James P. Bowers, PE
R. William Rudolph, Jr., PE

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July 1, 1992
PW 92.145

Mr. Scott O. Seery
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

**Work Plan**
**Preliminary Site Assessment**
**Alameda Gateway Limited**
**2900 Main Street**
**Alameda, California 94501**

Dear Mr. Seery:

The following is a work plan for a preliminary site assessment of confirmed hydrocarbon releases from 4 underground storage tanks (USTs) at the referenced site. This work plan is in response to a letter by the Alameda County Health Care Services Agency (ACHCSA) dated May 26, 1992 requesting an investigation of the releases.

Four underground storage tanks were removed from the site on April 11, 1990. Analytical testing of soil collected from the side walls of tank pits 133 and 137 contained total extractable hydrocarbons (TEH) concentrations of diesel up to 1,100 parts per million (ppm) and 38,000 ppm respectively. A grab groundwater sample from tank pit 85A and 85B contained 3,300 parts per billion (ppb) of total volatile hydrocarbons (TVH) as gasoline and 37 ppb of benzene.

This work plan outlines a site assessment to preliminarily evaluate the impacts of the underground storage tank releases on soil and groundwater at the site. The assessment will consist of the following tasks.

1. Install 3 groundwater monitoring wells,
2. Develop and sample wells,
3. Analyze soil and groundwater samples,

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4. Perform a level survey and tidal influence study, and

5. Prepare an assessment report.

These tasks are described below.

**Task 1 - Install Three Groundwater Monitoring Wells**

To confirm the results of the previous grab groundwater sampling event, and to evaluate whether known soil contamination has impacted groundwater, we propose to install three groundwater monitoring wells approximately 10 feet down gradient of the tank excavations. Well permits will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7. The wells will be constructed in test borings drilled using hollow stem auger equipment. Drilling and sampling equipment will be steam cleaned prior to each use.

According to previous investigations the groundwater surface is situated approximately 3 feet below the groundsurface, and as a result, the wells will be about 10 feet deep. The upper 2 feet of the wells will consist of 2-inch-diameter PVC casing and the lower 8 feet will be machine slotted screen. A 2 foot sanitary seal will be constructed at the top of each well. The wellheads will be secured with locking caps and finished below grade in traffic rated utility boxes.

Our field engineer will observe drilling operations and prepare a detailed log of the soils encountered. Soil samples will be obtained at three to five foot intervals. The samples will be screened in the field using an organic vapor meter. The samples will be retained in 2-inch-diameter brass liners. Sample liner ends will be covered with Teflon sheeting, plastic caps and duct tape. The samples will be refrigerated until transmitted to the analytical laboratory.

One soil sample from each boring will be analyzed for the hydrocarbon constituents stored in the adjacent tank(s). The analytical testing program will include total extractable hydrocarbons (TEH), as diesel, total volatile hydrocarbons (TVH) as gasoline and benzene, toluene, ethylbenzene and xylenes (BTEX).

Soil cuttings generated during drilling will be placed in drums. Appropriate disposal methods will be evaluated upon review of the analytical test results.

**Task 2 - Develop and Sample Wells**

The wells will be developed by pumping and/or bailing until the water is relatively clear. Measurements of pH, conductivity and temperature will be taken during development. Development water will be placed in 55 gallon drums. Appropriate disposal methods will be evaluated upon review of analytical test results.

After development, groundwater samples will be obtained from the wells using new disposable bailers. The samples will be retained in pre-cleaned sample containers and refrigerated until delivery to the analytical laboratory.

**Task 3 - Analyze Soil and Groundwater Samples**

The soil and groundwater samples will be transmitted to the analytical laboratory accompanied by Chain-of-Custody documents. The analytical testing will be performed by Curtis and Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services (DHS) for soil and groundwater analyses.

The samples will be analyzed for the constituents in the previous adjacent tank. The analytical testing will be as follows.

| Well | Adjacent to Previous Tank(s) | Previous Contents | Test Name | Method |
|---|---|---|---|---|
| MW-1 | 85A | Diesel | TEH | EPA 8015/3550 |
| | 85B | Gasoline | TVH | EPA 8015/5030 |
| | | | BTXE | EPA 8020 |
| MW-2 | 133 | Diesel | TEH | EPA 8015/3550 |
| | | | BTXE | EPA 8020 |
| MW-3 | 137 | Fuel Oil | TEH | EPA 8015/3550 |
| | | | BTXE | EPA 8020 |

**Task 4 - Perform Level Survey and Tidal Influence Study**

A level survey will be conducted to determine the elevations of the tops of the well casings. Elevations will be referenced to a mean seal level. Groundwater depths will be measured so that the groundwater flow direction and gradient can be determined. Groundwater levels will be measured monthly for one full year as requested by the ACHCSA.

Water levels within the Oakland Estuary fluctuate with the tide. The effects of tidal changes on the study area will be evaluated by monitoring water levels in the harbor and wells at various times during a full tidal cycle.

