

ENVIRONMENTAL  
PROTECTION  
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June 14, 1999

Alameda County Health Care Services  
1131 Harbor Bay Parkway  
Alameda, CA 94502

*S. Hootman should be cc'd*

ATTN: MS. EVA CHU

SITE: TOSCO 76 STATION 11104  
1716 WEBSTER STREET  
ALAMEDA, CALIFORNIA

RE: INTERIM REMEDIAL WORKPLAN

Dear Ms. Chu:

On behalf of Tosco Marketing Company, Alton Geoscience submits this workplan for the removal of liquid and vapor-phase hydrocarbons from the groundwater and soil at Tosco Service Station 11104, located at 1716 Webster Street, Alameda, California (Figure 1).

## 1.0 OBJECTIVES

The proposed activities are intended to improve site conditions and establish a pathway toward achieving site closure.

## 2.0 SITE DESCRIPTION

Present Site Use: The site is an active Tosco 76 Service Station.

Future Site Use: No change to the current site use is anticipated.

Adjacent Property: The property is bounded on the north by Buena Vista Avenue and to the west by Webster Street. Private residences border the property to the east and south. A Chevron Service Station lies across Buena Vista Avenue to the north.

Geography: Topography in the vicinity of the site is relatively flat but slopes gently northward.

**Interim Remedial Workplan**  
Tosco 76 Service Station 11104  
June 14, 1999

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- Geology:** The site is underlain by fine-grained sediments ranging from silty sand to sand (Alisto Engineering, 1998).
- Hydrogeology:** The site is located within the East Bay Plain Groundwater Basin (WQCP, 1995). The groundwater basin has been designated as having existing beneficial uses for agricultural, municipal, and industrial purposes. Local groundwater flow is to the north. The depth to groundwater ranges from 4 and 8 feet below grade (fbg) (HETI, 1993).

### **3.0 BACKGROUND**

In September 1990, Kaprelian Engineering, Inc. (KEI) supervised the removal of the dispenser island and associated product piping during a renovation of the existing service station. Hydrocarbons were detected in soil samples collected from the side walls of the excavation and in groundwater that had accumulated in the excavation.

At the request of Alameda County Department of Health Services (ACDHS), KEI supervised the excavation of soil in the vicinity of the former Dispenser Island in late 1990. Post-excavation soil sampling confirmed the continued presence of hydrocarbons in the soil.

In June 1992, Hydro Environmental Technologies, Inc. (HETI) installed three on-site monitoring wells (MW-1 through MW-3) to assess the extent of hydrocarbon contamination in the soil and groundwater, and to determine sub-surface lithology and groundwater flow direction. Hydrocarbons were detected in soil and water samples taken from one of three monitoring wells installed. Groundwater was encountered at approximately 5 fbg. Inferred groundwater flow was in a north-by-northeasterly direction. Soil beneath the site was found to consist predominantly of fine, silty sands.

In March 1993, HETI installed two off-site monitoring wells (MW-4 and MW-5) to determine the extent of the hydrocarbon plume in soil and groundwater. No detectable hydrocarbons were found in samples taken from the off-site wells in July 1993.

In August 1993, HETI performed a soil vapor extraction test in RW-1. Test results indicated a 27 ft. radius of influence around the recovery well. HETI concluded that dual-phase extraction would be an effective remediation method for the site.

The Alisto Engineering Group continued to perform additional monitoring and sampling activities at the existing well locations (MW-1 through MW-5 and RW-1) through September 1998. Depth

to water ranged from 4 to 8 fbg, and inferred direction of groundwater flow was to the north. Elevated concentrations of total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethyl benzene, and total xylenes (BTEX), and methyl tertiary-butyl ether (MTBE) were found in wells RW-1 and MW-1.

#### **4.0 CURRENT SITE CONDITIONS**

Groundwater was present at a depth of approximately 7 fbg at the site during the September 2, 1998 monitoring and sampling event with a groundwater gradient of 0.01 ft/ft to the north. Dissolved-phase TPH-G concentrations of 230,000 parts per billion (ppb) and 260,000 ppb were detected in wells MW-1 and RW-1, respectively.

Dissolved-phase benzene was detected in wells RW-1, MW-1, and MW-2 during the September 2, 1998 monitoring and sampling event at the site.

MTBE has been detected in monitoring wells (MW-1, MW-2, and RW-1). A maximum MTBE concentration of 490,000 ppb was detected in MW-1 on January 27, 1998.

#### **5.0 PLANNED INTERIM REMEDIAL ACTIVITIES**

Alton Geoscience proposes to conduct a dual-phase vacuum extraction (DPVE) test/interim remedial event at wells MW-1 and RW-1 using Alton Geoscience's Mobile Treatment System (MTS) to remove hydrocarbons from soil and groundwater in the vicinity of these wells.

