AC Transit
Alameda-Contra Costa Transit District

1600 Franklin Street, Oakland, California 94612 ☐ (415) 891-4777

June 14, 1989

State of California
Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, California 94607

Attention: Mr. Hossain Kazemi

Dear Mr. Kazemi:

Subject: AC Transit Facilities Improvement Program
Division 2 - Emeryville
Groundwater Testing Program

In the process of investigating the groundwater situation relative to the recent diesel fuel discharge at our Emeryville facility, we have been notified that test results of some of the groundwater samples indicate the presence of light hydrocarbon compounds (TLH) not accountable from the diesel fuel discharge. The source of this TLH may be located in the area near the old fuel island and/or maintenance buildings. This source of TLH compounds was the cause of a soils characterization study and remedial action program that was completed late last year. We believe a more extensive study is required to establish the extent of these TLH compounds.

The attached report defines the problem relative to the occurrence of TLH compounds in groundwater, as we now know it. This report also notes the program the District is in the process of implementing to assess the extent of migration and to aid in the assessment of the need for remedial action.

This program includes a groundwater probe survey, to be completed approximately August 1, 1989, to determine the extent of identified TLH occurrences. Results of the laboratory analyses will be used to determine the number and location of the groundwater monitoring wells that will then be constructed.

Upon completion of the above groundwater testing program, a groundwater site characterization report addressing the occurrence of TLH compounds in groundwater will be prepared. It is anticipated that this report will be available for RWQCB review by the end of October 1989. However, while gathering field information, we

propose to schedule meetings with your representative(s) at appropriate times including the completion and review of the groundwater probe laboratory test results.

I can be reached at (415) 577-8803 should you have any questions or comments on our proposed investigative program.

Very truly yours,

AC TRANSIT DISTRICT

George Skezas
Director of Maintenance and Construction

lad

Attach.

cc: Alameda County Health Care Services w/attach.
Division of Hazardous Materials
Department of Environmental Health

Kaiser Engineers w/attach.

INTRODUCTION

The purpose of this document is to summarize and report data available to date concerning the detection of gasoline related hydrocarbons in the shallow groundwater at the AC Transit facility in Emeryville. It also outlines an investigative program that is to be implemented at the site which will result in a site characterization report that will address this subject.

SITE HISTORY

Reconstruction work was undertaken at the site in October 1983 which included the phased construction and demolition of various structures. The structures relevant to this document, i.e. the old fuel island and old maintenance building, are shown on Figure 1 (the same new structures are also shown).

During November 1986, five underground tanks were removed from the old tank farm. A soil remediation program was executed involving soil sampling and eventual off-haul of Class I soils. The program was coordinated with the Alameda County Health Agency (ACHA), to whom the results were reported. Following soil excavation, one (downgradient) groundwater monitoring well was installed (coded W4 on Figure 1). In a letter dated March 5, 1987 ACHA notified AC Transit that they considered the remediation plan (for the tank removal from the old tank farm) complete.

On October 15, 1987 two tanks were removed from a location near the old maintenance building. Analyses of soil samples from beneath the tank vault showed the soil material to be Class I (>1000 mg/kg TPH). AC Transit notified the RWQCB of the detection of hydrocarbon contamination, and site characterization and remediation activities were undertaken. These included the installation of three groundwater monitoring wells (coded W1, W2 and W3 on Figure 1) and a very comprehensive characterization of the soils that underlied the western part of the old maintenance building. This characterization resulted in the excavation and off-hauling of soils contaminated to levels requiring such disposal.

The soil characterization is described in detail in a report prepared by Kaiser Engineers, "Characterization and Conceptual Remedial Plan for Soil at a Portion of AC Transit's Emeryville Facility" dated July 1988, which was submitted by AC Transit to ACHA with copies sent to the RWQCB and DOHS.

