

ENVIRONMENTAL  
PROTECTION

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November 6, 1998

Mr. Barney M. Chan  
Hazardous Materials Specialist  
Alameda County Health Care Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

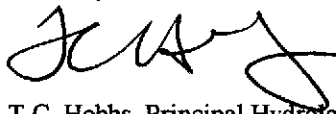
RE: Workplan for Subsurface Investigation at AC Transit 1100 Seminary Avenue Facility

Dear Mr. Chan:

On behalf of AC Transit, SK Environmental Decision Group, Inc. (EDG) is pleased to present this workplan for a subsurface investigation at the AC Transit 1100 Seminary Avenue Facility in Oakland, California. This workplan is presented in response to your September 18, 1998 letter to Ms. Suzanne Patton, AC Transit, in which Alameda County requested that a workplan for additional subsurface investigation be submitted by November 9, 1998.

Should you have any questions regarding this workplan or the matters discussed therein, please contact Ms. Suzanne Patton at (510) 577-8869.

Sincerely,



T.C. Hobbs, Principal Hydrologist  
West Coast Regional Manager

encl.

cc. Ms. Suzanne Patton, AC Transit

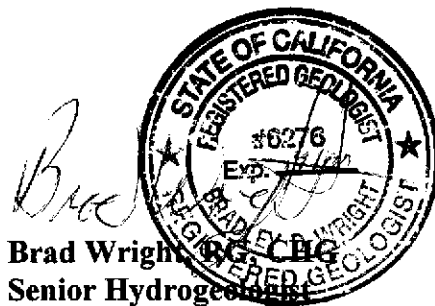
**WORKPLAN FOR SUBSURFACE INVESTIGATION  
AT 1100 SEMINARY AVENUE, OAKLAND CALIFORNIA**

**Prepared For:  
Ms. Suzanne Patton  
AC Transit-Environmental  
10626 E. 14<sup>th</sup> Street  
Oakland, California 94603**

**Prepared By:  
Environmental Decision Group  
2233 Santa Clara Avenue  
Alameda, California 94501**



**T.C. Hobbs  
Principal Hydrologist  
West Coast Regional Manager**



## **Introduction**

Environmental Decision Group, Inc. (EDG) is submitting this workplan on behalf of AC Transit, in response to Alameda County Health Care Services (ACHCS) September 18, 1998, letter which requested a workplan to perform a subsurface investigation at the AC Transit facility located at 1100 Seminary Avenue, Oakland, California (the site). The scope of work detailed in this workplan has been designed to further define the extent of total petroleum hydrocarbons in both soil and groundwater in the vicinity of five underground storage tanks (USTs ) that were removed from the site in January 1987.

## **Background**

UST removal, soil excavation and subsequent environmental investigations performed at the site are detailed in the following documents:

- Results of Soil Sampling Activities Near Underground Fuel Storage Tanks, Baseline Environmental Consulting, October 1, 1986
- A Plan of Correction for AC Transit Facility, Division 4, December 4, 1986
- Reporting on Monitoring Well Installation, Baseline Environmental Consulting, March 9, 1987
- Results of Hydrological and Geo-Chemical Activities, Kaiser Engineers, April 13, 1987
- Soil and Ground Water Investigation, Weiss Associates, May 28, 1987

Based on information contained in the above documents, it is known that five USTs were removed at the site in January 1987. Four of the tanks were used to store diesel fuel and one stored gasoline. At the time the USTs were removed, a limited quantity of soil containing concentrations of total petroleum hydrocarbons (TPH) in excess of 1000 milligrams per kilogram (mg/kg) was excavated. Following the UST removals, three groundwater monitoring wells were installed. Groundwater samples obtained from these wells showed that

groundwater had been impacted by TPH and benzene, toluene and xylene. Subsequent investigations showed that the affected area was limited to the areas of the former USTs and monitoring wells MW-1 through MW-3.

The three geologic units defined in the subsurface consist of fill to about three feet below ground surface (bgs), bay mud deposits underlying the fill to depths of five to nine feet bgs and fine grained alluvium below the bay muds. Permeable channel deposits within the alluvium are the primary water-bearing zones in the site's subsurface.

The 1987 groundwater samples indicate the presence of TPH as fuel (TPH-F) and benzene, toluene and xylene (BTX) in groundwater with concentrations up to 50 milligrams per liter (mg/l) and 13 mg/l, respectively. Since benzene has a higher solubility in groundwater and low State of California Maximum Contaminant Level, it was used as a *worse case* migration parameter. Preliminary calculations were made using available site data (including a reported southwesterly flow direction) and standard assumptions for Bay Area sediments indicate that benzene in groundwater could migrate from the former UST area to distances of up to 180 to 220 feet in the 11 years since the tanks were removed. Since hydrocarbon releases likely occurred during the years of UST use, the actual migration distance would be expected to be greater.

method, specify

show calc.

