IMFC

INGRAM-MASON & FAIRBAIRN
A DIVISION OF IMFC CORPORATION

41 SUTTER STREET, SUITE 1537
SAN FRANCISCO, CA 94104

TEL (415) 281-9696
FAX (800) 804-IMFC

July 16, 1996

Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Material Division
1131 Harbor Bay Parkway
Alameda, California 94502-6577

ENVIRONMENTAL PROTECTION
96 JUL 17 PM 2:44

Attention: Ms. Madhulla Logan

Subject: Workplan, Corrective Action Plan
2504 MacArthur Boulevard
Oakland, California 94602

Dear Ms. Logan:

At the request of Mr. Michael Marr, we are forwarding for your review and approval a copy of the workplan for Corrective Action Plan for the site located at 2504 MacArthur Boulevard, Oakland, California.

This workplan is based on the data generated during the subsurface investigation and review of other available information, and includes the excavation and off-site disposal of a limited volume of contaminated soil, as well as initiation of a quarterly monitoring program for groundwater.

If you have any question or comments, please call the undersigned at **(415) 951-4893.**

Very truly yours,

Fred Serafin
Director, Environmental Services

cc: M. Marr, 27737 Fallen Leaf Court, Hayward, CA 94542

J:\marr\counltr1.doc

WORKPLAN

DEVELOPMENT AND IMPLEMENTATION OF A CORRECTIVE ACTION PLAN FOR HYDROCARBON CONTAMINATED SOIL AND GROUNDWATER

2504 MacArthur Boulevard
Oakland, California

This document presents the workplan for excavating contaminated soil by petroleum product constituents for the site located at 2504 MacArthur Boulevard, Oakland, California (Site). Site Location Map is presented in Figure 1.

This workplan is prepared in accordance with the requirements of Alameda County Department of Environmental Health (County); and guidelines of: 1) the leaking Underground Fuel Tank (LUFT) field manual by the State Water Resources Control Board; 2) Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites, San Francisco Bay Region (RWQCB); and 3) the State Water Resources Control Board's a) Petroleum Underground Storage Tank Cleanup Fund Regulations, b) Petroleum Underground Storage Tank Cleanup Fund Corrective Action Guide, and c) Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304.

A. BACKGROUND

Four underground storage tanks were removed from the Site on June 27, 1994. During the excavation, extensive visible staining in the sidewalls was observed and strong hydrocarbon fuel odor was detected. Soil samples obtained from the tank excavation area confirmed that the subsurface had been moderately to highly impacted by fuel hydrocarbons. Upon removal of the tanks, under the direction of the representative of the County, the tank pits were overexcavated and the contaminated soil was stockpiled at the Site. Subsequently, the contaminated soil was removed from the Site. Figures 2 and 3 show sample locations and limits of overexcavation. Summary of soil analyses for samples taken during the tank excavation operation is presented in Table 1.

Upon approval of the County, a program of subsurface investigation was implemented in July 1995. The services was based on the requirements of the County and RWQCB. It was intended that the investigation would reasonably define the horizontal and vertical extent of the pollutants in and around the location of former underground tanks, and would also initially define the geologic and hydrogeologic parameters needed for determining an effective and feasible remedial action for this site.

The investigation consisted of advancing five soil borings at pre-determined locations; collecting soil samples; converting three soil borings into monitoring wells; obtaining groundwater samples; chemical analyses of selected samples; establishing horizontal and vertical control of the wells, and calculating the groundwater potentiometric levels and flow direction; and identifying and recommending appropriate remedial technology. Figure 4 depicts the locations of soil

borings and monitoring wells and Figure 5 shows groundwater flow direction. Tables 2 and 3 show the summary of soil and groundwater analyses data, respectively.

Evaluation of data generated during the field exploration, coupled with the review and analysis of findings during the tank excavation operation indicated that three separate areas of the Site contained contaminated soil. A brief description of each area follows:

1. The first area is located in the northern part of the Site in the vicinity of monitoring well B-3 and the Boston Avenue sidewalk. Laboratory analyses of the samples and evaluation of field observations reveal that the depth of the impacted zone is about seven feet below ground surface (bgs). Contamination in this area could be attributed to the leakage from the fill-pipe of former tank(s) that passes through this area. The fill-pipe still exists in place. Several confirmatory soil samples taken during the overexcavation of former tanks' pit, just a few feet west of this zone at a depth of about 8.5 feet bgs detected low concentration of contaminants.