Results of groundwater sample analyses from wells W1, W2, W3 and W4 through April, 1988 are presented in Table 1. Certified analytical reports (CARs) for these analyses appear in Attachment 1. With the exception of the analyses from well W2, constructed adjacent to the previously removed tanks, no fuel related compounds were detected in any of the wells.

In addition, Table 1 also presents analytical results of water samples from four exploratory soil pits, located as shown on Figure

1 (coded P1-P4). A very thin product sheen was observed on the water in these pits.

RECENT DIESEL DISCHARGE

On April 12, 1989 a leak was detected in a diesel fuel supply line at the existing fuel island. Some of the discharged diesel migrated off-site through the storm drain system. Cleanup operations included off-site work and extensive on-site pumping of free and dissolved diesel product from the lined tank farm fill material and the on-site storm drain system.

In addition, 17 boreholes were drilled at the site to aid in determining the extent of free and dissolved diesel product in the subsurface. Ten of these were converted to monitoring wells (coded MW1-MW10 on Figure 1) and 3 to extraction wells (coded E1-E3, and located inside the lined tank farm).

A comprehensive site characterization report addressing this diesel discharge is being prepared, and is expected to be submitted to the RWQCB on, or around, June 30, 1989.

Chemical analyses of groundwater samples obtained from a number of these newly constructed monitoring wells, taken with regard to the diesel fuel discharge, showed detectable levels of gasoline related hydrocarbons, usually not present in diesel fuel. Results of these analyses are presented in Table 2; CARs appear in Attachment 1.

VERIFICATION SAMPLING

With the dual purpose of updating data and verifying previously obtained results, verification groundwater samples were taken from wells W1, W2, W4, MW6, MW7, and MW10. These wells were chosen because of location and/or previous detection of gasoline related compounds. Results are presented in Table 3, the CARs appear in Attachment 1.

PROPOSED WORK PLAN

As a result of the detection of gasoline related compounds in the groundwater at various locations at the site, AC Transit is implementing a groundwater characterization study to determine extent of such compounds in the shallow groundwater beneath the site.

This will include the following proposed action:

1. A groundwater probe survey, using an on-site mobile laboratory to analyze groundwater samples obtained with a probe temporarily inserted to the water table. This survey will allow obtaining initial groundwater chemistry data necessary to delineate possible gasoline related plumes.
2. Installation of groundwater monitoring wells. Locations of these wells will be based on the results of the groundwater probe survey. The purpose of installing

these wells is two-fold:

a. Verify groundwater chemistry results obtained through the probe survey, and

b. Obtain lithologic data for the subsurface to be used in assessment of site hydrogeology.

Upon completion of the phased work described above, a ground- water site characterization report addressing the TLH situation will be prepared and submitted to the appropriate regulatory agencies.

47TH ST.

SAN PABLO AVE.

WASH BLDG.

SERVICE BLDG.

FUEL ISLAND

PARKING STRUCTURE

TRANSPORTATION BUILDING

TIRE BLDG

OIL INTERCEPTOR

MAINTENANCE BUILDING

DOYLE ST

BERKELEY FARMS

PROPERTY LINE

SD

B1/MW2

B2/E3

E1

B4/E2

B3

B7/MW3

B6/MW4

B8

B5

B9

MW1

MW5

MW6

W4

MW7

MW8

MW9

MW10

W3

W2

W1

P1

P2

P3

P4

removed tanks (5)

removed tanks (2)

DEMOLISHED FUEL ISLAND

DEMOLISHED BUS WASH

DEMOLISHED MAINTENANCE BUILDING

UNDERGROUND FUEL STORAGE TANKS

SOUND WALL

SOUND WALL AT PROPERTY LINE

45TH ST.

LEGEND

B5 BOREHOLE

MW1 MONITORING WELL

E1 PUMPING WELL

P3 SOIL PIT

SD STORM DRAIN

30 0 30 60 90 120

approximate scale (ft.)