The MTS utilizes a high-vacuum liquid ring pump to extract both liquids and vapors from the subsurface through a stinger pipe inserted into the monitoring wells. At the surface, the liquids are separated from the vapors using an inline "knockout pot". The liquids are then pumped to a holding tank for storage until the appropriate disposal arrangements are made. The vapor stream is routed to an propane-fueled thermal/catalytic oxidizer for on-site hydrocarbon destruction as authorized by the Bay Area Air Management District (BAAQMD). The liquid-ring pump is capable of creating a maximum vacuum of 28" of mercury (Hg), while the MTS can process vapor flow rates of 100 to 350 cubic feet per minute (cfm) and a liquid flow rate of up to 20 gallons per minute.

During MTS operation, wellhead vacuums, air flow rates, and hydrocarbon vapor concentrations will be periodically measured. The amount of hydrocarbon recovery will be calculated based on the air flow rates and hydrocarbon vapor concentrations, and used to determine the remedial effectiveness of the system.

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## 6.0 WORK SCHEDULE

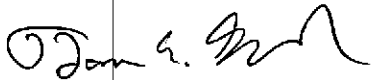
Planned activities will be performed according to the following estimated completion schedule:

- Begin interim remedial dual-phase vacuum extraction in RW-1 and MW-1 on June 21, 1999.
- Submit results of interim remedial actions within 45 days of the end of the test.

If you have any questions regarding this workplan, please call Mr. Dave DeWitt, Tosco Engineer, at (925) 277-2384, or Mr. Tom Seeliger, Alton Geoscience Senior Project Geologist, at (925) 288-2474. *925/688-2474* <sup>6</sup>

Sincerely,

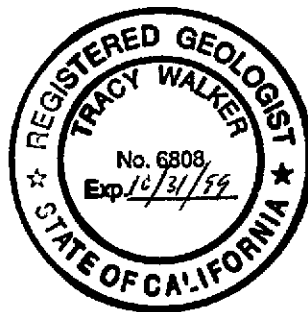
ALTON GEOSCIENCE



Tom Seeliger  
Senior Project Geologist



Tracy L. Walker, RG  
Associate



Attachments:

References

Figure 1: Vicinity Map

Figure 2: Site Plan

Appendix A: Dual-Phase Vacuum Extraction (DPVE) Test Protocol

cc: Dave DeWitt, Tosco Marketing Company  
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**Interim Remedial Workplan**  
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June 14, 1999

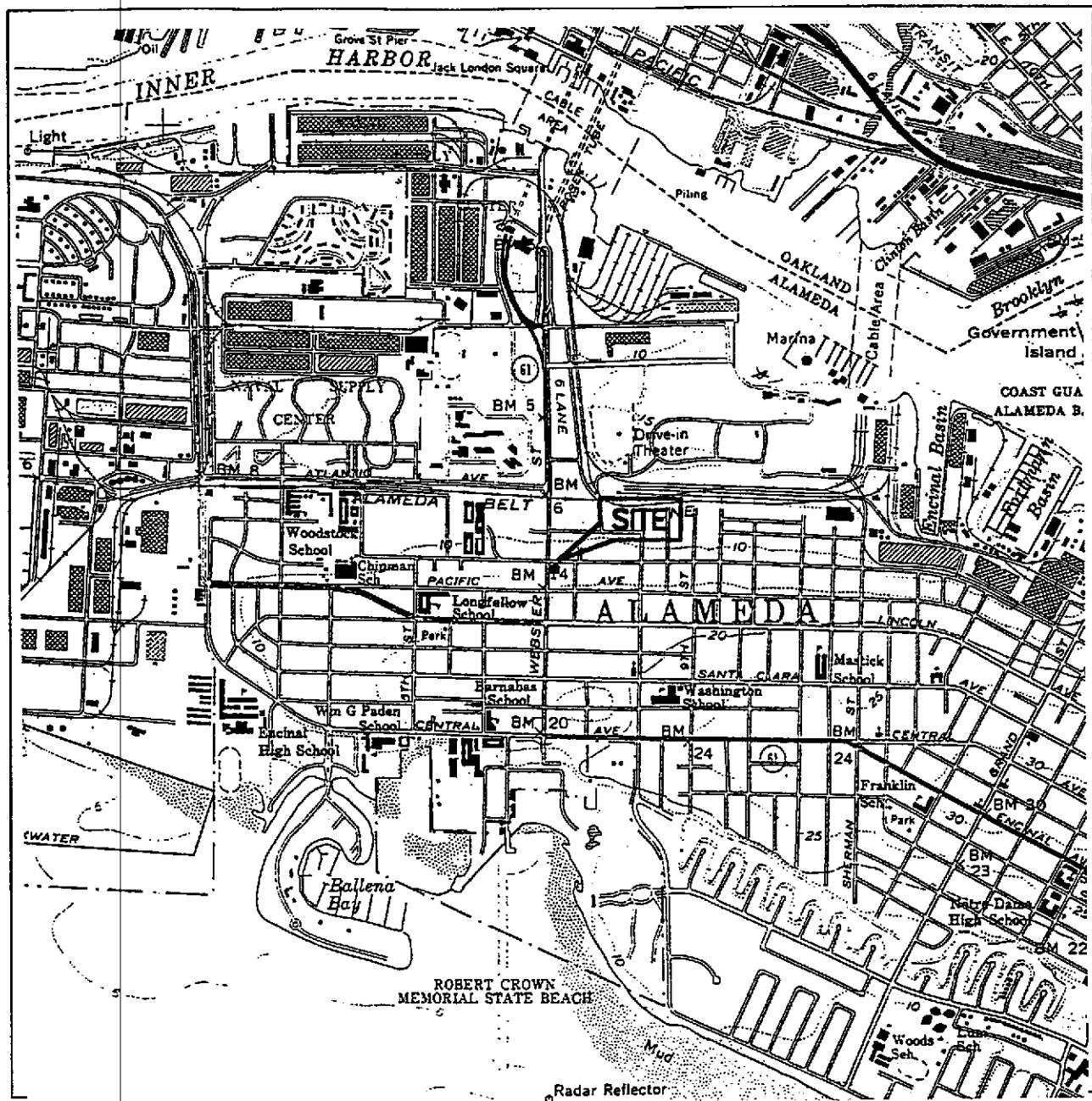
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**REFERENCES**

