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A DIVISION OF IMFC CORPORATION

CITICORP CENTER · ONE SANSOME STREET · SUITE 1900 · SAN FRANCISCO, CALIFORNIA 94104
TEL 415-951-4793 · FAX 415-951-4701 · FAX 800-804-IMFC

February 12, 1999

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

Attention: Ms. Madhulla Logan

Subject: Workplan, Three Grab Groundwater Samples
2504 MacArthur Boulevard
Oakland, California 94602

Dear Ms. Logan:

In response to your letter of December 9, 1998 to Mr. Michael Marr requesting a workplan for collection and chemical analyses of three grab groundwater samples at the site located at 2504 MacArthur Boulevard, Oakland, California, enclosed we are forwarding for your review and approval a copy of the workplan.

If you have any question or comments, please call the undersigned at **(415) 951-4793.**

Very truly yours,

F. A. Serafin

Fred Serafin
Director, Environmental Services

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

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WORKPLAN

COLLECTION OF GRAB GROUNDWATER SAMPLES AS PART OF CORRECTIVE ACTION PLAN

2504 MacArthur Boulevard
Oakland, California

A. GENERAL

This document presents the proposed workplan for advancing three borings to approximately five feet below groundwater table; collecting and chemically analyzing three grab groundwater samples, and preparation of a final report leading to the closure of the site, located at 2504 MacArthur Boulevard, Oakland, California (Site). The proposed locations of the borings are in the southwest and southeast in the downgradient direction of the Site. Site Location Map is presented in Figure 1, and boring locations are shown on Figure 2.

This workplan is prepared at the specific request of, and in compliance with the requirements of the 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.

B. 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.

A program of subsurface investigation was implemented in July 1995. The services were 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; converting three soil borings into monitoring wells; chemical analyses of selected soil and groundwater 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.

Evaluation of available data indicated the existence of a contaminated zone, extending to an approximate depth of 15 feet below ground surface (bgs), located in the southwest of the Site, in

the vicinity of monitoring well B-1 and MacArthur Boulevard sidewalk. This contaminated zone was very close to the locations of various utilities, sanitary sewer and storm drain; and therefore, constituted a health and safety hazard.

The results of the investigation also indicated that some immediate interim remediation measure should be implemented. The intended purpose of the measure was to establish control, reduce the rate of migration and expansion of the existing plume of hydrocarbon to the adjacent property(ies), and to remove the potential source of groundwater contamination. Several methods for remediation of contaminated soil underneath the Site were evaluated. The examination of the alternatives concluded that excavation and off-site disposal to be an acceptable means for cleaning up the Site because it provided for source removal, thus eliminating many long-term site management concerns. The plan consisted of five general elements which included: 1) soil excavation, 2) confirmatory testing of the excavation limits, 3) lining of excavation with visqueen and backfilling with fresh fill, 4) stockpiling and treatment of excavated soil and 5) disposal of the stockpiled soil. After approval of the workplan by the County, the services were implemented in the field. Also, as part of the plan, a program of quarterly groundwater monitoring was implemented.

During the performance of the initial investigation, groundwater was first encountered at a depth of 34 feet bgs in both borings B-1 and B-3, but immediately started to rise. 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 initial groundwater level measurements in 1995, the site-specific groundwater flow direction was assessed to be in a southerly direction.

Originally, minor concentrations of hydrocarbon pollutants were detected in the groundwater.

Although the geology and hydrogeology of the site made the characterization of potential pathways and conduits difficult to estimate, it was assumed that pollutants in the groundwater had not substantially migrated off-site.

Due to the low levels of contaminants detected in the groundwater, a program of quarterly monitoring was implemented to gather additional data for characterization of contamination, and for the future selection of an appropriate treatment technology, if needed.

Chemical analyses of groundwater samples collected from monitoring wells MW-B1, MW-B3, and MW-B5 in November 1996 and June 1997 indicated non-detectable levels of contaminants tested for above the laboratory detection limits.

The groundwater potentiometric level maps for November 1996, February through August 1997 and February, May, and August 1998 showed that site-specific groundwater flow direction over the period remained basically toward the south-southwest with the gradient ranging from 0.018 ft/ft to 0.037 ft/ft.

