

**GROUNDWATER
TECHNOLOGY, INC.**

4080 Pike Lane, Suite D, Concord, CA 94520 (415) 671-2387

Fax: (415) 685-9148

May 23, 1989

Job No 203 175 3286

Mr. Arie levi
Alameda County Hazardous Materials Management
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Work Plan to Conduct a Well Point Survey at Chevron
Service Station # 9-0191, located at the intersection
of Westline Drive and Otis Drive, Alameda, California

Dear Mr. Levi:

This letter describes the proposed well point survey which Groundwater Technology, Inc. (GTI) plans to conduct at Chevron Service Station # 9-0191, located at the intersection of Westline Drive and Otis Drive in Alameda, California. There has been no indication of subsurface hydrocarbon contamination at the site.

The proposed scope of work is designed to allow for the collection of soil and groundwater samples from beneath the site. Groundwater is known to be present at a depth of approximately 1.5-feet below grade surface though tidal fluctuations may affect this level.

GTI proposes to drill a series of small, 1- or 3/4-inch-diameter holes across the site. The exact number of holes will be determined by field observations. These wells will be drilled to an approximate depth of 5-feet below grade. A soil sample from above the saturated zone and a groundwater sample will be collected from each borehole, and the soils which are encountered

6/1/89

Mr. Arie Levi
May 23, 1989
Page 3

*oVA
PID
98 LAMP
10.2 LAMP*

will be field screened for volatile organic vapors using a portable photo-ionization detector (PID). Based on field observations and PID readings, selected soil and groundwater samples will be analyzed for gasoline hydrocarbons at the GTEL Environmental Laboratories, Inc. (GTEL) in Concord, California.

*- TPH
BTX*

1.5 MILE (S.M.S.) # 194

After samples have been collected, each well-point hole will be backfilled with pelletized bentonite and sealed with cold-patch asphalt.

The attached figure shows the configuration of existing site structures and the approximate location of the proposed sampling locations. The exact number and placement of sampling points will be controlled by the conditions encountered during drilling.

A check for \$333.00 to cover fees and a review of the work plan is also included. If you have any questions or require additional information on the proposed work, please contact me at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Glen L. Mitchell

