ALISTO ENGINEERING GROUP

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June 6, 1994

Mr. Scott Seery
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

10-138-02-010

Subject: **Work Plan** for Supplemental Site Investigation
BP Oil Company Service Station No. 11105
3515 Castro Valley Boulevard
Castro Valley, California

Dear Mr. Seery:

On behalf of BP Oil Company, enclosed is a **work plan to conduct a supplemental site investigation** at BP Oil Company Service Station No. 11105, 3515 Castro Valley Boulevard, Castro Valley, California.

Please call if you have questions or need additional information.

Sincerely,

ALISTO ENGINEERING GROUP

Eric Yoemley for

Brady Nagle
Project Manager

Enclosure

1777 OAKLAND BOULEVARD, SUITE 200 • WALNUT CREEK, CA 94596 • (510) 295-1650 • FAX (510) 295-1823
CONTRACTORS LICENSE NO. A-652544

ALISTO ENGINEERING GROUP

FACSIMILE TRANSMISSION SHEET

DATE: 6/4/94

TO: SCOTT SEERY

COMPANY: ALAMEDA COUNTY HEALTH CARE SERVICES

FAX NO.: 569-4757

FROM: ERIN GORMLEY

NUMBER OF PAGES INCLUDING THIS SHEET: 8

MESSAGE: ON BEHALF OF BP OIL COMPANY, THIS IS THE WORK PLAN FOR SERVICE STATION NO. 11105, 3515 CASTRO VALLEY BLVD., CASTRO VALLEY, CALIFORNIA. A COPY WILL FOLLOW BY MAIL

Please call if you do not receive this facsimile in full.

ALISTO ENGINEERING GROUP
1777 Oakland Boulevard, Suite 200
Walnut Creek, California 94596
TEL: 510-295-1650 FAX: 510-295-1823

WORK PLAN
FOR
SUPPLEMENTAL SITE INVESTIGATION

BP Oil Company Service Station No. 11105
3515 Castro Valley Boulevard
Castro Valley, California

Project No. 10-138

Prepared for:

BP Oil Company
Environmental Resources Management
295 S.W. 41st Street
Building 13, Suite N
Renton, Washington 98055

Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California

June 3, 1994

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
ALBERTO SANCHEZ SEVILLA
26392
Exp. Date 3/31/94
CIVIL
STATE OF CALIFORNIA

WORK PLAN
FOR
PHASE II - SUPPLEMENTAL SITE INVESTIGATION

BP Oil Company Service Station No. 11105
3515 Castro Valley Boulevard
Castro Valley, California

Project No. 10-138

INTRODUCTION

This work plan presents the proposed scope of work to perform a supplemental site investigation at BP Oil Company Service Station No. 11105, 3515 Castro Valley Boulevard, Castro Valley, California. A site plan is shown in Figure 1.

SCOPE OF WORK

The proposed scope of work for this investigation includes: installing two additional onsite and one offsite groundwater monitoring wells and two onsite soil borings to further assess the nature and extent of petroleum hydrocarbons in the soil and groundwater. The locations of the proposed monitoring wells are shown in Figure 2.

The work will be conducted in accordance with the technical specifications of BP Oil Company and the guidelines and requirements of the Alameda County Health Care Services Agency and the California Regional Water Quality Control Board, San Francisco Bay Region. The scope of work has been divided into the following tasks:

Task 1: Acquire Permits

Before beginning the field work, the necessary drilling and groundwater well installation permit will be procured, offsite access authorization obtained, underground utilities located, and field activities scheduled.

Task 2: Drill Exploratory Soil Borings and Install Groundwater Monitoring Wells

Five exploratory soil borings will be drilled using a truck-mounted drilling rig equipped with 8-inch-diameter hollow-stem augers. Three of the five borings will be converted into groundwater monitoring wells to further assess the lateral extent of petroleum hydrocarbons in the soil and groundwater, and two of the soil borings will be drilled to investigative the presence or absence of petroleum hydrocarbons in soil beneath a concrete slab. The locations of the proposed and existing groundwater monitoring wells and proposed soil borings are presented in Figure 2.

