Chemical Analysis of **GROUNDWATER** Samples
TPH-G, TPH-D, BTEX and MTBE
All results are in **parts per billion**

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-1							
01-30-95	740	200	3	5	1	4	--
04-12-95	400	500	<0.5	<0.5	3	<2	--
07-14-95	520	400	1	<0.5	2	3	--
10-17-95	400	200	0.5	1	3	<2	--
01-12-96	120	890	<0.5	<0.5	<0.5	<1.0	<2.0
MW-2							
01-30-95	88,000	800	19,000	18,000	2,400	10,000	--
04-12-95	110,000	990	21,000	28,000	2,800	14,000	--
07-14-95	120,000	5,000	20,000	25,000	3,200	15,000	--
10-17-95	190,000	4,000	15,000	26,000	4,900	23,000	--
01-12-96	32,000	2,600	10,000	8,000	1,100	4,800	<2.0
EPA METHOD	5030/ 8015M	3550/ 8015M	8020	8020	8020	8020	8020

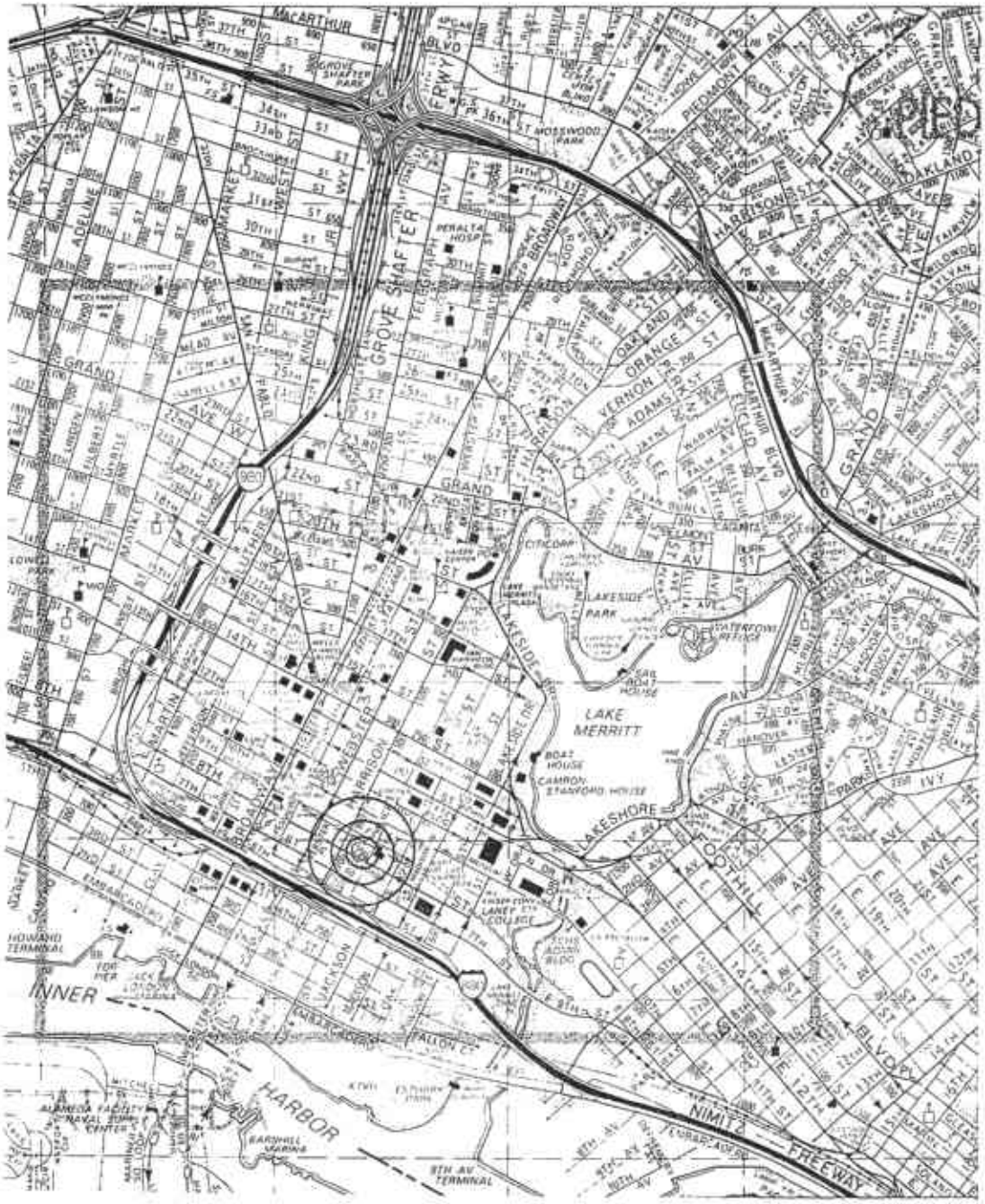
TABLE TWO

Summary of Chemical Analysis of **GROUNDWATER** Samples
Lead, Oil & Grease and Volatile Organic Compounds
All results are in **parts per billion**

