



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ENVIRONMENTAL
PROTECTION
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February 24, 1995
Project 325-031.01

Mr. Mark Miller
Chevron U.S.A. Products Company
2410 Camino Ramon
P.O. Box 5004
San Ramon, California 94583-0804

Re: Work Plan
Former Gulf Service Station G-0006
460 Grand Avenue at Bellevue Avenue
Oakland, California

Dear Mr. Miller:

This letter, prepared by Pacific Environmental Group, Inc. (PACIFIC), presents a work plan for the installation of two temporary and one permanent off-site groundwater monitoring wells at the site referenced above. The purpose of the proposed work is to further delineate the downgradient extent of dissolved hydrocarbons in groundwater beneath the site. The work plan includes a discussion of site background, scope of work, and schedule. Field and analytical procedures are presented as Attachment A.

SITE BACKGROUND

The site is a former Gulf Oil Service Station located at the northeast corner of the intersection of Grand Avenue and Bellevue Avenue in Oakland, California (Figure 1). The site lies within a residential and light commercial area. A small business and apartment building are located across Bellevue Avenue to the northwest, an apartment building lies adjacent to the site to the east, and Lake Merritt lies approximately 250 feet south and downgradient of the site. Grand Avenue is a major street comprised of four to six lanes.

The site was initially built in the late 1940s. In 1961, the site was purchased and remodeled by Gulf Oil Corporation (Gulf), who subsequently replaced the then-existing fuel storage tanks with three new fuel underground storage tanks (USTs). In August 1978, the property was then purchased from Gulf by Falaschi Brothers, the USTs were emptied of product, and the fuel dispensers were removed. From 1978 to 1990, Falaschi Brothers operated the site as a

parking facility. Fuel products or oils have not been sold or stored at the site since Falaschi Brothers acquired ownership of the site.

In November and December 1990, in response to a letter from Alameda County Health Care Services, Falaschi Brothers had the three USTs and one waste oil tank removed as documented in a report entitled *Removal of Inactive Underground Storage Tanks*, prepared by Treadwell and Rollo, Inc., dated January 29, 1991. The three former USTs were 10,000-gallon volume each, and the waste oil storage tank, located behind the station building, was 280 gallons in volume (Figure 2).

In December 1994, PACIFIC, on behalf of Chevron U.S.A. Products Company, installed three groundwater monitoring wells and one soil boring on site. Total petroleum hydrocarbons calculated as gasoline (TPH-g) and benzene were not detected in groundwater samples collected from two of the three wells. One of these two wells is located downgradient of the former tank complex. The second well is located downgradient of the waste oil tank. Groundwater samples collected from the third well contained TPH-g and benzene at concentrations of 640 and 63 parts per billion (ppb), respectively. The third well is located downgradient of the pump islands.

The site area is underlain by poorly sorted gravels, sands, silts, and clays of the upper member of the San Antonio Formation, which were deposited in alluvial fan, flood plain, and bay swamp depositional environments. These sediments are the main source of groundwater in the region. The upper member of the San Antonio Formation has been deposited principally by coalescing alluvial fans adjacent to mountain highlands and by meandering streams in the gently sloping western portion.

Based on previous investigations conducted at the site to a maximum depth of 20 feet, soil beneath the site consists primarily of silts and clays with sand interbeds. A relatively continuous sand interbed was encountered at a depth interval of between 10 to 20 feet. Groundwater at the site occurs from approximately 5.17 to 7.49 feet below ground surface (bgs). The average historical groundwater gradient has been 0.09 ft/ft with flow to the south.

SCOPE OF WORK

The scope of work of this work plan was designed to investigate groundwater conditions directly downgradient of the site. The specific scope of work is described below:

- **Permitting.** Appropriate well permits and encroachment permits will be obtained from the Alameda County Water District (ACWD) and the City of Oakland.
- **Well Installation.** Two temporary wells (EB-2 and EB-3) and one permanent groundwater monitoring well (C-4) will be installed along the downgradient property boundary of the site.

- **Soils Analyses.** Selected soil samples will be submitted to a California State-certified laboratory for analysis of TPH-g, and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds).
- **Well Development and Sampling.** Temporary Wells EB-2 and EB-3, and Well C-4 will be developed prior to groundwater sampling, after which groundwater samples will be submitted to a California State-certified laboratory for analysis of TPH-g and BTEX compounds.
- **Well Elevation Survey.** Well C-4 will be surveyed to mean sea level (MSL).
- **Reporting.** A report that documents the findings of the investigation will be submitted upon completion of the work.