The Site is located at the heel of gently sloping Oakland Hills. The lithologic sequences of alluvial deposits consist of interbedded strata of silt and clay with some sand to at least 42 feet below ground surface. The analysis of generated data suggests that a confined aquifer is located underneath the Site at an approximate depth of 30 feet. Due to the Site's lithologic makeup, the aquifer's ceiling conditions appear to be relatively tight. Consequently, the potential contamination at the higher horizon (5 to 9 feet below ground surface) has apparently not impacted the groundwater.

Based on the conclusions of the investigations, and in view of the absence of contaminants in the groundwater beneath the Site, in September 30, 1998, IMFC on behalf of the owner

requests this site be granted Low-Risk Site Closure. After review of the submitted documents, the County requested that at a minimum, three grab groundwater samples be collected in the southwest and southeast, in the downgradient direction (on either sides of monitoring well (MW B-1).

C. SCOPE OF SERVICES/METHODOLOGY

Based on the requirements of regulatory agencies, Consultant provided professional and technical services to develop and implement remediation concepts for hydrocarbon-contaminated soil and groundwater at the Site. To comply with the request of the County, and to confirm that groundwater contamination has not migrated off-site, it is planned to drill three soil borings to approximately five (5) feet below groundwater and collect grab samples. All services will be performed in accordance with all applicable local, state and federal environmental, safety and construction laws and regulations.

The drilling and sampling activities will include the following:

- Preparation of this workplan and Site Health and Safety Plan;
- Obtaining necessary permits;
- Collection and chemical analyses of groundwater samples;
- Analysis of laboratory/field data and Preparation of a final report.

The scope of services for this project include the following:

Task 100 Interaction with Regulatory Agencies and Preparation of Workplan

IMFC will interact with regulatory agencies and their comments and/or suggestions will be incorporated into the scope and progress of the investigation. Further, IMFC will attend any

project meetings as requested by the owner. IMFC has prepared this detailed site specific technical workplan after extensive discussions with the County, in order to provide necessary information needed for closure of the Site.

Task 200 Health and Safety Plan

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

Task 300 Permits

Proper permit for drilling and sampling will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7.

Task 400 Implementation of Workplan

After approval of the workplan by the County, the services shall be implemented in the field. The drilling and sampling protocol is as follows:

- Employ the services of a professional underground locator to attempt to determine the existence and location of any underground utilities or obstructions in the vicinity of proposed borings locations. Notify Underground Service Alert (USA).

- Employ the services of a licensed drilling company to drill soil borings at selected locations. Drilling equipment will be pre-washed in trisodium Phosphate (TSP) solution prior to advancing. As an average, the depth of each boring is estimated to be approximately 35 feet.

- Screen the cuttings in the field by a photoionization detector (PID).