Glen L. Mitchell
Project Geologist

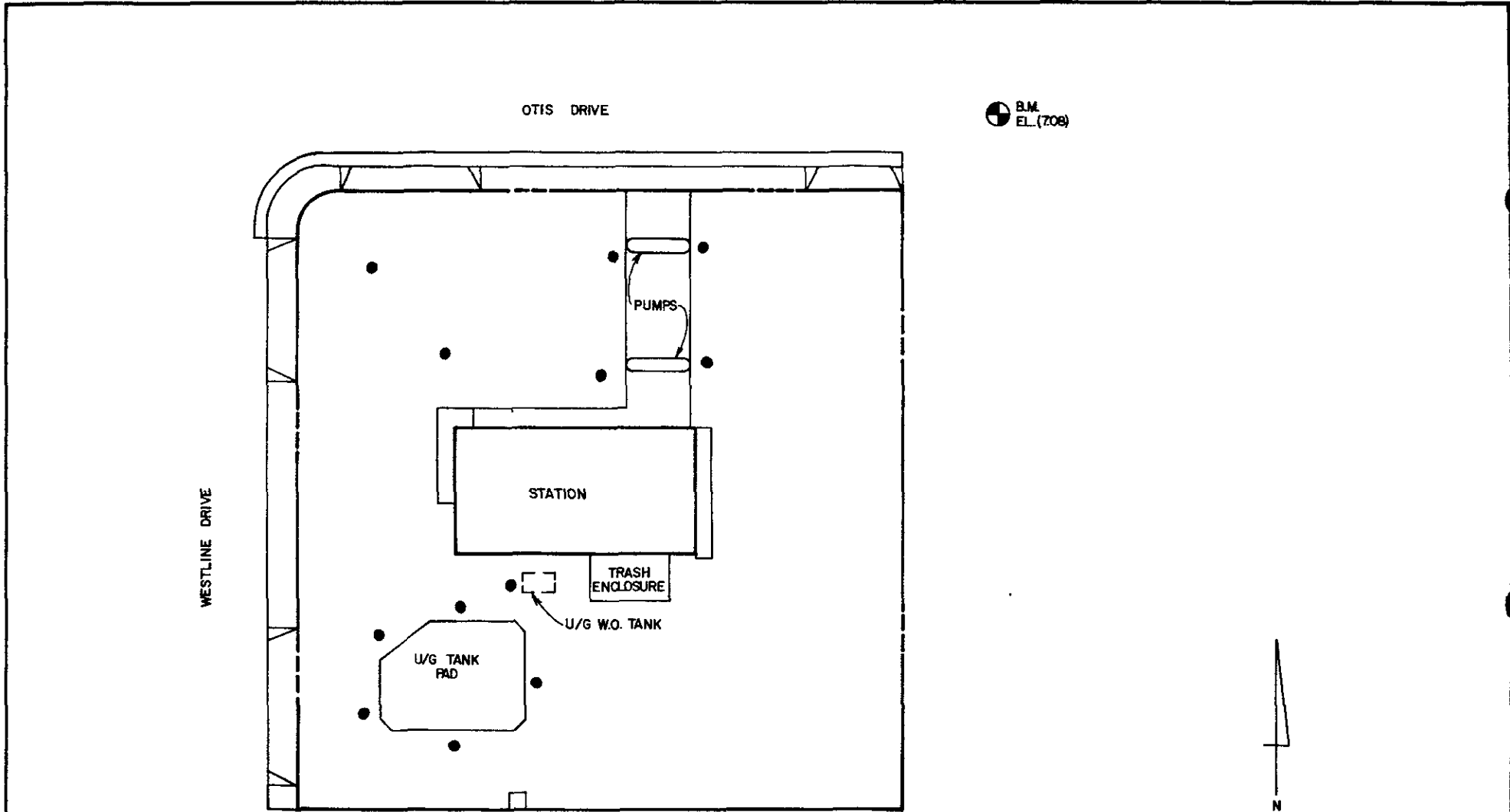
*GAS - TPH BTX
oil - TOB.*

GLM:lf
L3286A

cc: Mr. John Randall
Chevron U.S.A., Inc.

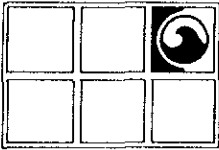


GROUNDWATER
TECHNOLOGY, INC.



● = PROPOSED SAMPLE LOCATION





GROUNDWATER TECHNOLOGY, INC.

4080-D Pike Lane, Concord, CA 94520

(415) 671-2387

September 15, 1989

Job No 203 175 3286

Mr. Arie Levi
Alameda County Hazardous Materials Management
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Work Plan to Conduct a Well Point Survey
Chevron Service Station # 9-0191,
intersection of Westline Drive and Otis Drive,
Alameda, California

*900 Otis Drive
Alameda*

Dear Mr. Levi:

This letter describes the proposed well point survey which Groundwater Technology, Inc. (GTI) plans to conduct in Westline Drive adjacent to Chevron Service Station # 9-0191, located at the intersection of Westline Drive and Otis Drive in Alameda, California.

The proposed scope of work is designed to allow for the collection of soil and groundwater samples from beneath the city street. Groundwater is known to be present at a depth of approximately 3-feet below grade surface, though tidal fluctuations may affect this level.

GTI proposes to drill a series of small, 1- or 3/4-inch-diameter holes across the site. The exact number of holes will be determined by field observations. These holes will be drilled to an approximate depth of 5-feet below grade. A soil sample from above the saturated zone will be collected from each borehole

3/21/90

Done because initial soil sampling showed contamination in the soil around the USTs. The well pt. survey was done to see if a plume existed. Some dissolved constituents were found. Results are in report dated 10/25/89. Glen Mitchell of G.T. Inc. will call John Randall at Chevron for permission to send us the report.

Offices throughout the U.S., Canada and Overseas

ALAMEDA COUNTY
DEPT. OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS

9/18/89 K. Chisick

Mr. Arie Levi
September 15, 1989
Page 3

and field screened for volatile organic vapors using a portable photo-ionization detector (PID). Based on field observations and PID readings, selected soil samples will be analyzed for gasoline hydrocarbons at the GTEL Environmental Laboratories, Inc. (GTEL) in Concord, California. In three of the soil borings, 3/4-inch-diameter, steel well points will be installed. Groundwater samples from each well point will be extracted for laboratory analyses.

After samples have been collected, the well points will be removed and all holes will be backfilled with pelletized bentonite and sealed with cold-patch asphalt.

The attached figure shows the configuration of existing site structures and the approximate location of the proposed sampling locations. The exact number and placement of sampling points will be controlled by the conditions encountered during drilling.