The two soil borings in the concrete pad and the one soil boring for monitoring well construction at the western side of the site will be sampled continuously. In the other two soil borings for monitoring well construction, soil samples will be collected at 5-foot intervals and at significant stratigraphic changes beginning at 5 feet below grade and continuing to the total depth of the borings. Samples will be collected from a split-spoon sampler lined with stainless steel tubes and logged in the field by a qualified geologist or engineer using the Unified Soils Classification System. Each sample will also be field screened using a photo-ionization detector or combustible gas indicator to assist in selecting the samples for laboratory analysis. The samples selected for analysis will be sealed airtight with Teflon or aluminum sheeting, plastic caps, and adhesive tape, and placed immediately into a cooler containing blue or dry ice.

Three of the five borings will be converted into 2-inch-diameter groundwater monitoring wells to a depth of approximately 10 to 15 feet below the top of the first saturated zone. The proposed wells will be installed and constructed based on site-specific hydrogeologic conditions. The wells will be constructed using 2-inch-diameter, Schedule 40, polyvinyl chloride casing with 0.010-inch perforations, and the associated filter pack. An approximately 1-foot-thick bentonite spacer will be installed above the sand pack, and the remainder of the annulus will be sealed with Portland Type I/II neat cement. The top of each well will be secured with watertight locking caps and utility boxes finished flush with the ground surface.

Task 3: Develop, Sample, and Survey Groundwater Monitoring Wells

Well development will be performed to: (1) consolidate and stabilize the filter pack; (2) optimize well production; and (3) reduce the turbidity of subsequent groundwater samples. The proposed wells will be developed during drilling before installation of the bentonite spacer and neat cement seal. Development will continue to a maximum of 10 saturated well volumes or until the groundwater is relatively free of sediments.

All the wells at the site will be sampled a minimum of 72 hours after well development and installation of the neat cement seal. Before sampling, the water level at each well will be measured, and the wells will be observed for the presence of free product or sheen. The wells will then be purged to allow groundwater representative of the aquifer to enter. Purging will be accomplished using a bailer or pump so as not to agitate the groundwater or expose it to air. Purging will continue until a minimum of 3 and a maximum of 10 saturated well casing volumes have been evacuated and indicator parameters have stabilized. Indicator parameters will be Ph, temperature, and specific conductivity. Stabilization of the parameters will be determined when they vary no more than the following values:

- Ph - 0.2 units
- Temperature - 0.5 degrees Celsius
- Specific conductivity - 10 percent

The samples will be placed in an iced cooler and transported to a state-certified laboratory for analysis. Purged water from sampling and development, as well as decontamination rinsate will be stored onsite in Department of Transportation approved 55-gallon drums for transport and disposal.

To calculate the hydraulic gradient and groundwater flow direction of the shallow aquifer, each well will be surveyed by a state-licensed surveyor from the top of the casing to within 0.01 foot accuracy in reference to an established benchmark or a common datum.

Task 4: Analyze Soil and Groundwater Samples

Selected soil samples and groundwater samples from each well will be transported to a state-certified laboratory and analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, and total xylenes (BTEX) using Environmental Protection Agency (EPA) Methods 5030/8015/8020. The samples will be analyzed on a standard 2-week turnaround time.

Task 5: Analyze Data and Laboratory Results

On completion of sample analysis, a detailed evaluation of results and available information will be conducted to assess the extent and nature of petroleum hydrocarbons in the soil and groundwater. This will include the following:

- Interpretation of geologic and hydrogeologic characteristics of the water-bearing formation and the nature of subsurface contamination.
- Preparation of groundwater potentiometric surface maps and hydrocarbon concentration maps.
- Assessment of the extent of hydrocarbons in the soil and/or groundwater.

Task 6: Prepare Report

A report presenting the results, findings, conclusions, and recommendations of the investigation will be prepared for submittal to the appropriate parties.