FIGURE 1

AC TRANSIT EMERYVILLE

Table 1: ACT Emeryville - Groundwater Sample Analyses *

Date	Location	TFH	B	T	X	Oil & Grease
9-21-87	W1	<1.0	<1	<1		<5
9-21-87	W2	4.4	71	16	130	<5
9-21-87	W3	<1.0	<1	<1		<5
3-28-88	W1	<1.0	<0.5	<0.5	<0.5	<5
4-06-88	W2	9.2	91	42	100	<5
4-15-88	W4	<1.0	<50	<50	<50	<5
4-15-88	Pit 1	2.9	690	<50	<50	<5
4-15-88	Pit 2	11.0	650	120	120	<5
4-15-88	Pit 3	14.0	560	260	200	<5
4-15-88	Pit 4	3.0	<50	<50	<50	<5

* units: TFH, O&G = mg/L
BTX = ug/L

NOTE: A thin film of free product was observed on the groundwater in the four pits sampled.

Table 2: ACT Emeryville - Groundwater Sample Analyses *

Well	Date	TPH-G	B	T	E	X
MW5	5-2-89	1.9	<0.3	2.3	2.0	14.0
MW6	5-2-89	5000	<1500	3800	6100	16000
MW7	5-2-89	1.3	16	0.5	3.2	1.2
MW8	5-2-89	0.8	<0.3	<0.3	1.7	0.7
MW9	5-2-89	<0.05	<0.3	<0.3	<0.3	<0.3
MW10	5-2-89	12	4.0	7.6	17	68

* units: TPH-G = mg/L
BTEX = ug/L

Table 3: ACT Emeryville - Verification Sample Analyses *

Well	Date	TPH-G	B	T	E	X
W1	6-5-89	<0.5	<0.3	<0.3	<0.3	<0.3
W2	6-5-89	11	30	21	120	60
W4	6-5-89	<0.5	3.3	<0.3	1.3	1.0
MW6	6-5-89	820	83	580	880	1800
MW7	6-5-89	0.6	18	0.6	2.4	1.1
MW10	6-5-89	8.0	5.4	6.5	16	51

* units: TPH-G = mg/L
BTEX = ug/L

(100% premium)

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-09-567

Received: 21 SEP 87
Reported: 30 SEP 87

Ms. Laura Hofman
Kaiser Engineers Inc.
1800 Harrison Street
Oakland, California 94623-2321

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
		21 SEP 87
09-567-1	W-1	21 SEP 87
09-567-2	W-2	21 SEP 87
09-567-3	W-3	

PARAMETER	09-567-1	09-567-2	09-567-3
Oil & Grease by Infrared, mg/L	<5	<5	<5
Total Fuel Hydrocarbons, mg/L	<1.0	4.4	<1.0

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
		21 SEP 87
09-567-1	W-1	21 SEP 87
09-567-2	W-2	21 SEP 87
09-567-3	W-3	

PARAMETER	09-567-1	09-567-2	09-567-3
Purgeable Priority Pollutants	09.23.87	09.23.87	09.23.87
Extraction	<1	<1	<1
1,1,1-Trichloroethane, ug/L	<1	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethylene, ug/L	<1	<1	<1
1,2-Dichloroethane, ug/L	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<1	<1
1,3-Dichloropropene, ug/L	<1	<1	<1
2-Chloroethylvinylether, ug/L	<10	<10	<10
Acrolein, ug/L	<10	<10	<10
Acrylonitrile, ug/L	<1	<1	<1
Bromodichloromethane, ug/L	<1	<1	<1
Bromomethane, ug/L	<1	71	<1
Benzene, ug/L	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1
Chloroethane, ug/L	<1	<1	<1
Bromoform, ug/L	<1	<1	<1
Chloroform, ug/L	<1	<1	<1
Chloromethane, ug/L	<1	<1	<1
Dibromochloromethane, ug/L			

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Reported: 30 SEP 87

Ms. Laura Hofman
Kaiser Engineers Inc.
1800 Harrison Street
Oakland, California 94623-2321