A check for \$333.00 to cover fees and a review of the work plan is also included. This work is scheduled for September 28, 1989. If you have any questions or require additional information on the proposed work, please contact me at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.



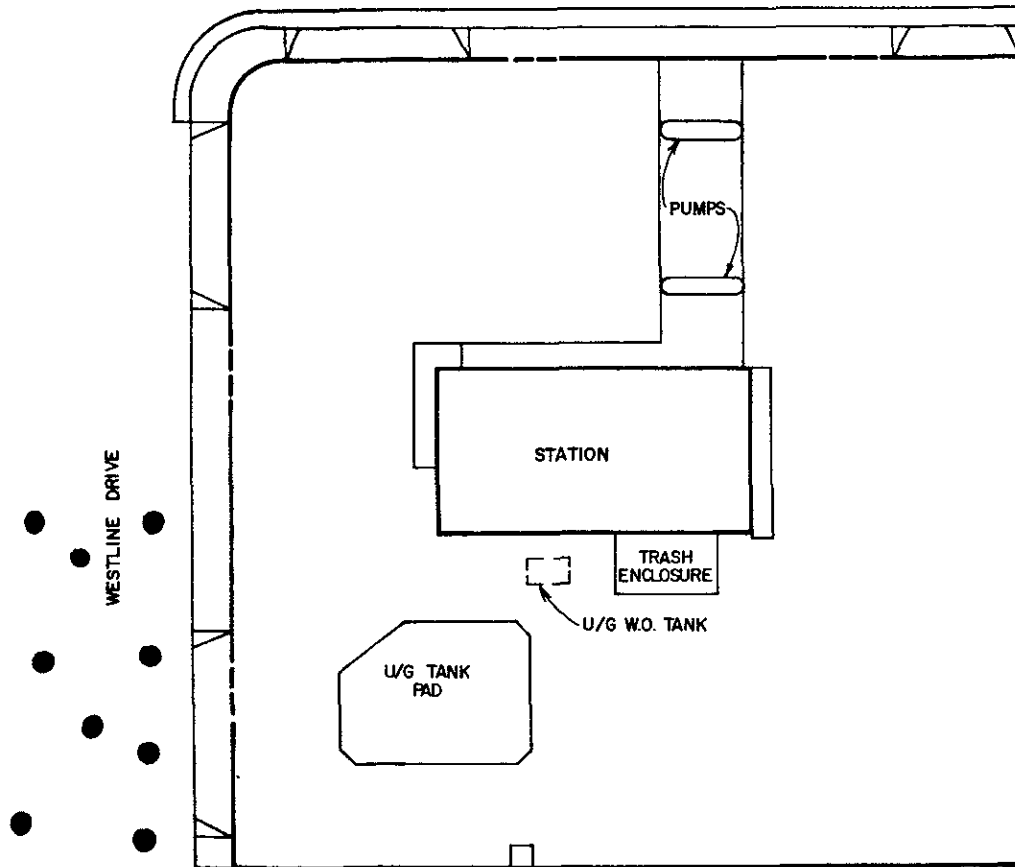
Glen L. Mitchell
Project Geologist

GLM:lf
L3286A

cc: Mr. John Randall
Chevron U.S.A., Inc.

OTIS DRIVE

B.M.
EL. (708)



● = PROPOSED SAMPLE LOCATION

CHEVRON USA
ALAMEDA, CALIFORNIA

DIETERICH POST REORDER NO 116233 MAY 30, 1989 203-175-3286

0 FEET 20
SCALE



GROUNDWATER
TECHNOLOGY, INC.



PACIFIC
ENVIRONMENTAL
GROUP INC.

