



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ARCO
DRAFT

(LHM)

-KAC
6-27-88

PETER JOHNSON'S
COPY - RWQCB

PETER - LARRY SETO
OF ALAMEDA Co.
ENVIRON. HEALTH DEPT.
WILL CONTACT YOU
REGARDING THIS
MATTER. THANK YOU
- KYLE CHRISTIE

June 27, 1988
Project 330-06.03

Alameda County Department of Environmental Health
Hazardous Material Division
80 Swan Way Suite 200
Oakland, California 94621

CALIFORNIA REGIONAL WATER

Attn. Mr. Larry Seto

JUN 27 1988

Subject: ARCO Station No. 608
17601 Hesperian Boulevard
San Lorenzo, California

QUALITY CONTROL BOARD

Gentlemen:

This letter describes a corrective action work plan for the subject station. Pacific Environmental Group, Inc. (PACIFIC) has developed this corrective action work plan based on soil and groundwater conditions at this site. Though a detailed corrective action work plan will be submitted in the near future, the intent of the enclosed plan is to gain authorization from Alameda County Department of Environmental Health to continue tank installation activities at the station.

BACKGROUND

Groundwater and soil conditions have been documented in separate investigations by Applied Geosystems and EMCON Associates (See Figure 1). The native material at the site consists predominately of moderately stiff to stiff silt. A medium dense sand was encountered in several bore holes (B-1, B-2 and B-3) between 8 feet and 12 feet in depth. Groundwater is at approximately 11 feet beneath ground surface and flows to the southwest. These investigations identified the presence of floating product and/or dissolved hydrocarbon constituents in the groundwater in all five of the existing groundwater wells at the site. Groundwater and soil conditions from Applied Geosystems' March, 1988 investigation are summarized on Table 1.

Additional soil and groundwater data has been collected by PACIFIC during the recent fuel and oil tank excavations. These excavations commenced on June 14, 1988. PACIFIC collected soil samples from tank sidewalls as well as two samples beneath each tank (one each end). To enable proper disposal of excavated soils, additional soil samples were collected and analyzed. The results of these analyses and measurements by HNU portable organic vapor analyzer are shown on Table 2 and the location map Figure 2.

Kyle Christie
Environmental
Engineer

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CORRECTIVE ACTION WORK PLAN

The objective of a corrective action work plan for the site will be to remediate existing soil and groundwater conditions to within remedial guidelines for the site which will be agreed upon between ARCO, the San Francisco Regional Water Quality Control Board and Alameda County Health Department. Based on current site conditions, it is evident that additional remedial investigation will be required prior to the design of a complete remedial system for the site.

ARCO will propose will be undertaken at the site to provide sufficient data for the design and installation of a remedial action system:

- Installation of sufficient shallow groundwater monitoring wells to define the lateral extent of hydrocarbon contamination. Location of these monitoring wells may be facilitated through shallow soil vapor mapping.
- Further characterization of the extent of petroleum hydrocarbons in the unsaturated soil near the former tank complex.
- Additional geologic or hydrogeologic investigation to enable the design of a remedial action system for the site.

A remedial action system will be designed and installed to control the migration of petroleum hydrocarbons from the site as well as reduce their concentrations to acceptable levels. The remedial system for the site may incorporate the following technologies:

- To remove petroleum hydrocarbons in the groundwater at the tank complex, installation of a groundwater extraction pump within the gravel backfill of the west pit (former tank location) will be considered. At this location relatively high petroleum hydrocarbons relative to the rest of the site were encountered.
- To control petroleum hydrocarbons in the groundwater beyond the tank complex, installation of additional on-site and possibly off-site groundwater extraction pumps will be evaluated. The location of these groundwater extraction pumps will be based on the distribution of petroleum hydrocarbons and the size of the capture zone created by a given extraction well.
- To remove gasoline petroleum hydrocarbons in the unsaturated soil, in-situ soil ventilation will be considered. Ventilation points would be located based on results of shallow soil gas mapping.