2. The second area is located in the southwest of the Site, in the vicinity of monitoring well B-1 and the MacArthur Boulevard sidewalk. Laboratory analyses of samples collected in this area, coupled with field testing and screening of soil cuttings indicate the existence of a contaminated zone, extending to an approximate depth of 15 feet bgs. A sample collected and tested at the depth of 40 feet bgs (under the groundwater table) did not detect any contaminants. Given the Site's features in this area (location of tanks and dispensers) and topography (sloping toward the southwest corner of the property), as well as the nature of business and past practices of former tenants, this contamination could be attributed to repeated overspills as well as migration of contaminants from the tanks' backfill into deeper strata. This contaminated zone is

very close to the locations of various utilities, sanitary sewer and storm drain; and therefore, constitute a health and safety hazard.

3. The third contaminated area is immediately north of the former pump island location. Review of the tank removal report reveals the existence of contaminated soil directly underneath the leaking tank. Most of this contaminated zone has already been removed during overexcavation and replaced with clean imported fill; but confirmatory samples collected during the tank excavation operation indicate that some contaminated soil has remained in place.

b. Groundwater

During the performance of the investigation, groundwater was encountered at a depth of 34 feet bgs in both borings B-1 and B-3, but immediately started to rise. Boring B-5, drilled to a depth of 20 feet bgs, was dry when the drilling rig broke down. Five days later, upon resumption of drilling activities, groundwater was encountered at the depth of 10 feet. This indicated the existence of a confined water zone. The regional groundwater flows generally in a west/southwesterly direction toward the San Francisco Bay. Based on the groundwater level measurements on July 11, 1995, the site-specific groundwater flow direction was assessed to be in a southerly direction with a gradient of about 0.067 ft/ft.

The original source of contamination (the tanks) has already been removed from the Site, but the impacted soil remaining around the former location of tanks now acts as the primary source. Whenever groundwater comes in contact with the contaminated soil (either through normal

seasonal groundwater fluctuations or through surface seepage), pollutants become mobilized and begin to migrate.

In order to establish controls for the prevention of possible migration, and in order to eliminate the source of contamination, it is necessary to implement some remedial measures and controls.

C. SCOPE OF SERVICES/METHODOLOGY

Based on the requirements of regulatory agencies, Consultant is providing professional and technical services to develop and implement remediation concepts for hydrocarbon contaminated soil and groundwater at the Site. To mitigate the potential impact to groundwater, it is planned to excavate contaminated soil in two separate areas, and set up a quarterly groundwater monitoring program. All services will be performed in accordance with all applicable local, state and federal environmental, safety and construction laws and regulations.

The excavation activities will include the following:

- Outlining previous site activities, preparation of this workplan and Site Health and Safety Plan;
- Excavation of hydrocarbon fuel contaminated soil, collection and analysis of soil samples for total petroleum hydrocarbon as gasoline (TPH-D). This will involve coordinating the laboratory analysis of soils for determination of final excavation limits; and

- Review of laboratory/field data and preparation of a report outlining the findings and recommendations leading to the closure of the Site.

The scope of services for this project include the following:

Task 100 Meetings

Consultant will attend planning, scoping and progress meetings as requested by the owner. Five meetings are anticipated for the purpose of this workplan.

Task 200 Preparation of Remediation Workplan

Consultant has prepared this detailed site specific technical remediation workplan. A site specific waste disposal plan shall be prepared for the generated wastes prior to the initiation of excavation. It is assumed that about 80 yd^3 of contaminated soil will be excavated from two separate areas. These areas are around MW B-1 and MW B-3 as shown on Figure 4. The volume of additional soil excavation, if any, along with potential need for utility relocation and other details will be prepared immediately prior to the initiation of excavation. specifications for backfill material, resurfacing material, piping, electrical conduit, etc.; quarterly monitoring program; etc.

Task 300 Health and Safety Plan

As required by 29 CFR 1910.120, the attached site specific Health and Safety Plan has been prepared to cover all phases of the work including but not limited to data acquisition, and phases such as maintenance, monitoring, abandonment and/or removal, and waste disposal,

Task 400 Permits

During the life of the cleanup project, contaminated soil will be removed, remediated by an in-situ soil venting or bioremediation method (with or without secondary aeration) as appropriate. All excavated soil containing pollutants will be transported from the site and disposed of at an appropriate location, after verification of pollutant concentrations, and pending approval of regulatory approval.