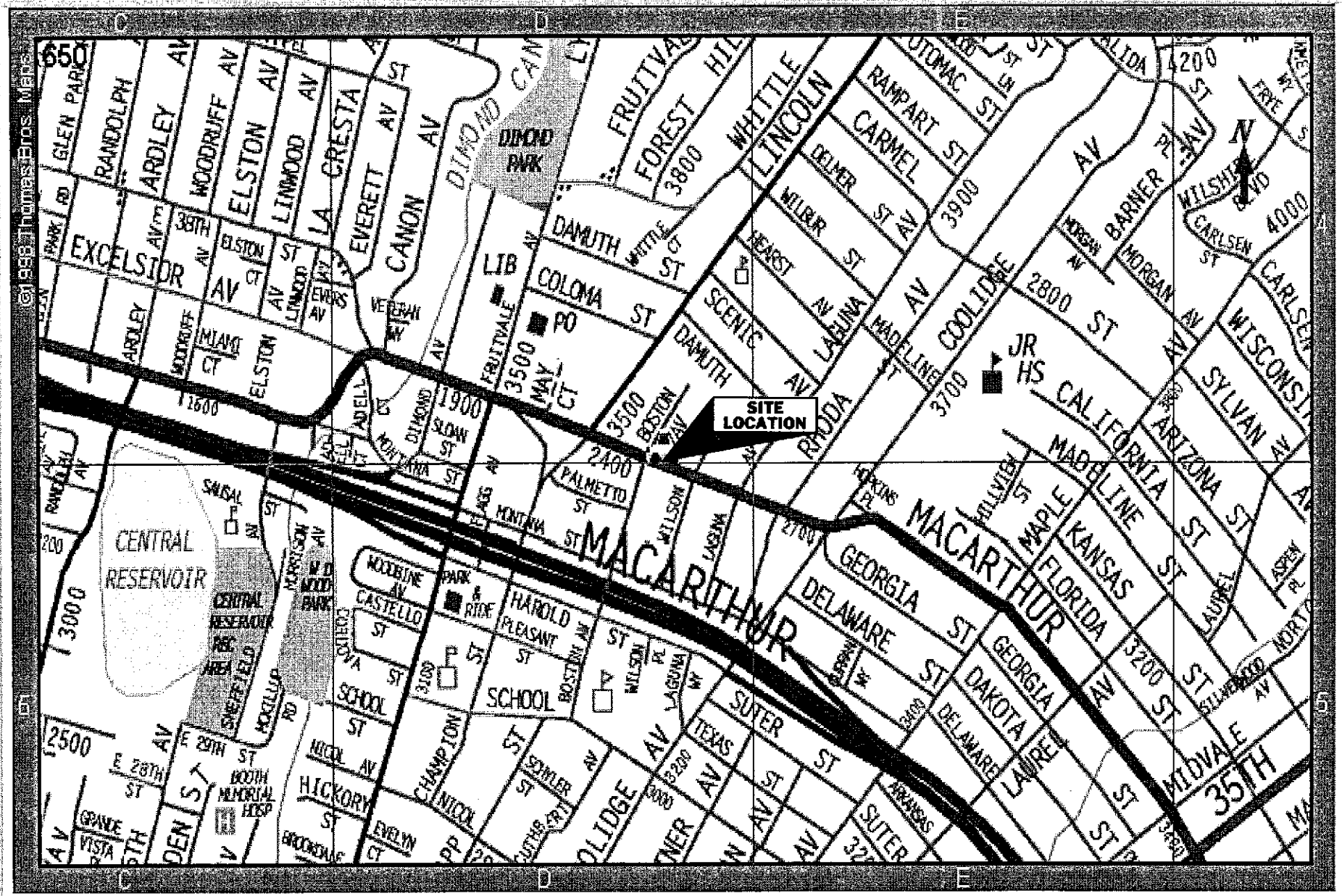
- collect groundwater samples for chemical analyses. The samples will be collected by disposable bailers. After collection, all samples will be labeled and placed in an iced cooler for transport under chain-of-custody to the analytical laboratory.

- Analyze groundwater samples for:
    1. Total Purgeable Petroleum Hydrocarbons as Gasoline (TPH-G) by GCFID (LUFT Method) following sample purge and trap by EPA Method 5030;
    2. Volatile hydrocarbon constituents: Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) by EPA Method 8020 / 602; and
    3. Methyl Tertiary Butyl Ether (MTBE) by EPA Method 8020 / 602, and confirmed by EPA Method 8260.

- Prepare a formal report, based on field observations, laboratory data, and evaluation of generated data. Document and summarize the work performed, and discuss the findings. Make recommendations, as necessary.

D. SCHEDULE

It is anticipated to begin work immediately upon receipt of an authorization to proceed and approval of this workplan. Pre-field activities (including obtaining permit) and mobilization would take about two weeks. Drilling and sampling would be completed in one day. The report containing the results of the activities will be available approximately three weeks after completion of the field activities.