SCHEDULE


Upon approval of the work plan, PACIFIC is prepared to secure encroachment permits and to commence performing the field work approximately 2 weeks after notification to proceed. The report of findings will be submitted approximately 6 weeks after initiation of field work unless an accelerated or rush schedule is requested.

If you have any questions regarding the contents of this letter, please call.

Sincerely,

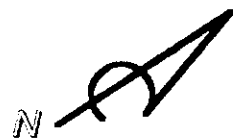
Pacific Environmental Group, Inc.


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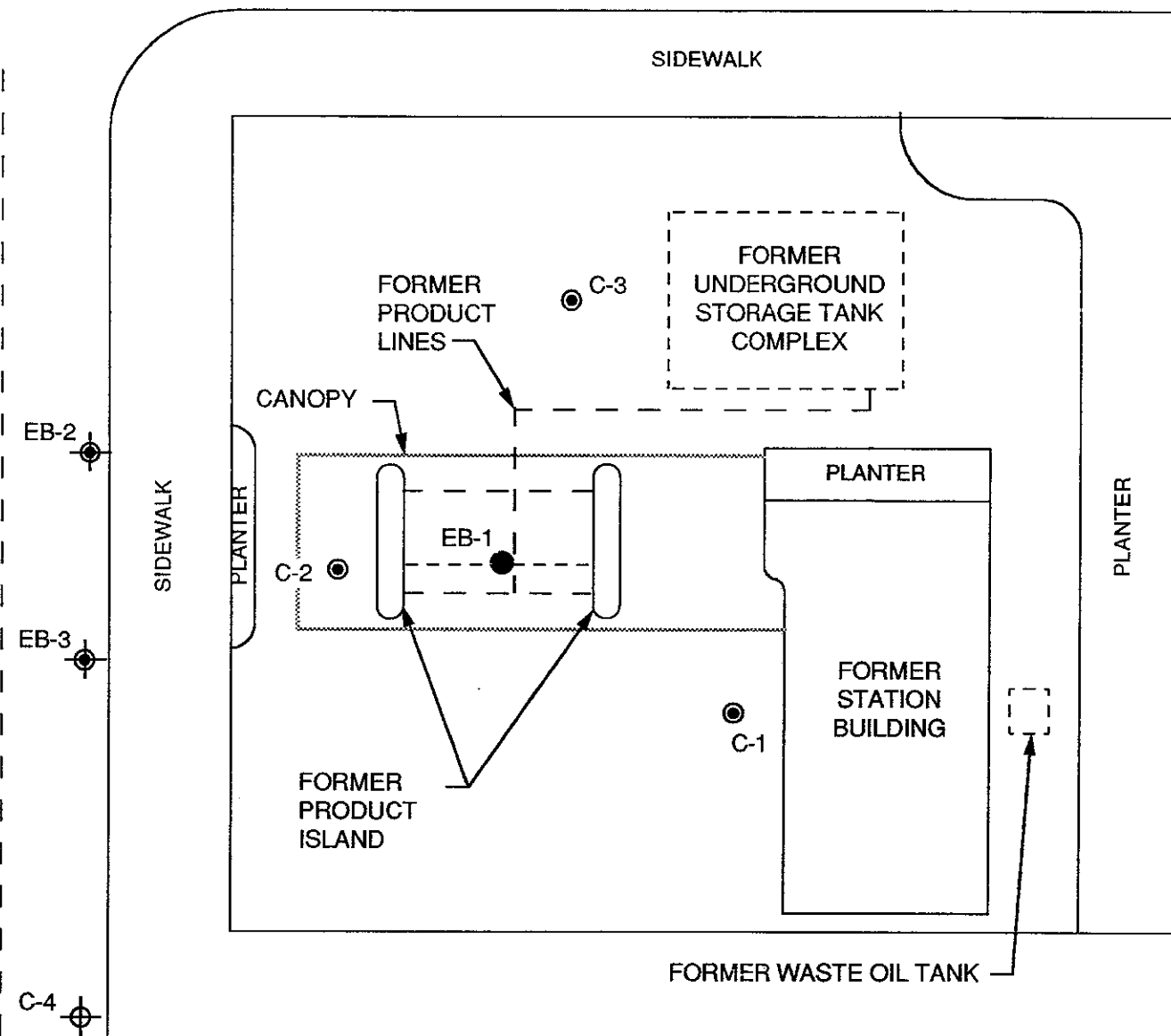


Attachments: Figure 1 - Proposed Well Location Map
Attachment A - Field and Laboratory Procedures



BELLEVUE AVENUE

GRAND AVENUE



LEGEND

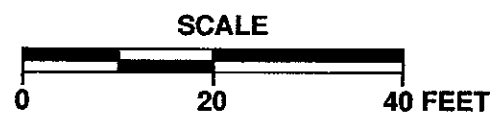
- C-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- EB-1 ● EXPLORATORY SOIL BORING LOCATION AND DESIGNATION
- C-4 ⊕ PROPOSED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- EB-2 ⊕ PROPOSED TEMPORARY GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

map

MAP TAKEN FROM THEADWELL & ASSOCIATES, INC.