Task 500 Implementation of Workplan

After approval of the workplan by regulatory agencies, the services shall be implemented in the field. The excavation and sampling protocol are as follows:

- A licensed contractor specialized in hazardous material handling will be retained to excavate and stockpile contaminated soil in designated areas. A state-certified laboratory will provide confirmation laboratory analysis.
- Based on the results of previous investigations, moderate to significant concentration of gasoline contaminated soils are located in two separate areas. The aerial extent of each area is approximately 12 feet by 10 feet. After removal of asphalt pavement, soil excavation would proceed, if possible, until non-detected concentrations of gasoline is obtained. If groundwater is encountered during excavation activities, the collected water in the pit will be pumped out and stored on-site.
- As an average, the initial depth of excavation will be approximately 10 feet. Excavation will be guided by the use of a portable field screening instrument such as a photoionization detector (PID). Confirmation laboratory analysis will be performed to determine the limits of excavation.

- Due to the space limitation at the Site, the excavated soil will be stockpiled in separate piles (approximately 10 cubic yards each) and screened for hydrocarbon contamination. Disposal options will be based on levels of contamination determined by laboratory analysis of the soil. One sample per pile will be collected and analyzed for TPH-G.
- Samples taken from the floor and sidewalls of each pit will be analyzed for TPH-G. Sampling equipment will be pre-washed in trisodium Phosphate (TSP) solution prior to sampling. The samples will be collected by driving a 2-inch diameter by 6-inch long brass tube into the soil. After collection of the samples, the brass tube ends will be covered with aluminum foil and capped with plastic end-caps and taped to the brass tubes with duct tape. The tubes then will be labeled and placed in an iced cooler for transport under chain-of-custody to the analytical laboratory.
- Several 55-gallon drums at the Site containing soil cuttings from previous investigations will be emptied and incorporated into the piles for eventual disposal.
- Backfilling of the pits will commence immediately after completion of excavation activities and review of laboratory results. The clean imported backfill material will consists of soil similar to the native soil or pea gravel. The pits will be lined with visqueen If pea gravel is used as backfill material.
- The area will be subsequently resurfaced to match the surrounding area.
- Upon completion of this phase of the project, all the results of excavation activities, field observation, and laboratory analysis will be compiled and reviewed. A report documenting the excavation and backfilling activities, including conclusions and recommendations leading to the closure of the Site will be prepared and presented.
- Groundwater samples will be obtain from the three on-site groundwater monitoring wells and will be analyzed for TPH-G; Benzene, Toluene, Ethylbenzene, and Xylene (BTEX). These analyses will be performed by an analytical laboratory, certified by the State of California to perform the required analyses according to EPA accepted protocol. Prior to sampling, water

- levels will be obtained from each of the monitoring wells. The wells will subsequently be purged of at least three well volumes of water or until the parameters of pH, electrical conductivity, and temperature stabilize. Samples will be taken once the wells have been replenished. It is anticipated that the purge water will be temporarily stored at Site. The depth to groundwater in each well will be measured on a monthly basis.

Quarterly Reports

Once each quarter a quarterly report will be prepared which documents the results of the previous quarter's activities. Each quarterly report will contain data regarding the static water levels at each well, assessment of groundwater direction and gradient, and results of chemical analysis.

D. SCHEDULE

It is anticipated to begin work immediately upon receipt of an authorization to proceed and approval of this workplan. Pre-field activities and mobilization would take about three weeks. Excavation and backfilling would be completed within a two-week period. Excavated soil will be stockpiled on-site pending disposal and/or reuse. Contaminated soil will be disposed, based on laboratory results and in accordance with applicable regulations. One week will be needed for resurfacing and demobilization. The report containing the results of excavation activities and the first quarterly report will be available approximately four weeks after completion of the field activities.