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
09-567-1	W-1	21 SEP 87
09-567-2	W-2	21 SEP 87
09-567-3	W-3	21 SEP 87

PARAMETER	09-567-1	09-567-2	09-567-3
Ethylbenzene, ug/L	<1	<1	<1
Methylene chloride, ug/L	<1	<1	<1
Tetrachloroethylene, ug/L	<1	<1	<1
Trichloroethylene, ug/L	<1	<1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1
Toluene, ug/L	<1	16	<1
Vinyl chloride, ug/L	<1	<1	<1
trans-1,2-Dichloroethylene, ug/L	<1	<1	<1
trans-1,3-Dichloropropene, ug/L			
Semi-Quantified Results **			
C4H10 Hydrocarbon, ug/L	---	500	---
C5H10 Hydrocarbon, ug/L	---	200	---
C6H10 Hydrocarbon, ug/L	---	300	---
C6H12 Hydrocarbon, ug/L	---	1000	---
C7H12 Hydrocarbon, ug/L	---	400	---
C7H14 Hydrocarbon, ug/L	---	900	---
Total Xylene Isomers, ug/L	---	130	---

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

D. A. McLean, Laboratory Director

Invoice E20893-250(4/14)
No premium

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-03-659

Received: 28 MAR 88
Reported: 13 APR 88

Ms. Laura Hofman
Kaiser Engineers Inc.
1800 Harrison Street
Oakland, California 94623-2321

Project: 80097

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, LIQUID SAMPLES	DATE SAMPLED
03-659-1	ACT-E-W1	28 MAR 88

PARAMETER	03-659-1
Oil & Grease by Infrared, mg/L	<5
Total Fuel Hydrocarbons, mg/L	<1.0
EPA Method 602	
Date Extracted	04.12.88
1,2-Dichlorobenzene, ug/L	<0.5
1,3-Dichlorobenzene, ug/L	<0.5
1,4-Dichlorobenzene, ug/L	<0.5
Benzene, ug/L	<0.5
Chlorobenzene, ug/L	<0.5
Ethylbenzene, ug/L	<0.5
Toluene, ug/L	<0.5
Total Xylene Isomers, ug/L	<0.5

Linda Brackon
Steve Fisher, Laboratory Director

Invoice E21023-250(5/4)
No premium

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-04-118

Received: 06 APR 88
Reported: 22 APR 88

Ms. Laura Hofman
Kaiser Engineers Inc.
1800 Harrison Street
Oakland, California 94623-2321

Project: 80097-825

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, AQUEOUS SAMPLES	DATE SAMPLED
04-118-1	ACT-EW2	06 APR 88
PARAMETER	04-118-1	
Oil & Grease by Infrared, mg/L	<5	
Total Fuel Hydrocarbons, mg/L	9.2	
EPA Method 602		
Date Extracted	04.21.88	
1,2-Dichlorobenzene, ug/L	<0.5	
1,3-Dichlorobenzene, ug/L	<0.5	
1,4-Dichlorobenzene, ug/L	<0.5	
Benzene, ug/L	91	
Chlorobenzene, ug/L	<0.5	
Ethylbenzene, ug/L	35	
Toluene, ug/L	42	
Total Xylene Isomers, ug/L	100	

Linda Black for
Steve Fisher, Laboratory Director

RECEIVED-KAISER ENGINEERS
TRANSPORTATION DIV.

MAY 16 1988

Invoice E21142-875 (4/29)
No premium

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-04-360

Received: 15 APR 88
Reported: 29 APR 88

Ms. Laura Hofman
Kaiser Engineers Inc.
1800 Harrison Street
Oakland, California 94623-2321

Project: 80097-825

WATER SAMPLES

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, AQUEOUS SAMPLES	DATE SAMPLED
04-360-1	ACT-E-A8-2.4-W	15 APR 88
04-360-2	ACT-E-B.5-2.7-W	15 APR 88
04-360-3	ACT-E G.4-1.5-W	15 APR 88
04-360-4	ACT-E-W84	15 APR 88
04-360-5	ACT-E-F.5-2.6W	15 APR 88