**Task 5- Report**

Based on the results of the assessment, we will develop conclusions and/or recommendations regarding:

1. Soil and groundwater conditions,
2. The presence of contaminants in the samples analyzed,
3. The significance of contaminant levels with respect to State and Local regulatory criteria,
4. The tidal influence on groundwater in the study area, and
5. The scope of future study, if necessary.

We will record our conclusions and recommendations in a written report. The report will include a site plan, well logs, monitoring well details, well development and sampling logs, analytical test data and Chain-of-Custody records.

If you have any questions, please call.

Yours very truly,

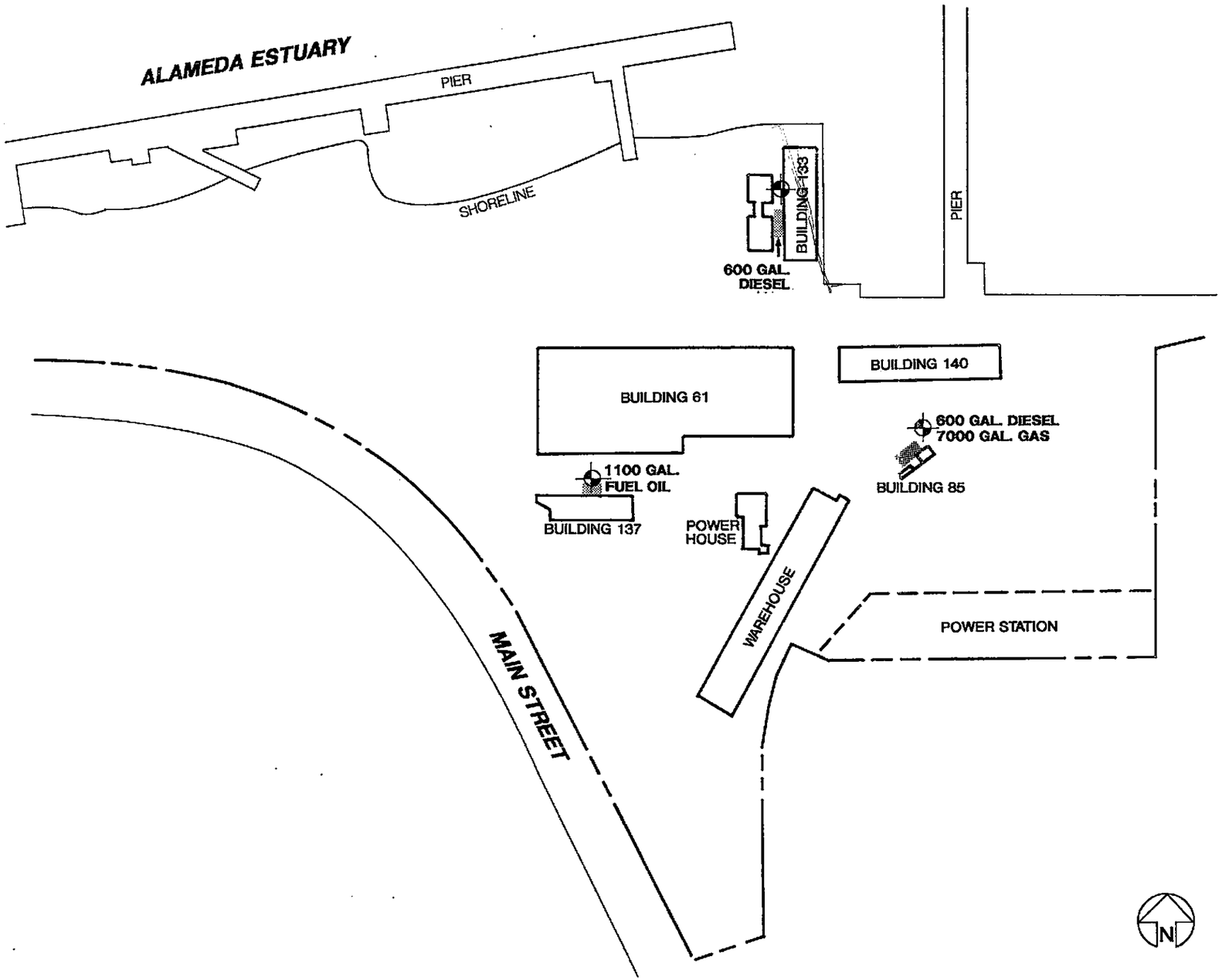
Subsurface Consultants, Inc.