SITE SAFETY PLAN

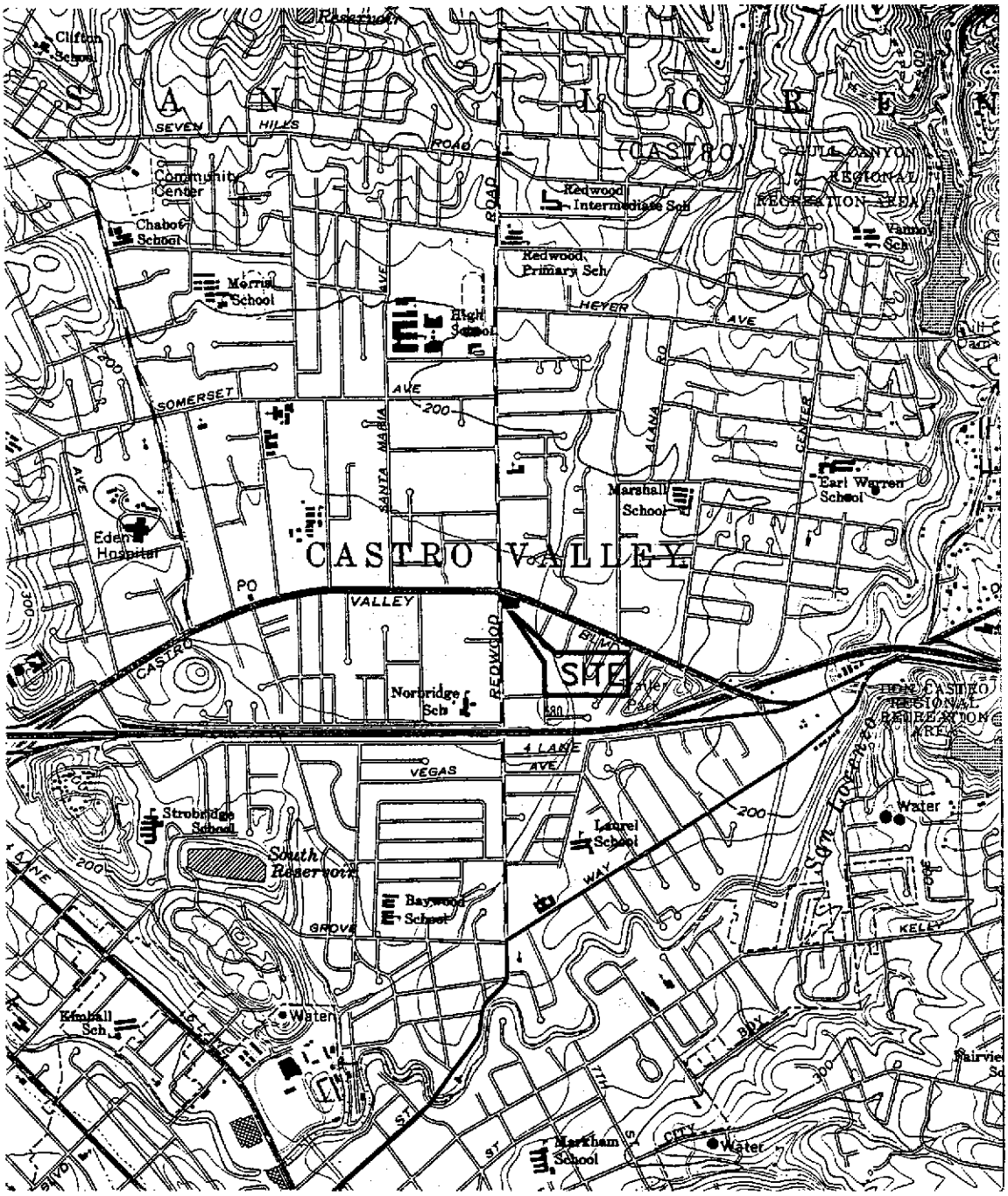
All field procedures and activities related to the site investigation will be conducted in accordance with the site-specific safety plan. The site safety plan will be developed in accordance with applicable requirements of the California Environmental Protection Agency and the federal and state Occupational Safety and Health Administration.

IMPLEMENTATION SCHEDULE

The proposed supplemental site investigation will be completed and a report submitted within 90 days after approval of the work plan from the appropriate regulatory agencies. The implementation schedule assumes that access from the offsite property owner is procured within 30 days of work plan approval.

The estimated schedule for completion of the tasks is as follows:

Task/Activity	Days After Work Plan Approval
- Obtain Competitive Bids Work Plan	15
- Acquire permits	20
- Procure offsite access	30
- Install well	40
- Develop and sample wells	45
- Analyze samples	60
- Analyze data	75
- Prepare report	90



SOURCE:
USGS MAP, HAYWARD QUADRANGLE, CALIFORNIA. 7.5 MINUTE SERIES. 1959. PHOTOREVISED 1980.