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June 27, 1988
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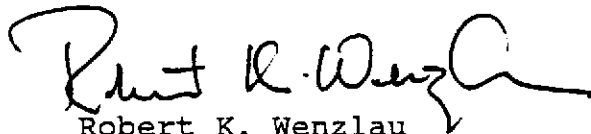
- Groundwater would be treated to remove both free petroleum product and dissolved petroleum hydrocarbons to within discharge standards. Air discharges from either the groundwater treatment system or the soil ventilation system would be within guidelines acceptable to the Bay Area Air Quality Management District.

A formalized work plan will be submitted to Alameda County Health Department within 45 days. This work plan will identify proposed activities and schedule for a remedial investigation at the site.

If you have any questions, please call Mr. Kyle Christie at ARCO at (415)-571-2434.

Sincerely,

PACIFIC ENVIRONMENTAL GROUP, INC.



Robert K. Wenzlau
Senior Engineer

RKW/rkw

enclosures



TABLE 1
RESULTS OF ANALYSES OF SOIL AND WATER SAMPLES
ARCO Station No. 608
17601 Hesperian Boulevard
San Lorenzo, California

	B	T	E	X	TVH	TEH	TOG
SOIL							
	(0.200)	(0.200)	(0.200)	(0.200)	(5)	(10)	(30)
S-11-B1	<0.200	<0.200	<0.200	<0.200	<5	<10	<30
S-10-B2	0.600	<0.200	<0.200	<0.200	<5		
S-10-B3	0.400	<0.200	<0.200	<0.200	<5		
S-5-B4	0.800	0.500	4.100	1.200	10		
S-10-B4	0.400	0.200	1.000	1.000	5		
WATER							
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.05)	(10)
W-11-MW1	0.020	0.050	0.010	0.080	0.300	0.20	<10
W-11-MW2	0.804	0.115	0.168	0.166	3.300		
W-11-MW3	0.020	0.020	0.080	0.060	1.800		
W-11-MW4	2.700	7.900	0.850	5.200	62.000		
W-11-MW5	4.00*	2.70*	3.80*	5.50*	31.000		

Results are in parts per million (ppm)
 BTEX = benzene, toluene, ethylbenzene,
 and total xylene isomers
 TVH = total volatile hydrocarbons
 TEH = total extractable hydrocarbons
 TOG = total oil and grease
 (0.001) = detection limit in ppm
 * = detection limit of 0.05 ppm
 Sample Designation = S-10-B1

W = water sample
 < = Result below detection limit for the selected method of analysis.

From Applied Geosystems,
March 9, 1988 report.

TABLE 2
SUMMARY OF SOIL AND GROUNDWATER DATA
COLLECTED DURING TANK REMOVAL ACTIVITIES

ARCO Station #608
17601 Hesperian Blvd.
San Lorenzo, California

<u>Sample ID</u>	<u>Depth (feet)</u>	<u>Analytical Status</u>	<u>Gas</u>	<u>B</u>	<u>T</u>	<u>X</u>	<u>HNU</u>
SOIL SAMPLES FOR AERATION (ppm):							
A-1	2 in Spoils	Complete	400	ND	6	70	500
A-2	2 in Spoils	Hold					500
A-3	2 in Spoils	Hold					180
A-4	2 in Spoils	Hold					180
A-5	2 in Spoils	Hold					400
A-6	2 in Spoils	Complete	110	ND	ND	20	420
A-7	2 in Spoils	Hold					250
A-8	2 in Spoils	Hold					220
A-9	2 in Spoils	Complete	500	2	30	100	480
A-10	2 in Spoils	Hold					390
A-11	2 in Spoils	Hold					350
A-12	2 in Spoils	Hold					360

SOIL SAMPLES FOR DISPOSAL OF CLEAN FILL (ppm):