Compound	MW-1	MW-2
1-30-95		
Dissolved Lead	<0.04	<0.04
Total Oil and Grease	<500	19,000
Hydrocarbon Oil and Grease	<500	17,000
Chloroform	0.5	<30
Tetrachloroethene (PCE)	8	<30
Other VOCs	<0.5-2	<30-100
4-12-95		
Dissolved Lead	<0.04	<0.04
Hydrocarbon Oil and Grease	<500	22,000
Tetrachloroethene (PCE)	6	0.9
1,2-Dichloroethane	<0.5	43
Other VOCs	<0.5-2	<30-100

TABLE TWO (Continued)
Summary of Chemical Analysis of GROUNDWATER Samples
Lead, Oil & Grease and Volatile Organic Compounds
All results are in parts per billion

Compound	MW-1	MW-2
7-14-95		
Total Oil and Grease	<500	25,000
Hydrocarbon Oil and Grease	<500	23,000
1,2-Dichloroethane	<0.5	35
Tetrachloroethene (PCE)	4	<5
Other VOCs	<0.5-2	<5-20
10-17-95		
Total Oil and Grease	<1,000	15,000
Hydrocarbon Oil and Grease	<1,000	13,000
Tetrachloroethene (PCE)	5	<0.5
Trichloroethene (TCE)	<0.5	5
01-12-96		
Hydrocarbon Oil and Grease	<5,000	<5,000