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FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10-138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

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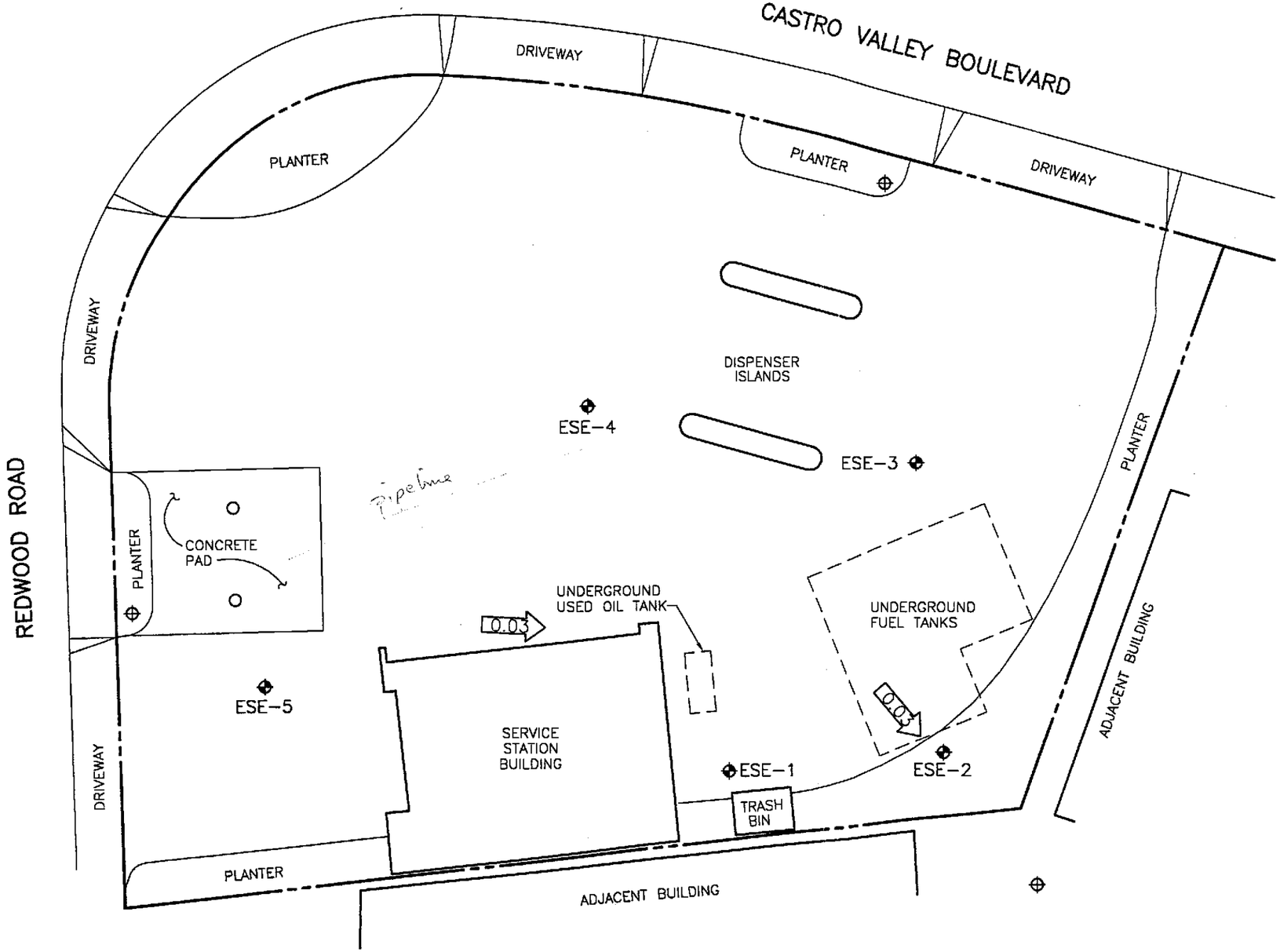

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SCALE IN FEET

LEGEND

- EXISTING GROUNDWATER MONITORING WELL
- PROPOSED GROUNDWATER MONITORING WELL
- PROPOSED SOIL BORING
- 0.03 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT AS MEASURED ON FEBRUARY 17, 1994

FIGURE 2

SITE PLAN

BP OIL SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10-138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

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