Alisto Engineering Group, 1998, Groundwater Monitoring and Sampling Report: BP Oil Company Service Station No. 11104, December 31.

California Regional Water Quality Control Board San Francisco Bay Region (CRWQCB), 1995, Water Quality Control Plan, June 21.

Hydro Environmental Technologies, Inc., 1993, Vapor Extraction Pilot Test Report: BP Oil Company Service Station No. 11104, November 1.



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SCALE 1 : 24,000



SOURCE:

United States Geological Survey  
7.5 Minute Topographic Maps:  
Oakland West Quadrangle  
California



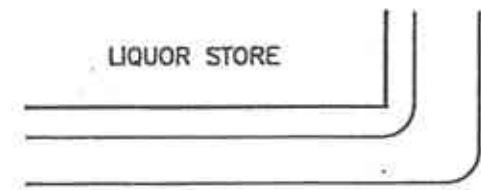
QUADRANGLE  
LOCATION

VICINITY MAP

Tosco Service Station No. 11104  
1716 Webster Street  
Alameda, California

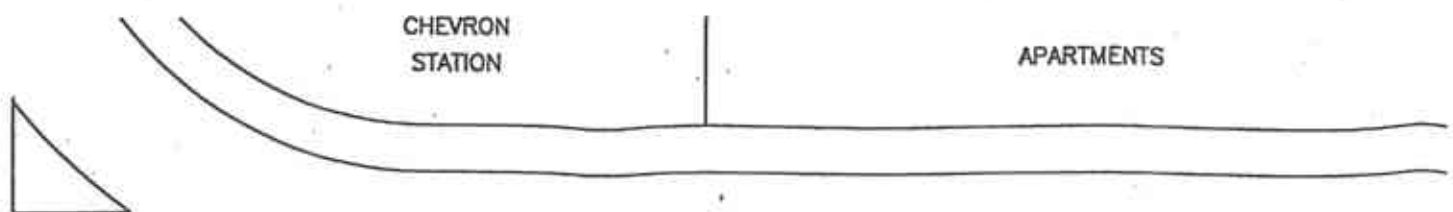


**FIGURE 1**



BUILDING

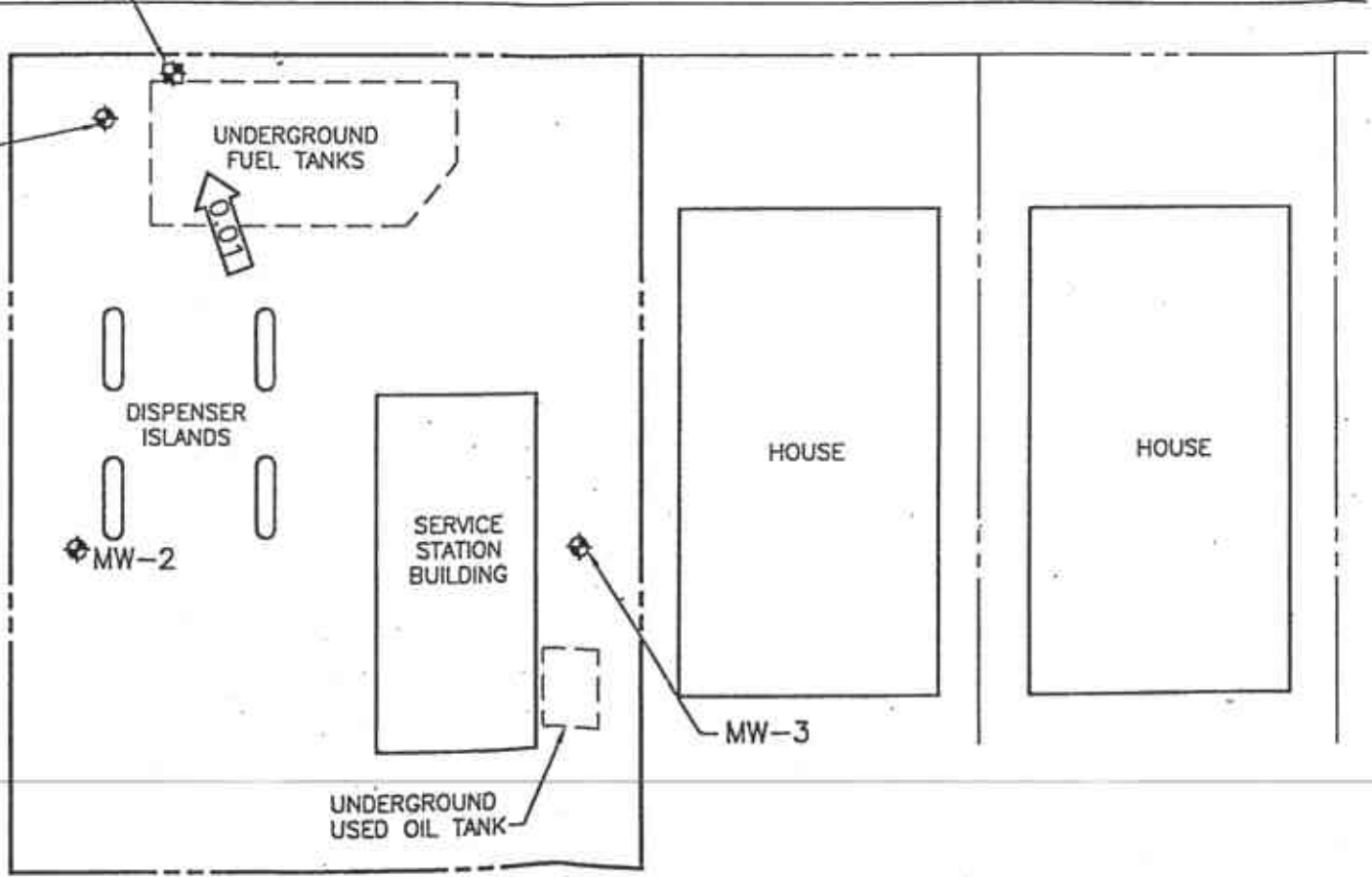
WEBSTER STREET



BUENA VISTA AVENUE

RW-1

MW-1



MW-2

MW-3



**APPENDIX A**  
**DUAL-PHASE VACUUM EXTRACTION (DPVE) TEST PROTOCOL**



## **APPENDIX A**

### **DUAL-PHASE VACUUM EXTRACTION (DPVE) TEST PROTOCOL**

Following is a general description of the Dual-Phase Vapor Extraction test protocol and data acquisition procedures.