TABLE 1
SUMMARY OF SOIL ANALYSES DATA
FOR SAMPLES FROM TANK EXCAVATION

Sample Number	Date	Sample Matrix	TPH-G mg/Kg	Benzene ug/Kg	Toluene ug/Kg	Ethyl Benzene ug/Kg	Total Xylenes ug/Kg	Lead mg/Kg
AB-1	6/27/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	8.0
BB-1	6/27/94	SOIL	3.4	12	68	75	320	5.9
CB-1	6/27/94	SOIL	12	N.D.	N.D.	29	40	6.9
AB-2	6/27/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	8.5
BB-2	6/27/94	SOIL	15	8.8	160	170	980	10.0
SP-1A,B,C	6/27/94	SOIL	1,600	870	12,000	14,000	77,000	14
CB-2	6/27/94	SOIL	24	N.D.	N.D.	39	56	9.3
SP-2A,B,C	6/27/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	14
SW-1	7/6/94	SOIL	9.5	8.3	N.D.	58	81	---
SW-2	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-3	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-4	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-5	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-6	7/6/94	SOIL	210	400	990	2,800	11,000	---
SW-7	7/6/94	SOIL	250	120	120	330	480	---
SW-8	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-9	7/6/94	SOIL	N.D.	N.D.	N.D.	N.D.	N.D.	---
SW-10	7/6/94	SOIL	5.4	N.D.	N.D.	20	37	---
SW-11	7/6/94	SOIL	8.2	15	N.D.	16	23	---
SW-12	7/6/94	SOIL	22	N.D.	N.D.	42	34	---
SW-13	7/6/94	SOIL	1.8	N.D.	N.D.	N.D.	N.D.	---
Detection Limits			**1.0**	**5.0**	**5.0**	**5.0**	**5.0**	**0.5**

NOTES: mg/Kg Milligrams per Kilogram (parts per million)
ug/Kg Micrograms per Kilogram (parts per billion)
TPH-G Total Pertroleum Hydrocarbons as Gasoline

TABLE 2

SUMMARY OF SOIL ANALYSES DATA

Sample No.	TPH-G (mg/kg)	TPH-D (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl Benzene (ug/kg)	Total Xylenes (ug/kg)	O&G (mg/kg)
B-1-5	310	3.8	ND	ND	1300	ND	NT
B-1-10	470	NT	ND	ND	1700	1700	NT
B-1-40	ND	NT	ND	ND	ND	ND	NT
B-3-5	490	ND	ND	380	5300	18000	NT
B-3-10	ND	ND	ND	ND	ND	8.7	NT
B-3-30	ND	NT	ND	ND	ND	ND	NT
B-4-15	ND	NT	ND	ND	ND	ND	NT
B-5-15	ND	NT	ND	ND	ND	ND	ND
B-6-5	ND	ND	ND	ND	ND	ND	NT

NOTES

Sample No.	The first two characters refer to the boring number, and the last character is the depth at which the sample was obtained.
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TPH-D	Total Petroleum Hydrocarbons as Diesel
O&G	Oil & Grease
mg/kg	Milligrams per kilograms (parts per million, ppm)
ug/kg	Micrograms per kilograms (part per billion, ppb)
ND	Not detected above laboratory detection limits
NT	Not tested