Soil borings, described in the following scope of work, are located to identify the presence and extent of benzene and TPH-F in groundwater and to evaluate natural attenuation of these substances, including degradation. In addition, soil samples will be collected from borings located near the former USTs and at soil boring locations where field observations of soil cores indicated the presence of petroleum hydrocarbons. All activities associated with this scope of work will be performed by or under the direct supervision of a California registered geologist.

### Scope of Work

Prior to initiating sampling at the site, the following activities will be performed:

- A site specific Health and Safety Plan will be prepared in accordance with California Occupational Health and Safety Administration requirements.
- Underground Service Alert (USA) will be notified of impending activities. Additionally, a professional underground utility locator will clear each boring location.
- Subcontracts will be secured.
- Required permits will be obtained from Alameda County Public Works Agency (ACPWA).
- Core concrete at each drilling location.

Soil Borings

*need 1 boring next to bed..*

The locations of the soil borings to be installed are depicted on Figure 1. Soil borings one through four will be located to identify the presence and extent of benzene, toluene, ethylbenzene and xylene (BTEX) and TPH-F in groundwater. During soil boring installation, headspace readings will be recorded for soil samples using a photoionization detector (PID) to determine if volatile compounds are present. If positive PID readings are measured or other evidence of a past hydrocarbon release (i.e. staining, odor) is observed, soil samples will be collected for possible laboratory analysis. Soil borings five through eight have been located to assess natural degradation of TPH-F and BTEX near the former USTs. Both soil and groundwater samples will be collected for laboratory analysis from soil borings five through eight.

*} what about  
measurements for  
bio-parameters*

Soil borings will be installed using a Geoprobe hydraulically-driven drilling rig. During boring advancement, soil samples will be collected to estimate lithologic characteristics and for field screening.

~~*should check maps to DTW.*~~

Based on the information contained in the previous site investigation reports, groundwater was encountered at depths of 10 to 15 feet bgs in 1989. During the subsurface investigation, soil borings will be advanced two feet beyond first encountered groundwater, or to a maximum

depth of 17 feet bgs. If no readily producing water-bearing zone is encountered groundwater samples will not be collected.

(GW spile(s) needed to determine extent of GW)

Soil samples will be retrieved in clear acetate sleeves, which allow the field geologist to view the soil lithology and note any visual staining. A portion of each sample will be placed in a plastic bag for headspace analysis using a PID. Portions of the soil core being submitted for laboratory analysis will be immediately sealed with teflon tape and plastic end caps and placed in a cooler containing ice. A unique sample identification number will be attached to each soil sample and documented on a chain-of-custody form.

Groundwater sampling will involve temporarily placing 3/4-inch polyvinyl chloride (PVC) well screen and casing into the borehole to depths of approximately two-feet below first encountered groundwater. Groundwater samples will be collected using either a peristaltic pump or bailer. A reasonable attempt will be made to purge one to three borehole volumes of groundwater prior to sample collection. Groundwater will be transferred to appropriate laboratory containers and a unique sample identification number will be attached to each container. The sample identification number will be documented on the chain-of-custody form. Upon completion of sample collection, each borehole will be backfilled with neat cement and topped with appropriate material to match the surrounding surface.

Reusable equipment will be thoroughly decontaminated between boreholes. Soil cuttings and water generated during sampling will be placed in appropriate containers for storage and disposal in accordance with local, state and federal regulations.

Soil and groundwater samples will be submitted to a California State-certified laboratory, under chain-of-custody documentation for analysis by USEPA Method 8015 for total petroleum hydrocarbons and USEPA Method 8020 for BTEX. Samples will be analyzed on a standard two-week turnaround basis. One trip blank will be generated and submitted for 8020 analysis.