C1-A (1)	} 2 in Spoils	Complete	19	0.12	0.2	2.0	NA
C1-B (1)							
C1-C (1)							
C1-D (1)							
C1-E (1)							
C2-A (2)	} 2 in Spoils	Complete	5	.17	.2	.5	NA
C2-B (2)							
C2-C (2)							
C2-D (2)							
C2-E (2)							

SOIL SAMPLES FROM BENEATH TANKS (ppm):

E1-N	15	Complete	60	0.2	ND	2	(3)
E1-S	15	Complete	2100	36	130	400	(3)
E2-N	15.5	Complete	330	1.6	6	48	(3)
E2-S	14.5	Complete	370	1.3	11	45	(3)
E3-N	13	Complete	5	.51	.1	.4	(3)
E3-S	15	Complete	2800	6	23	120	(3)
W4-NE	14	Complete	140	.8	2	10	(3)
W4-NE2	17	Complete	ND	ND	ND	ND	(3)
W4-SW	15	Complete	500	3.5	6	87	(3)
W05-NE	9	Complete	NA	2.1	14.	37	NA
W05-SW	9	Complete	NA	1.7	13.	45	NA

TABLE 2 - (continued)

<u>Sample ID</u>	<u>Depth (feet)</u>	<u>Analytical Status</u>	<u>Gas</u>	<u>B</u>	<u>T</u>	<u>X</u>	<u>HNU</u>
SIDEWALL SOIL SAMPLES:							
ESW-N	8	Complete	60	0.10	ND	1.3	8
ESW-S	8	Complete	350	1.2	5.	50.	25
ESW-E	8	Complete	ND	ND	ND	ND	3
ESW-W	8	Complete	9	0.12	ND	0.4	4
C-ESW-N	8	Complete	ND	.07	ND	ND	NA
W4SW-NW	8	Pending	ND	ND	ND	ND	NA
W4SW-NW2	12.5	Pending	680	ND	ND	89	NA
W4SW-NW3	16.5	Pending	ND	ND	ND	ND	NA