PACIFIC ENVIRONMENTAL GROUP, INC.



FORMER GULF SERVICE STATION G-0006
460 Grand Avenue at Bellevue Avenue
Oakland, California

PROPOSED WELL LOCATION MAP

FIGURE:
1
PROJECT:
325-031.01

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

ATTACHMENT A

FIELD AND LABORATORY PROCEDURES

Soil Boring Drilling Procedures

The monitoring wells will be drilled using an 8-inch diameter hollow-stem auger drilling equipment, and will be logged by a Pacific Environmental Group, Inc. geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging and chemical analysis will be collected at minimum 5-foot depth intervals by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler is driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. Soil samples will be analyzed in the field for volatile organic compounds using a photo-ionization detector (PID). Results of the PID tests will be used to assist in selection of samples for laboratory analysis. Up to three samples per boring may be submitted for analysis as described below. Soil samples for chemical analysis will be retained in brass liners, capped with Teflon and plastic end caps, and sealed in zip-lock plastic bags. These samples will be placed in a cooler on ice for transport to the laboratory accompanied by chain-of-custody documentation.

All down-hole drilling equipment will be steam-cleaned prior to drilling and between boring locations. All residual soils obtained from drilling operations will be stockpiled on site and covered with plastic sheeting until laboratory analyses are completed and the results evaluated. Arrangements will then be made for disposal to an appropriate landfill based on the detected gasoline concentrations.

Monitoring Well Installation Procedures

Two borings (EB-2 and EB-3) will be converted to temporary groundwater monitoring wells by the installation of 2-inch diameter Schedule 40 PVC casing and 0.020-inch factory-slotted screen. ~~Screen~~ will be placed through the saturated zone and extend no more than 15 feet below first-encountered groundwater. A graded sand pack (Lonestar 2 x 12) will be placed in the annular space across the screened interval, and will extend approximately 0.5 to 1 foot above the screen, dependent upon water levels. One boring (C-4) will be converted to a permanent monitoring well by following the procedure detailed above. Then approximately

✓ how far above gw?

0.5 to 1 foot of bentonite will be placed above the sand pack. A neat cement seal will be placed from the top of the bentonite to the ground surface. A locking cap and protective vault box will be installed on the top of each well. Prior to sampling, the temporary groundwater monitoring wells will be developed by surging and balling to remove fines from the well and sand pack. Periodic measurements of pH, conductivity, and temperature will be collected during development. The wells will be developed until well water is visibly clear or until ten well volumes of water have been removed. Monitoring well C-4 will be surveyed for location and for elevation relative to mean sea level.

Organic Vapor Procedures

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using the HNU Model PI 101 PID with a 10.2 eV lamp. The test procedure involves measuring approximately 30 grams from an undisturbed soil sample, placing this subsample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar is then warmed for approximately 20 minutes, then the foil is pierced and the head-space within the jar is tested for total organic vapor measured in parts per million as benzene (ppm; volume/volume). The instrument is previously calibrated using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 0.7, which relates the photo-ionization sensitivity of benzene (7.0 ppm) to that of isobutylene.

Laboratory Procedures

Selected soil samples and groundwater samples collected from the wells will be analyzed in the laboratory for the presence of total petroleum hydrocarbons calculated as gasoline, and benzene, toluene, ethylbenzene, and xylenes by modified EPA Methods 8015, 8020. The samples will be examined using the purge and trap technique, with final detection by gas chromatography using a flame-ionization detector as well as a PID. All analyses will be performed by a California State-certified laboratory.

Groundwater Sampling Procedures

Prior to water sampling, the wells will be gauged to determine depth to water, and to check for presence of light and dense non-aqueous liquids. Groundwater samples will be collected from all wells which do not contain separate-phase liquid hydrocarbons. Samples will be collected using disposable Teflon® samplers rinsed with distilled water. Distilled water field blanks will be collected to document ambient sampling conditions. Groundwater samples will be placed in 40-milliliter glass vials with Teflon septum caps, and other appropriate sample containers. Each sample will be labeled and placed on ice in an insulated container pending delivery under chain-of-custody manifest to a state-certified analytical laboratory.

All water generated during steam-cleaning, well development, and sampling will be pumped into a DOT-approved purge water trailer and eventually disposed of at a state-certified facility.