J:\martbl2.doc

TABLE 3

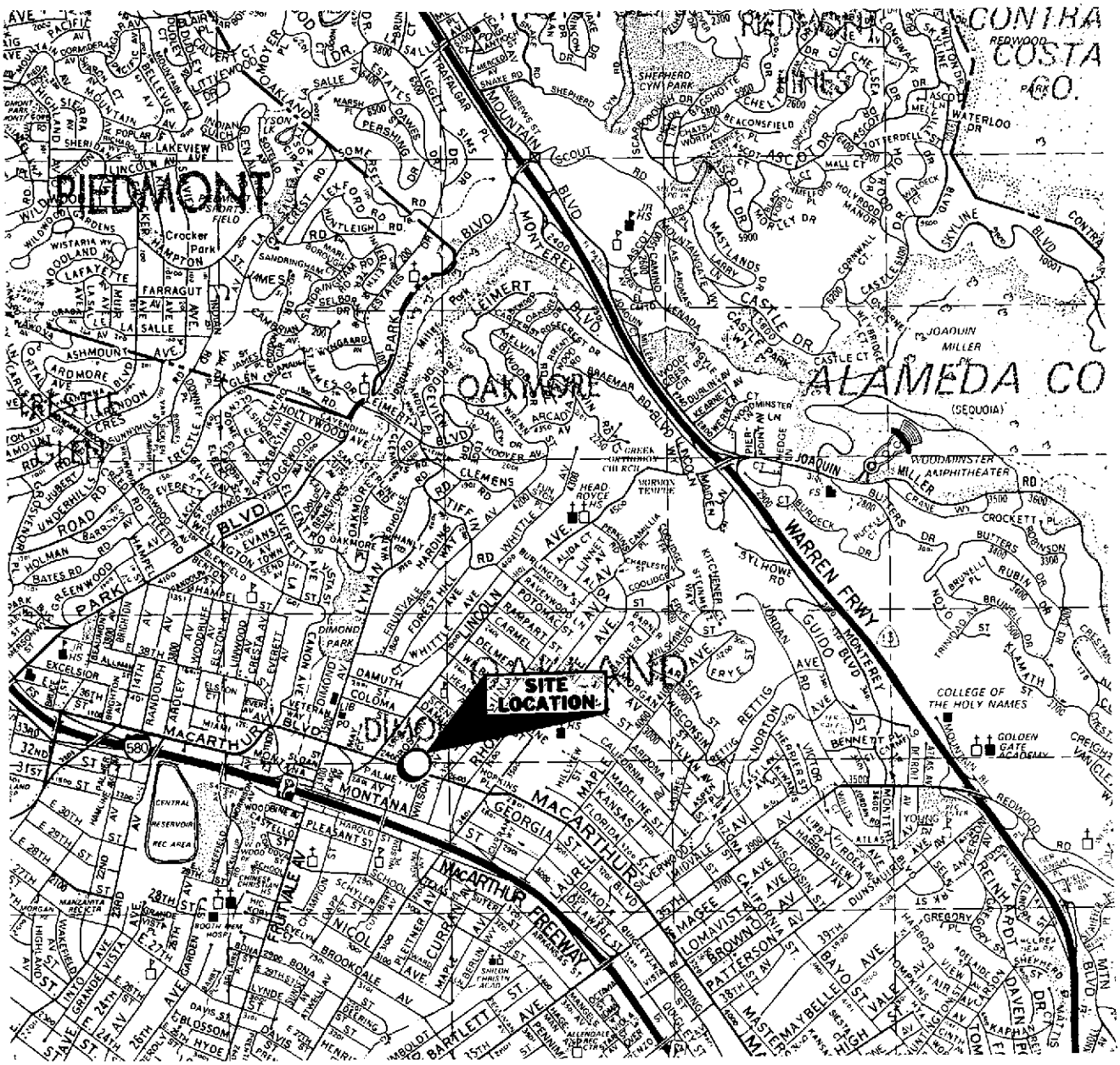
SUMMARY OF GROUNDWATER ANALYSES DATA

Well No.	TPH-G (mg/l)	TPH-D (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)
MW B-1	0.06	ND	0.5	2.8	1.2	6.0
MW B-3	0.20	ND	2.7	12.0	4.4	23.0
MW B-5	0.38	ND	ND	1.7	1.5	5.1

NOTES

TPH-G Total Petroleum Hydrocarbons as Gasoline
TPH-D Total Petroleum Hydrocarbons as Diesel
mg/l Milligrams per liter (parts per million, ppm)
ug/l Micrograms per liter (parts per billion, ppb)
ND Not detected above laboratory detection limits

J:\martbl3.doc



SCALE: 1" = 2200'