PARAMETER	04-360-1	04-360-2	04-360-3	04-360-4	04-360-5
Oil & Grease by Infrared, mg/L	<5	<5	<5	<5	<5
Benzene,Toluene,Xylene Isomers					
Benzene, mg/L	0.69	0.65	0.56	<0.05	<0.05
Toluene, mg/L	<0.05	0.12	0.26	<0.05	<0.05
Total Xylene Isomers, mg/L	<0.05	0.12	0.20	<0.05	<0.05
Total Fuel Hydrocarbons, mg/L	2.9	11	14	<1.0	3.0

Steve Fisher, Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 30838
CLIENT: KAISER ENGINEERS
CLIENT JOB NO.: 80037-B18

DATE RECEIVED: 05/02/89
DATE REPORTED: 05/09/89

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015
(Diesel by extraction, Gasoline by Purge and Trap)

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range	Diesel Range
1	MW-5; 5/2/89	1.9	ND<1
2	MW-6; 5/2/89	5000	47
3	MW-7; 5/2/89	1.3	ND<1
4	MW-8; 5/2/89	0.8	ND<1
5	MW-9; 5/2/89	ND<0.05	ND<1
6	MW-10; 5/2/89	12	1.4

mg/L - parts per million (ppm)

Minimum Detection Limit for Gasoline in Water: 0.05 mg/L
Minimum Detection Limit for Diesel in Water: 1 mg/L

QAQC Summary:

Daily Standard run at 200mg/L: RPD Gasoline = 4.
RPD Diesel = 5.

MS/MSD Average Recovery Gasoline = 98%: Duplicate RPD = 1.

MS/MSD Average Recovery Diesel = 68% Duplicate RPD = 2.

Les Partridge, Ph.D.
Laboratory Manager

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SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 50835
CLIENT: KAISER ENGINEERS
CLIENT JOB NO.: 80097-828

DATE RECEIVED: 05/02/89
DATE REPORTED: 05/09/89

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration (ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-5; 5/2/89	ND<0.3	2.3	2.0	14
2	MW-6; 5/2/89	ND<1500	3800	6100	16000
3	MW-7; 5/2/89	16	0.5	3.2	1.2
4	MW-8; 5/2/89	ND<0.3	ND<0.3	1.7	0.7
5	MW-9; 5/2/89	ND<0.3	ND<0.3	ND<0.3	ND<0.3
6	MW-10; 5/2/89	4.0	7.6	17	68

ug/L - parts per billion (ppb)

Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15.
MS/MSD Average Recovery = 99%: Duplicate RPD = <2.

Les Partridge, Ph.D.

Laboratory Manager

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SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 50932
CLIENT: KAISER ENGINEERS
CLIENT JOB NO.: 80097-828

DATE RECEIVED: 06/06/89
DATE REPORTED: 06/11/89

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	W1	ND<0.5
2	W2	11
3	W4	ND<0.5
4	MW6	820
5	MW7	0.6
6	MW10	8.0

mg/L - parts per million (ppm)

Minimum Detection Limit for Gasoline in Water: 0.5 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = 2
MS/MSD Average Recovery = 94%: Duplicate RPD = 4

Richard Srna, Ph.D.
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE D • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 50932
CLIENT: KAISER ENGINEERS
CLIENT JOB NO.: 80097-828

DATE RECEIVED: 06/06/89
DATE REPORTED: 06/11/89

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
		ND<0.3	ND<0.3	ND<0.3	ND<0.3
1	W1	30	21	120	60
2	W2	3.3	ND<0.3	1.3	1.0
3	W4	83	580	880	1800
4	MW6	18	0.6	2.4	1.1
5	MW7	5.4	6.5	16	51
6	MW10				

ug/L - parts per billion (ppb)

Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 104 %: Duplicate RPD = 4

Richard Srna, Ph.D.
Laboratory Manager