FACSIMILE TRANSMITTAL

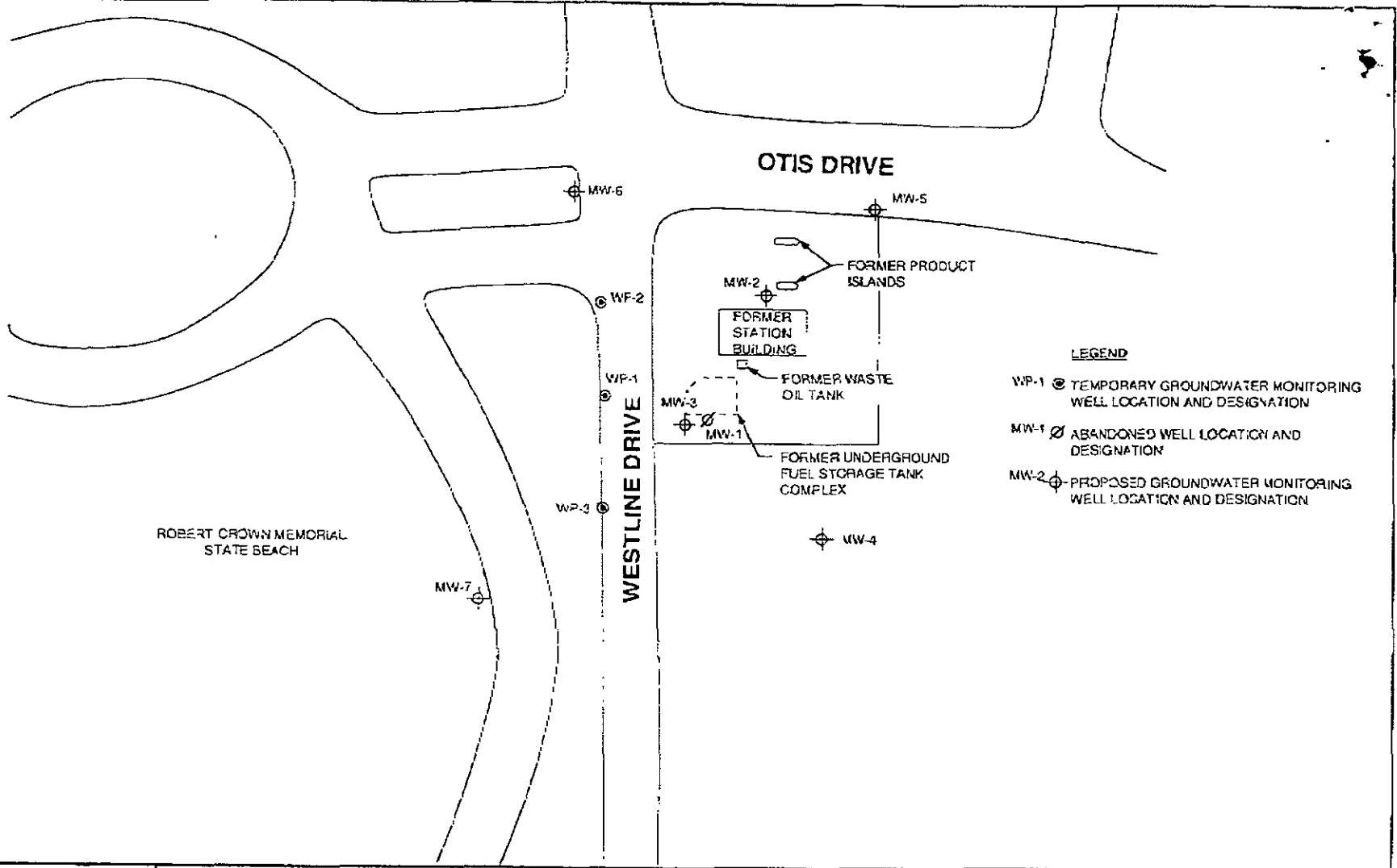
DATE: 12-19-94 PROJ. # 320-122-1A
 TO: Ms. JULIET SMITH FAX: 510 337-9335
CC: Mr. MARK MILLER 510 842-8252
 FROM: DAVE REINSMAN

IF YOU HAVE ANY PROBLEMS RECEIVING THIS FACSIMILE, PLEASE CALL (408) 441-7500

SHEETS TO FOLLOW COVER PAGE

1

COMMENTS: PER OUR TELEPHONE CONVERSATION @
10:30 AM THIS MORNING, I'VE SENT YOU
A REVISED PROPOSED WELL LOCATION MAP (FIGURE 2)
PLEASE REPLACE THIS REVISED MAP
WITH FIGURE 2 IN PACIFIC'S WORK PLAN
DATED NOVEMBER 29, 1994.
IF THERE ARE ANY
QUESTIONS, PLEASE CALL
DAVE REINSMAN



LEGEND

- WP-1 ● TEMPORARY GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-1 ⊘ ABANDONED WELL LOCATION AND DESIGNATION
- MW-2 ⊕ PROPOSED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

ROBERT CROWN MEMORIAL STATE BEACH

OTIS DRIVE

WESTLINE DRIVE

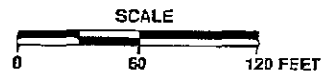
FORMER CHEVRON U.S.A. SERVICE STATION 9-0191
 800 Otis Drive at Westline Drive
 Alameda, California

PROPOSED WELL LOCATION MAP

FIGURE:
2
 PROJECT:
 320-122.1A



PACIFIC ENVIRONMENTAL GROUP, INC.