#### **TEST PROTOCOL**

The dual-phase vacuum extraction system consists of a high-vacuum liquid ring pump, an in-line liquid knockout tank, and a thermal/catalytic oxidizer. Vapor, and dissolved phased hydrocarbons are extracted from above and/or below the groundwater table by inserting a stinger into a monitoring well and applying a high vacuum. Each stinger is sealed at the top of the well casing with a sanitary well seal. An integrated transfer pump transfers the extracted liquids from the knockout vessel to an onsite Baker Tank. The hydrocarbon vapors from the knockout vessel are abated by the all electric catalytic oxidizer. Electrical power for all equipment is provided through the use of a portable diesel generator.

#### **PRESSURE MONITORING**

Suction pressure is recorded with a magnehelic gauge fitted at the influent end of the blower to determine air flow rate. Well caps, fitted with magnehelic pressure gauges with sensitivity levels as low as 0.01 in. H<sub>2</sub>O are used to record the pressure drawdown data from at least two nearby observation wells.

#### **AIR FLOW RATE**

The air flow rate is obtained by recording the pressure on a magnehelic gauge fitted on a Pitot tube at the influent end of the vapor conduit. Vacuum readings are converted to flow rate by referring to the appropriate Pitot tube size conversion chart.

#### **GROUNDWATER MONITORING**

All observation and extraction wells are monitored prior to system startup. Depth to water is recorded in the observation well(s) during the test as well as after the test is completed.