ADDITIONAL
ANALYSES

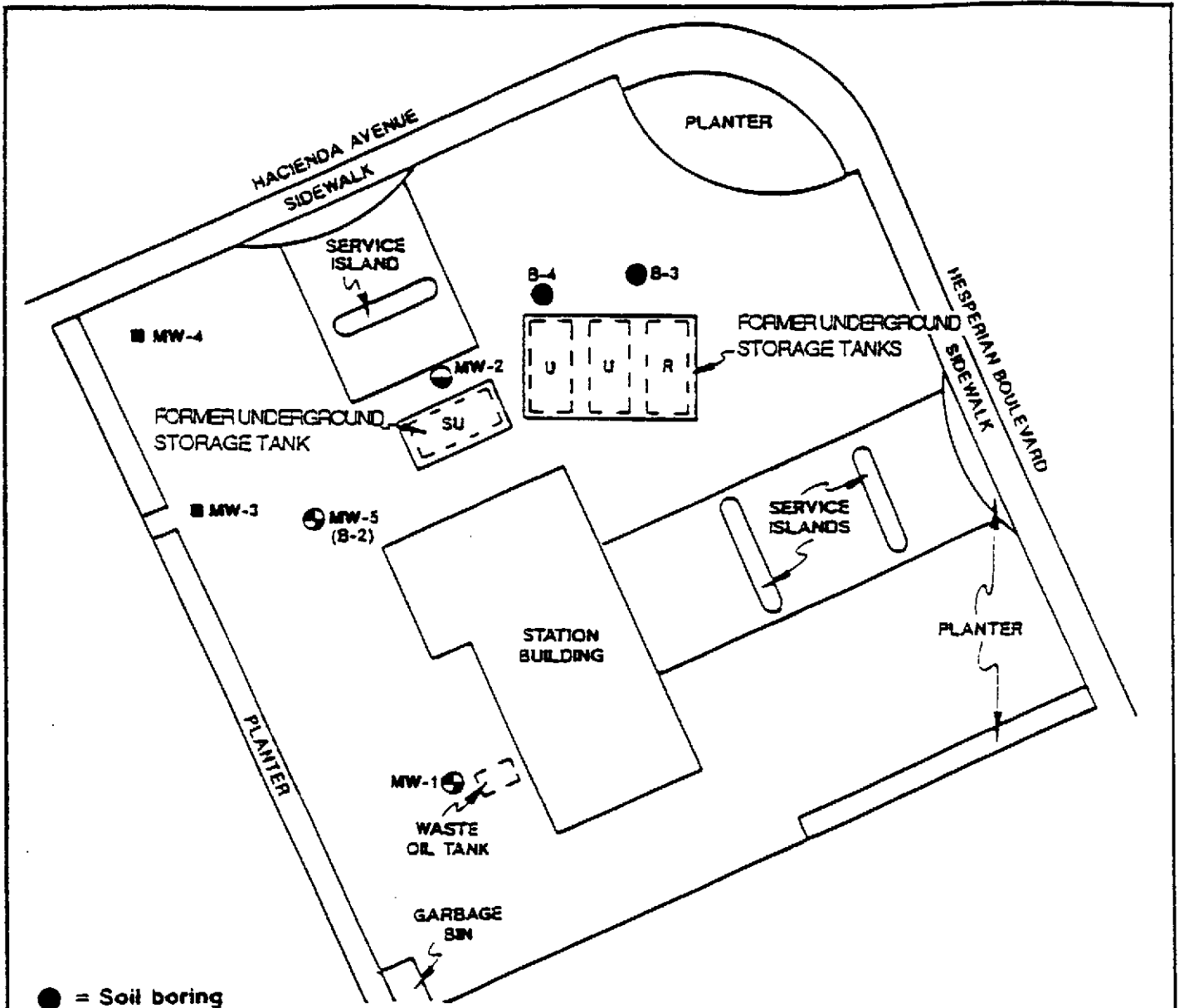
<u>Sample ID</u>	<u>Depth (feet)</u>	<u>Analytical Status</u>	<u>PCB</u>	<u>Oil & Grease</u>	<u>HNU</u>
W05-NE	9	Complete	ND@0.1ppm	11,000 ppm	NA
W05-SW	9	Complete	ND@0.1ppm	5,200 ppm	NA

WATERS:

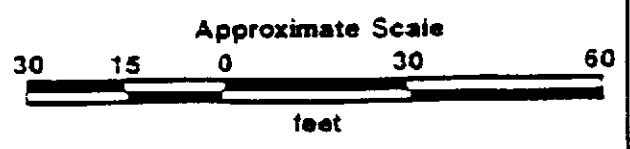
<u>Sample ID</u>	<u>Depth (feet)</u>	<u>Analytical Status</u>	<u>Gas</u>	<u>B</u>	<u>T</u>	<u>X</u>	<u>HNU</u>
E3-N	NA	Complete	8200	440	1100	2300	NA
E2-S	NA	Complete	15000	1400	2300	4700	NA
E1-S	NA	Complete	22000	1900	3900	4900	NA

Notes: All soil results shown in Parts Per Million (ppm).
Water results in Parts Per Billion (ppb).

- (1) Analyzed as Composite Soil Sample
- (2) Analyzed as Composite Soil Sample
- (3) HNU data not available because of water saturated sample




- = Soil boring
(Applied GeoSystems, January 1988)
- ⊙ = Monitoring well
(Applied GeoSystems, January 1988)
- ⊖ = Monitoring well
(Emcon Associates, November 1985)
- = Monitoring well (unknown origin)
- R = Regular gasoline
- U = Unleaded gasoline
- SU = Super Unleaded gasoline