TTHg  
+TPHed

*Resumes wells to MSL.*

*MW-4 still in existence  
FBO, monitor, verify proper  
closure.*

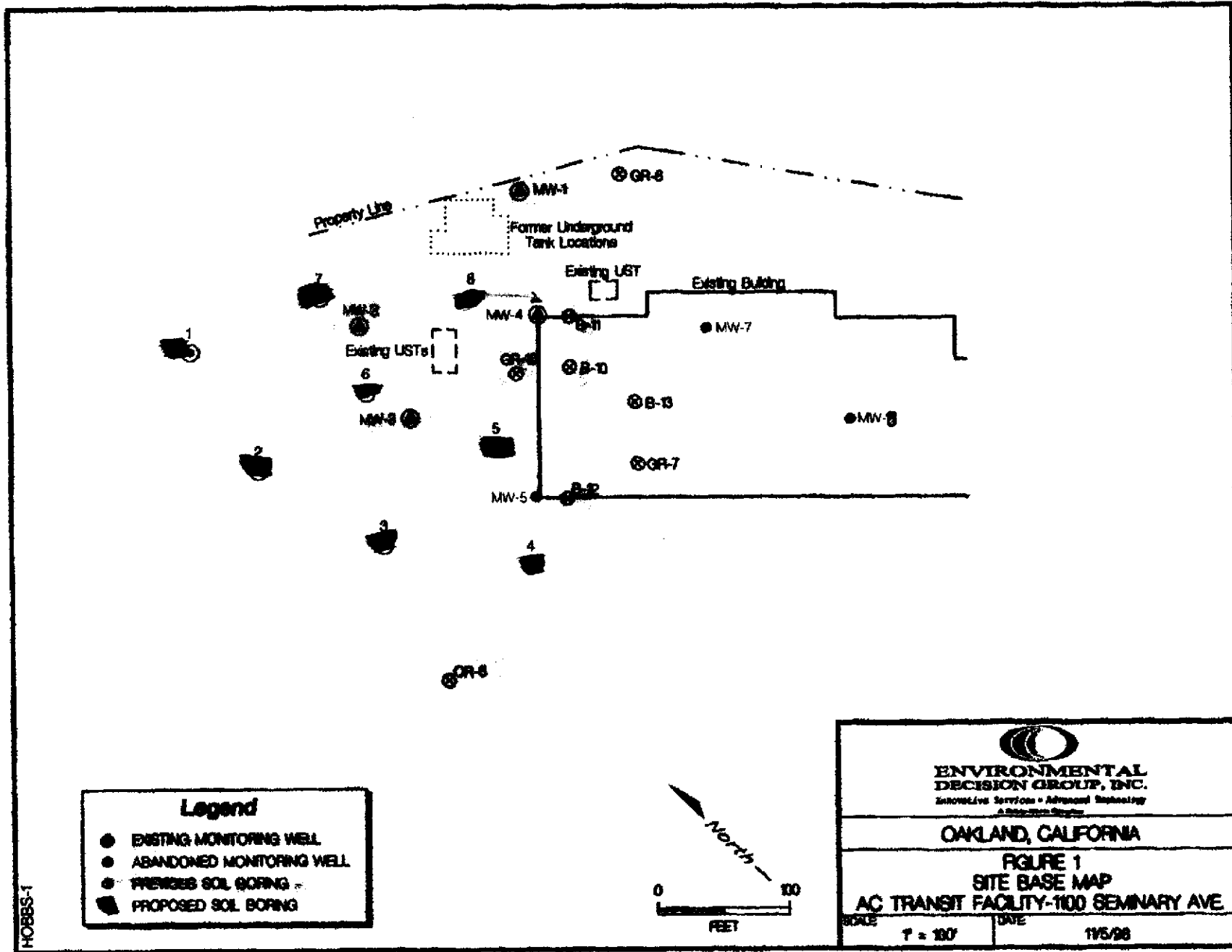
### Monitoring Wells

The existing monitoring wells (MW-1 through MW-3) will be assessed to confirm or re-establish well construction integrity. The well assessment will include opening each well, measuring static water level (including measurement for free product), measuring the total depth for comparison to the original construction depth and redeveloped by surging and pumping. Groundwater samples will be collected after redevelopment and the wells will be secured with new locking caps.

Monitoring well groundwater samples will be submitted to a California State-certified laboratory, under chain-of-custody documentation for analysis by USEPA Method 8015, for total petroleum hydrocarbons and USEPA Method 8020 for BTEX. Samples will be analyzed on a standard two-week turnaround basis.

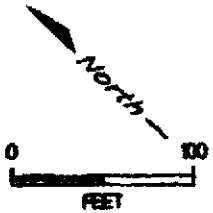
### **Reporting**


A report documenting the subsurface investigation and findings of the soil and groundwater sampling and analysis activities will be prepared and submitted. This report will present a brief description of the field activities, a site map denoting boring locations, a summary table of laboratory analytical results, a brief discussion of the analytical results and conclusions and recommendations. Copies of laboratory analytical reports and soil boring logs will be provided as an appendix. The report will be reviewed and stamped by a California registered geologist.



**Legend**

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- PROPOSED SOIL BORING
- PROPOSED SOIL BORING



  
**ENVIRONMENTAL  
DECISION GROUP, INC.**  
Knowledge Services • Advanced Engineering  
A Pro-Tech Group

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**OAKLAND, CALIFORNIA**

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**FIGURE 1  
SITE BASE MAP  
AC TRANSIT FACILITY-1100 SEMINARY AVE.**

<small>SCALE</small> 1" = 100'	<small>DATE</small> 11/5/98
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HOBBES-1