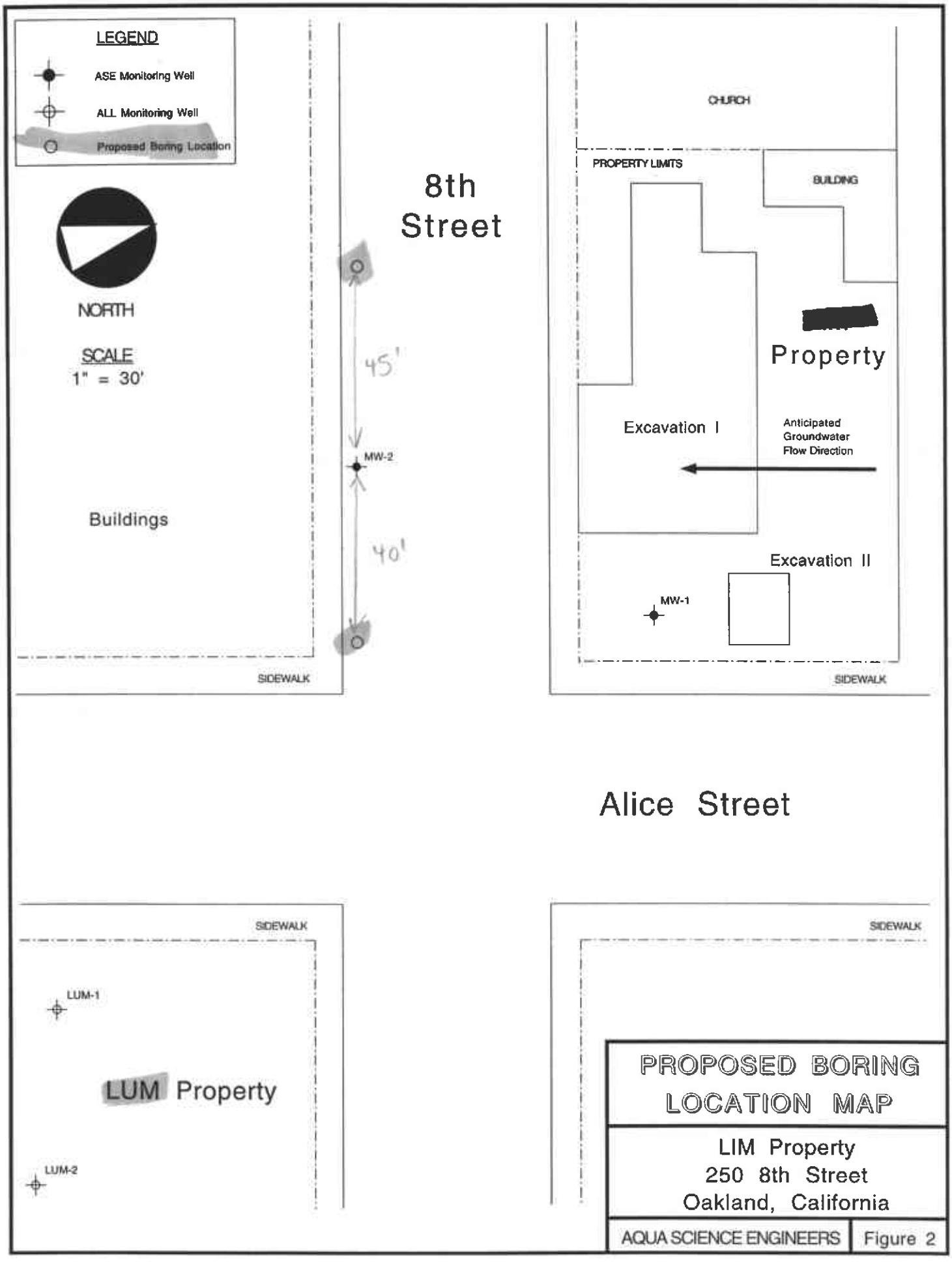


SITE LOCATION MAP

Lim Property
250 8th Street
Oakland, California

Aqua Science Engineers | Figure 1

BASE: The Thomas Guide, Alameda and Contra Costa Counties Street Guide & Directory, 1990



PROPOSED BORING LOCATION MAP

LIM Property
250 8th Street
Oakland, California

AQUA SCIENCE ENGINEERS | Figure 2

APPENDIX A

Alameda County Health Care Services Agency Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700

December 5, 1995
STID 1585

Alice, Edward, and May Lim
c/o Russell Lim
601 Brush St.
Oakland CA 94607

RE: former Exxon station, 250-8th St., Oakland CA 94607

Dear Lim Family,

Since my last letter to you, dated 11/9/94, the following documents have been received:

1) 2/17/95 "Report of Soil and Groundwater Assessment," by Aqua Science Engineers (ASE),

2) 5/1/95 "Quarterly Groundwater Monitoring Report," by ASE

3) 8/7/95 "Quarterly Groundwater Monitoring Report," by ASE

4) 11/2/95 "Quarterly Groundwater Monitoring Report," by ASE

It appears that dissolved concentrations of contaminants in MW-2 have not decreased over four quarters of sampling. In fact, TPH-gasoline has actually increased from 88,000 ppb to 190,000 ppb over four quarters. Benzene has remained fairly consistent, with a slight decrease, from 19,000 ppb to 15,000 ppb. TPH-diesel has increased from 800 ppb to 4,000 ppb, while hydrocarbon oil and grease has remained fairly consistent. MW-1 has fairly low concentrations of contaminants.

The MW-2 concentrations warrant further investigation. Although the commercial district located directly south of MW-2 may prevent investigation to the south, it would be possible to investigate the areas immediately west and east of MW-2.

Therefore, **you are requested to perform a Soil and Water Investigation (SWI),** as per Sect. 2724 of Chapter 16, Division 3, Title 23, California Code of Regulations. Rapid site assessment methods (i.e. cone penetrometer testing, geoprobe, hydropunch, etc.) are suggested to qualitatively assess impacts and to define the extent of the groundwater contaminant plume, as a first step of the SWI. Permanent wells may be required; however, the results of an investigation done with rapid site assessment methods will be evaluated before further work is requested. **Please submit a workplan for the SWI within 60 days, or by February 5, 1996.**

In an effort to perform the SWI in a cost-effective manner, you are encouraged to work cooperatively with your neighbor, Vic Lum, who is also being requested to perform a SWI.

In addition, quarterly groundwater elevation (GWE) measurements must be taken. Since you were allowed to install 2 wells instead of 3, you must work with Vic Lum in order to take GWE measurements from his wells at the same time. The last GWE measurements were conducted on 7/21/95; it is my understanding that this was a cooperative effort. October was apparently missed. **Therefore, the next GWE measurements are due**.

Lastly, it has been noted that halogenated VOCs have been sampled for four quarters. The concentrations are mostly below the MCLs; however, 1,2-DCA continues to be elevated at a noticeable level. **Therefore, you may decrease the sampling frequency for HVOCs from quarterly to annually.**

If you have any questions, please contact me at 510-567-6761.

Sincerely,

Jennifer Eberle
Hazardous Materials Specialist

cc: Robert Kitay, Aqua Science Engineers, 2411 Old Crow Canyon Rd., #4, San Ramon CA 94583
Acting Chief/file

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