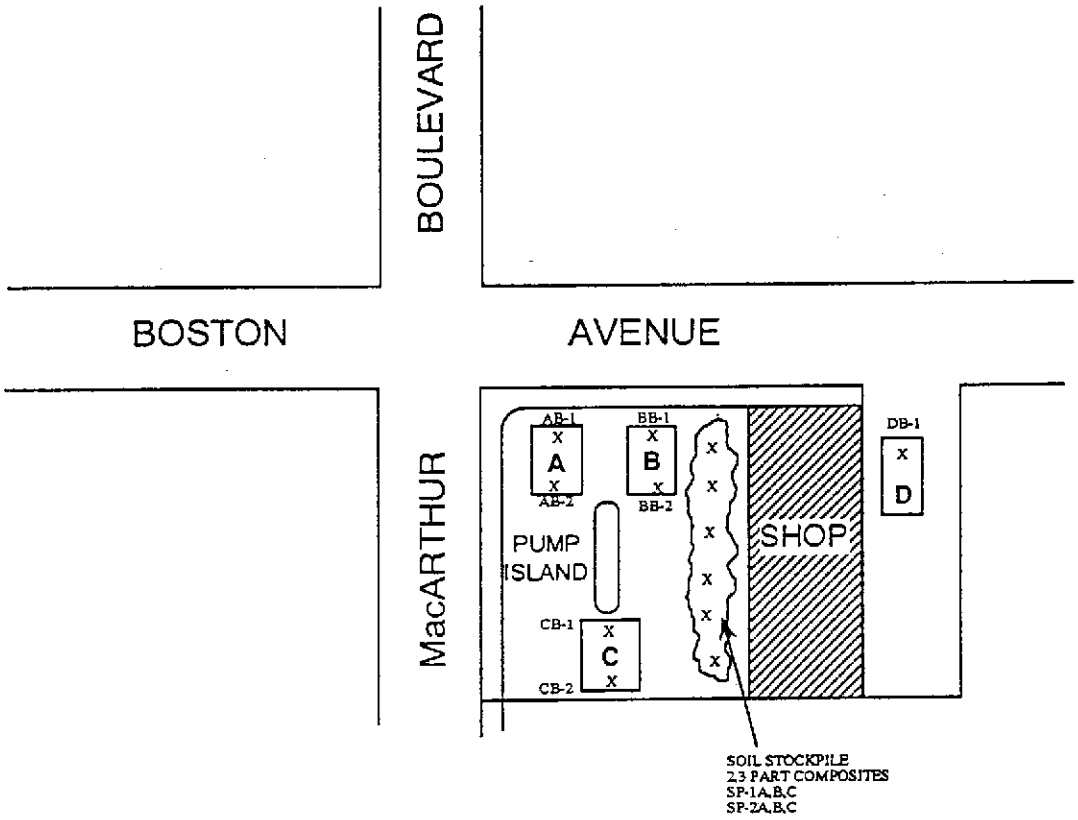
IMFC

GRACE AUTO REPAIR

2504 MacArthur Blvd.
Oakland, California

SITE LOCATION MAP

PROJECT NO.	DATE	FIGURE NO.
	July 96	1



LEGEND

Approximate Tank Location

X Approximate Sample Location

AB-1 Sample Number

Not to Scale

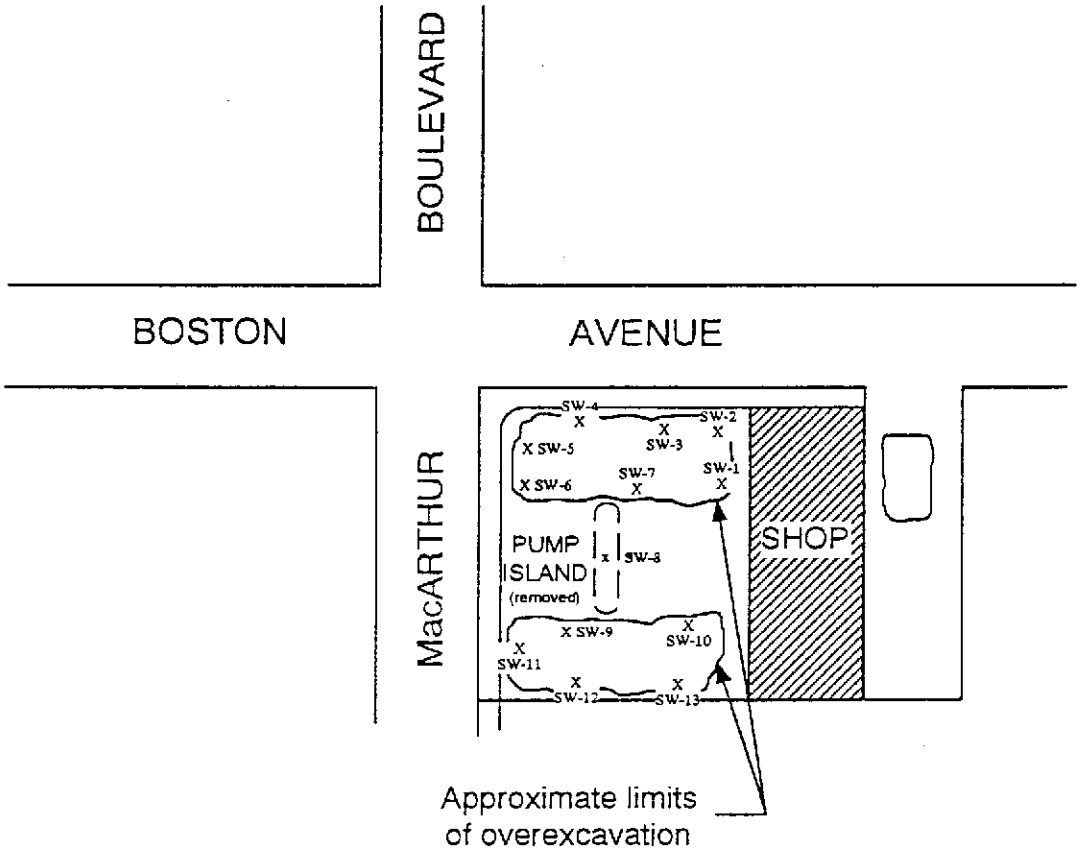
IMFC

GRACE AUTO REPAIR

2504 MacArthur Blvd.
Oakland, California

SAMPLE LOCATION MAP-
TANK EXCAVATION

PROJECT NO.	DATE	FIGURE NO.