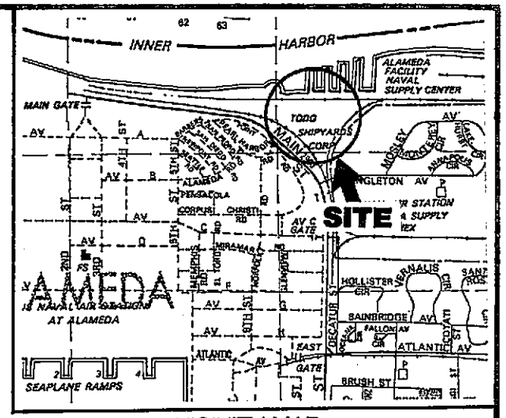
Sean O. Carson
Project Manager

R. William Rudolph
Vice President

SOC:RWR:JPB:sld

cc: Mr. Richard Hiett
San Francisco Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, CA 94612




VICINITY MAP

PROPOSED MONITORING WELL

PREVIOUS UNDERGROUND STORAGE TANK

N

APPROXIMATE SCALE (feet)

0 200 400

# SITE PLAN

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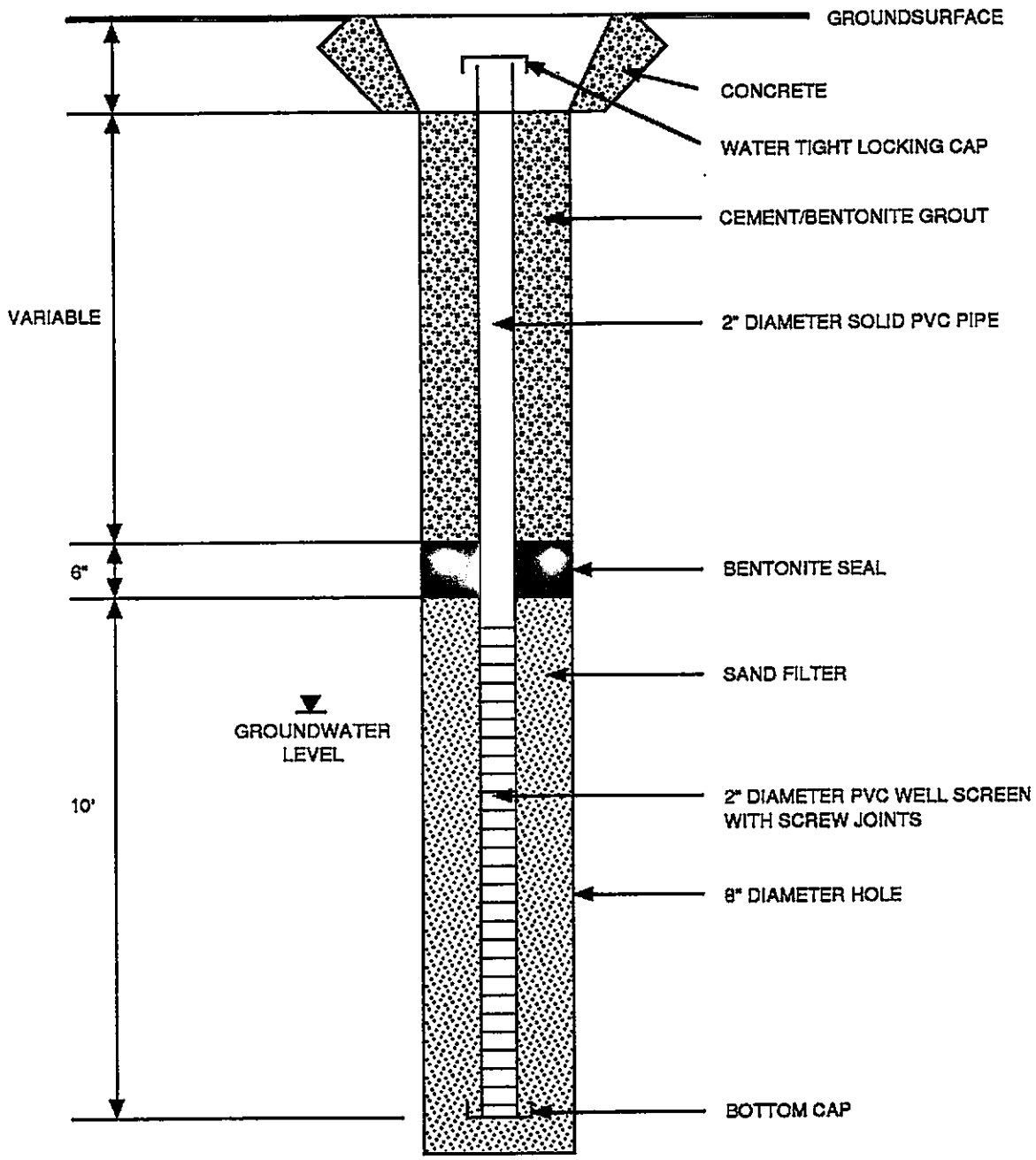
2900 MAIN STREET – ALAMEDA, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 554.007 | 7/10/92 | |

PLATE 1




# GROUNDWATER MONITORING WELL DESIGN

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PLATE 2