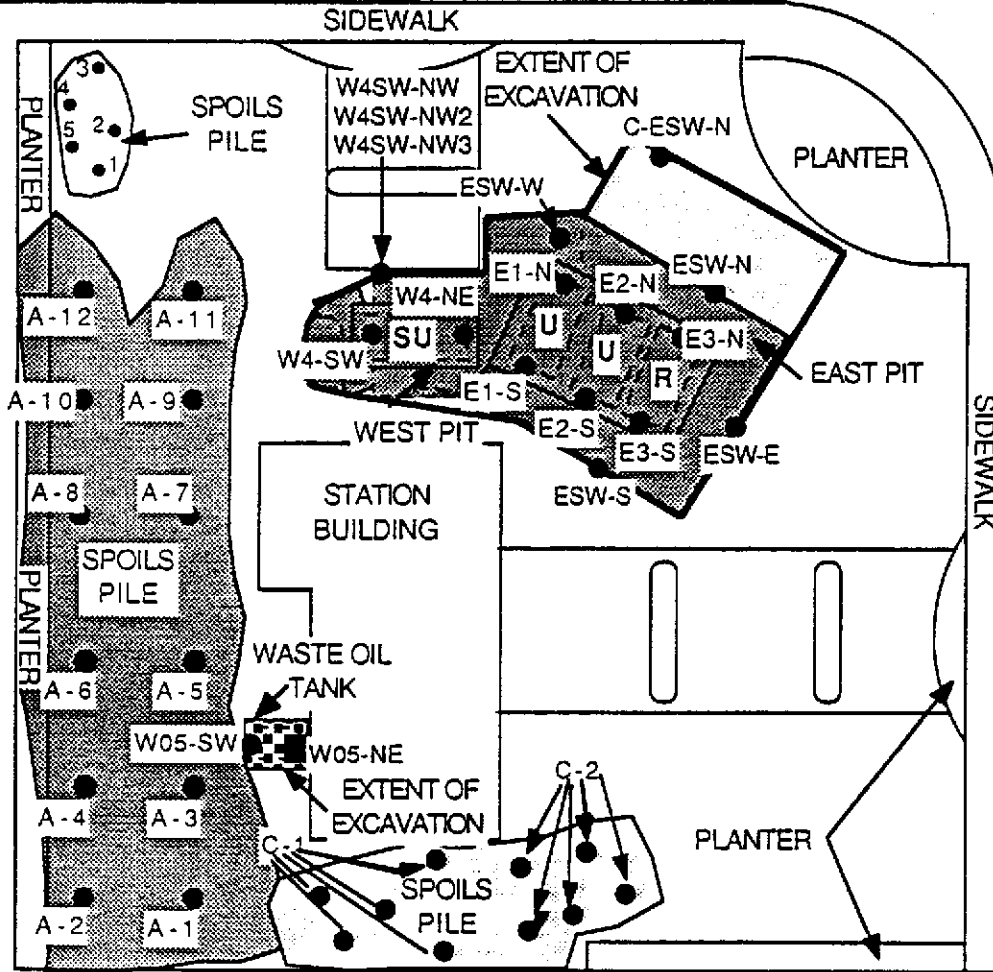
Source: Modified from plan supplied by ARCO

MAP BY: APPLIED GEOSYSTEMS

 PACIFIC ENVIRONMENTAL GROUP, INC.	ARCO STATION #608 17601 HESPERIAN BOULEVARD SAN LORENZO, CALIFORNIA	FIGURE: 1
	BORING AND MONITORING WELL LOCATIONS	PROJECT: 330-06.03



HACIENDA AVENUE



LEGEND

- SOIL SAMPLE LOCATION
JUNE 1988
- ① SOIL SAMPLE AND DESIGNATION
MAY 1988
- R REGULAR GASOLINE
- U UNLEADED GASOLINE
- SU SUPER UNLEADED GASOLINE



NON HAZARDOUS FILL



GASOLINE CONTAMINATED FILL
SUBJECT TO AERATION



WASTE OIL CONTAMINATED FILL

SCALE : APPROX. 1" = 20'



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ARCO STATION #608
17601 Hesperian Boulevard
San Lorenzo, California

SAMPLE LOCATION MAP

FIGURE:
2
PROJECT:
330-06.03