	July 1996	*2*



LEGEND

X Approximate Sample Location

SW-1 Sample Number

Not to Scale

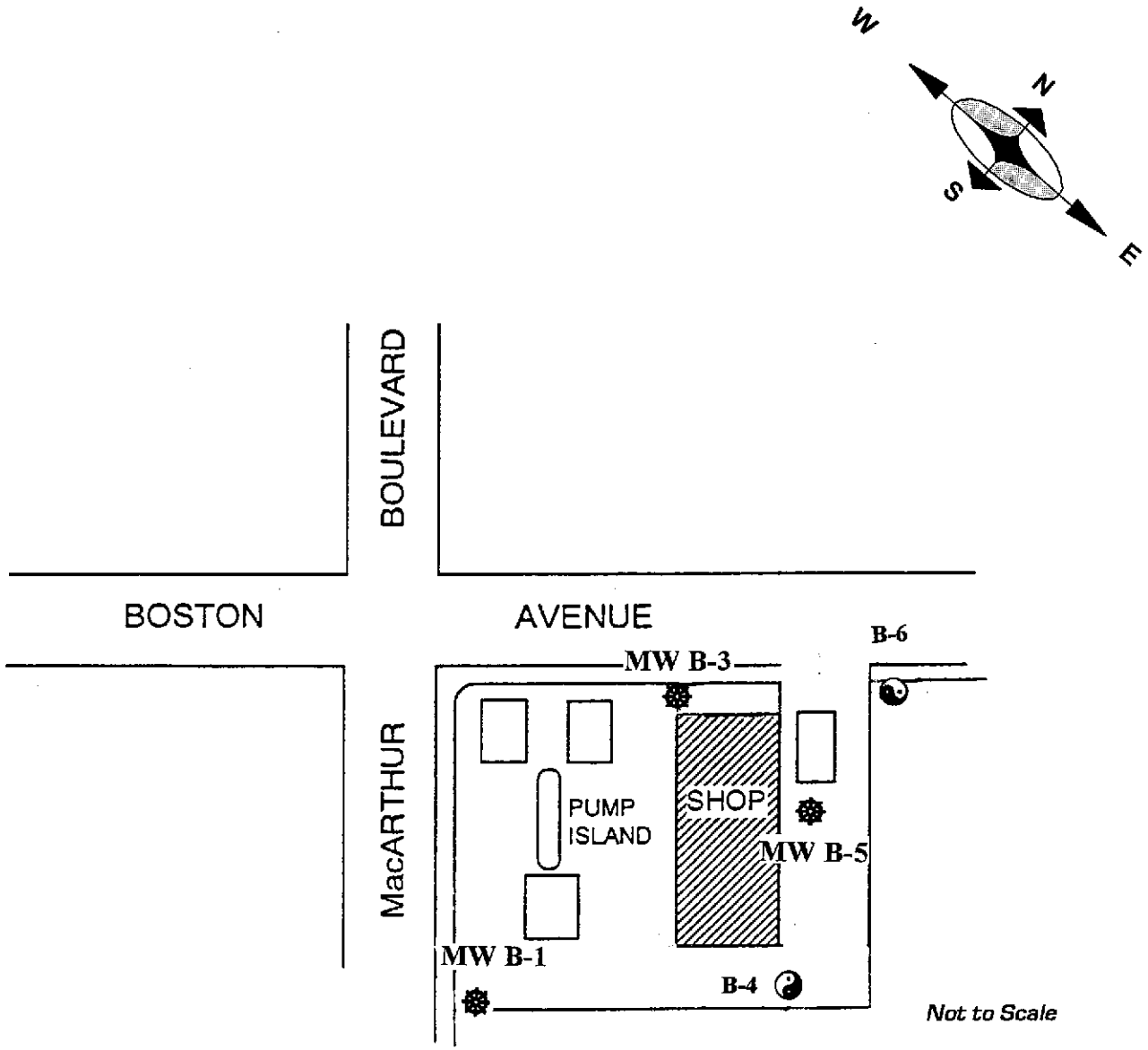
IMFC

GRACE AUTO REPAIR

2504 MacArthur Blvd.
Oakland, California

SAMPLE LOCATION MAP-
OVEREXCAVATION

PROJECT NO.	DATE	FIGURE NO.
	July 1996	*3*



NOTE

Soil Boring B-2 was not drilled

LEGEND

- Approximate Location of Soil Borings
- Approximate Location of Monitoring Wells
- Approximate Location of Former Tanks