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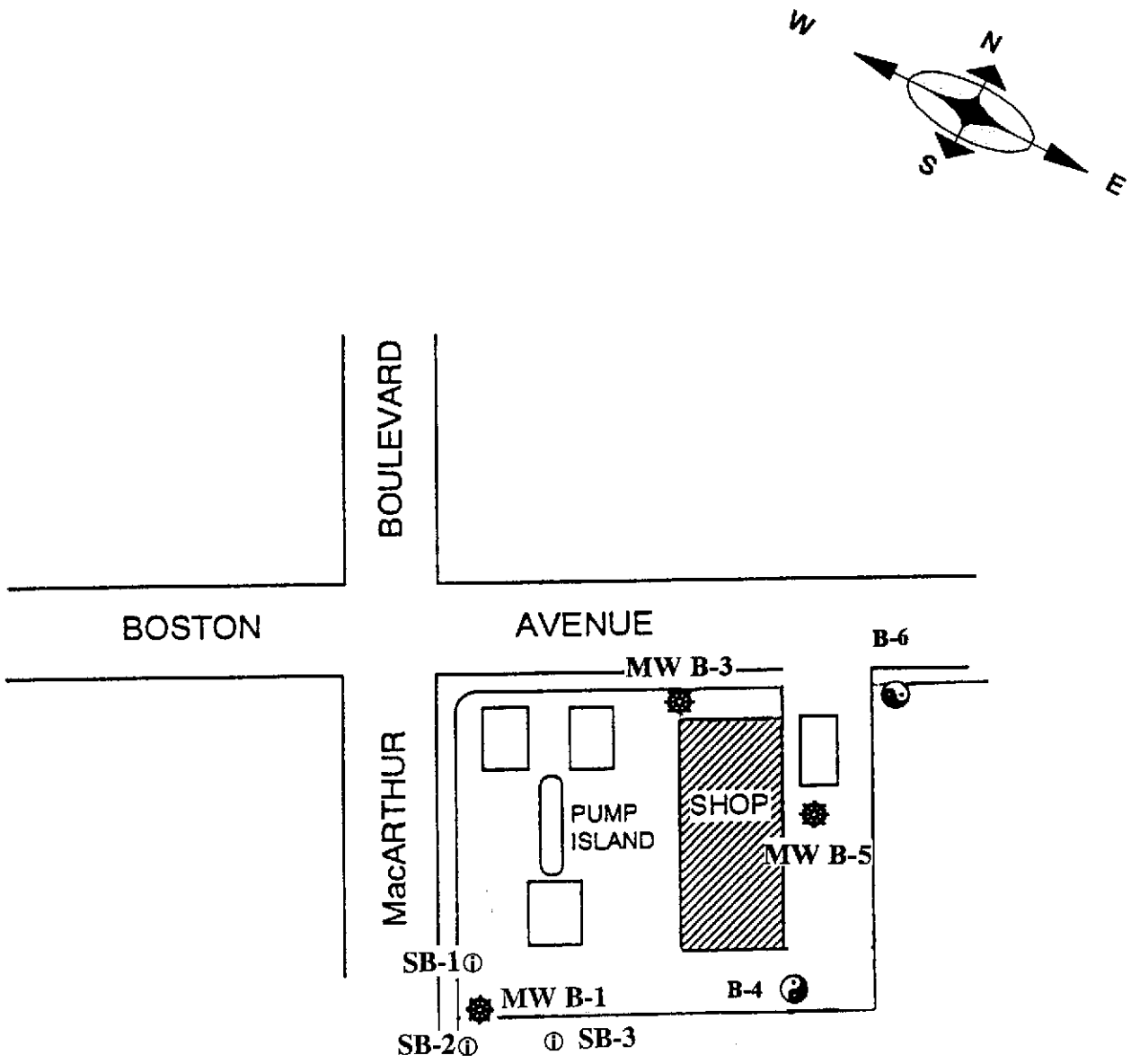
MARR AND ASSOCIATES

2504 MacArthur Boulevard
Oakland, California

SITE LOCATION MAP

PROJECT NO.	DATE	FIGURE NO.
MAR-102J	*FEBRUARY 1998*	*1*



LEGEND

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

Not to Scale

IMEC

MARR AND ASSOCIATES
2504 MacArthur Blvd.
Oakland, California

SITE SKETCH
AND PROPOSED LOCATION S OF BORINGS

PROJECT NO.	DATE	FIGURE NO.
MAR-102J	*FEBRUARY 1999*	*2*