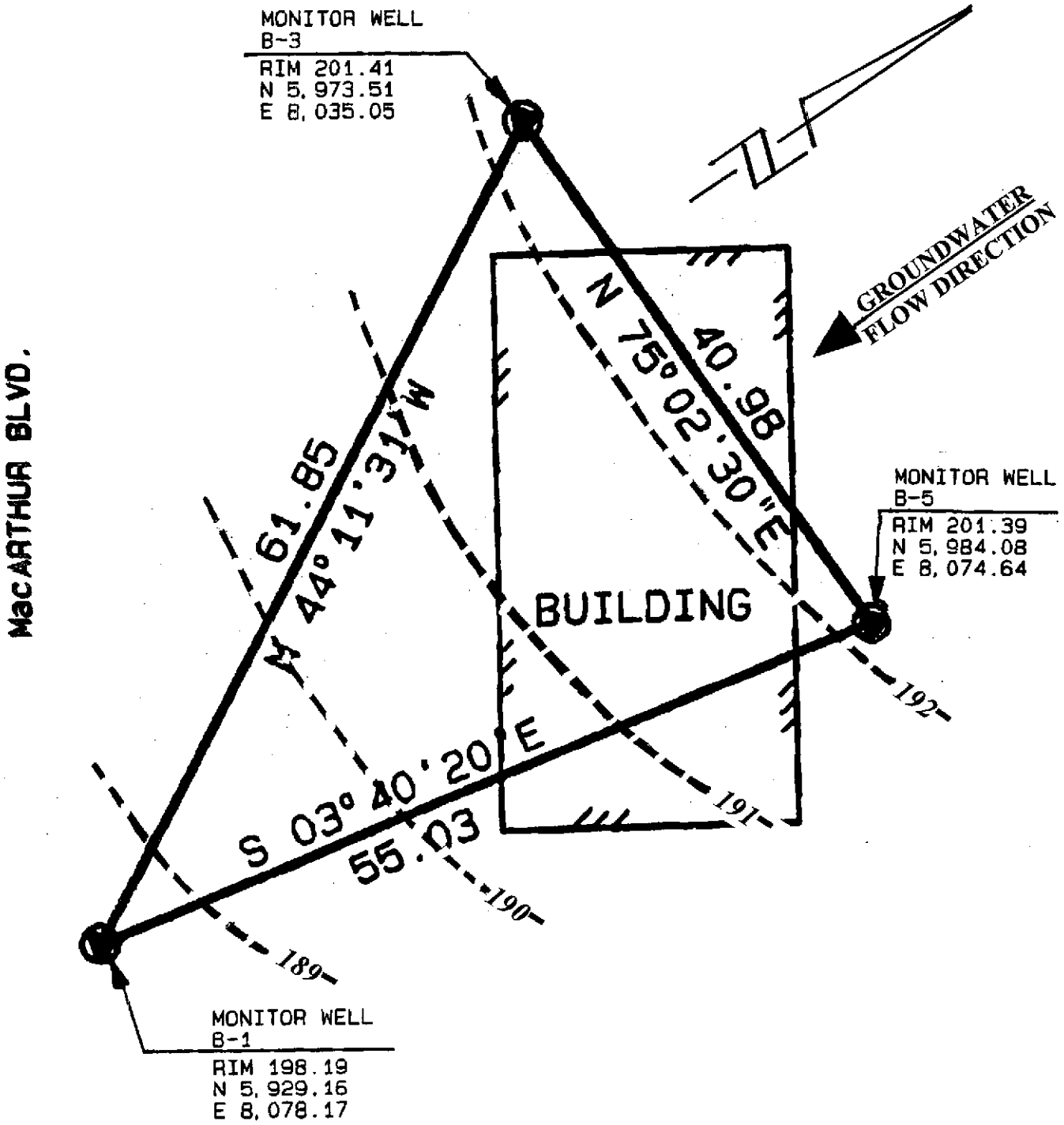
IMFC

GRACE AUTO REPAIR

2504 MacArthur Blvd.
Oakland, California

SITE SKETCH

PROJECT NO.	DATE	FIGURE NO.
	July 1996	*4*



10 0 10 20

GRAPHIC SCALE (FEET)

LEGEND

---190--- Groundwater contours and elevations

IMFC

GRACE AUTO REPAIR

2504 MacArthur Blvd.
Oakland, California

GROUNDWATER POTENTIOMETRIC LEVELS, AUGUST 1995

PROJECT NO.	DATE	FIGURE NO.
	July 1996	*5*