11.29.94
9:00-5 11:30:15



November 30, 1994

Chevron U.S.A. Products Company
6001 Bollinger Canyon Rd., Bldg. L
P.O. Box 5004
San Ramon, CA 94583-0804

Site Assessment & Remediation Group
Phone (510) 842-9500

Ms. Eva Chu
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**Re: Former Chevron Service Station #9-0191
900 Otis Drive, Alameda, CA**

Dear Ms. Chu:

Enclosed is the Work Plan for site assessment activities dated November 29, 1994, prepared by our consultant Pacific Environmental Group for the above referenced site.

The proposed work includes advancing six soil borings, completing the borings as a ground water monitor wells, and collecting and analyzing soil and ground water samples. This work is being done to further define the extent of hydrocarbon impact to ground water.

We are ready to begin work following your review and formal concurrence. If you have any questions or comments, please do not hesitate to call me at (510) 842-8134.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Ms. B.C. Owen

Harsch Investment Corp.
dba South Shore Center
235 W. MacArthur Boulevard, #63
Oakland, CA 94611



PACIFIC
ENVIRONMENTAL
GROUP, INC.

November 29, 1994
Project 320-122.1A

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

Re: Work Plan
Former Chevron U.S.A. Service Station 9-0191
900 Otis Drive at Westline Drive
Alameda, California

Dear Mr. Miller:

This letter, prepared by Pacific Environmental Group, Inc. (PACIFIC) presents a work plan for the installation of six groundwater monitoring wells at the site referenced above (Figure 1). The purpose of this work is to further define the lateral extent of petroleum hydrocarbons in groundwater beneath the site. This letter includes discussions on the site background, proposed scope of work, and schedule

SITE BACKGROUND

The site is located at 900 Otis Drive in Alameda, California (Figure 2), and is currently undeveloped. The former Chevron service station operated from 1964 to 1993 when the site was abandoned. Land use in the vicinity of the site is primarily recreational and residential. Site topography is flat and gently slopes to the southwest towards the San Francisco Bay and Robert Crown Memorial State Beach (Crown State Beach). The site lies at an elevation of approximately 15 feet above mean sea level.

Previous investigations

Previous environmental investigations at the site were conducted by Groundwater Technology, Inc. (GTI) in July and October 1989, and Touchstone Developments (Touchstone) in May 1993. Investigative activities and findings are briefly discussed below:

- Soils underlying the site consist of fine well sorted sands to 6 feet below ground surface (bgs), the total depth explored.
- Groundwater beneath the site has been encountered at depths ranging from approximately 2 to 5 feet bgs. Groundwater appears to be brackish and tidally influenced. Based on topography, the regional groundwater flow direction is inferred to be to the southwest.
- In July 1989, GTI drilled 13 shallow (3-1/2 to 4 feet) boreholes across the site to assess potential hydrocarbon impact to soil prior to abandoning the facility. Based on field evidence of petroleum hydrocarbons, four soil samples were selected for laboratory analysis. Results of laboratory analysis indicated that with the exception of one soil sample collected near the gasoline underground storage tanks (USTs), all soil samples were non-detect for total petroleum hydrocarbons calculated at gasoline (TPH-g) and benzene. The soil sample collected near the gasoline USTs contained TPH-g and benzene at concentrations of 6,100 and 22 parts per million (ppm), respectively.
- In October 1989, GTI drilled seven additional shallow off-site soil borings and installed three temporary off-site wells (WP-1, WP-2, and WP-3) west of the UST complex in Westline Drive. Three soil samples were submitted for laboratory analysis from the borings and one groundwater sample from each temporary well was also submitted. Soil samples contained TPH-g at concentrations from non-detect to 420 ppm, and benzene from non-detect to 1 ppm. Groundwater samples contained TPH-g at concentrations from 44 to 97 parts per billion (ppb), and benzene from non-detect to 1 ppb.
- In May 1993, three gasoline USTs (7,000-, 7,000-, and 3,000-gallon), one waste oil UST (550-gallon), all associated piping, two hydraulic lifts, and an oil water separator sump were excavated and removed in conjunction with site demolition activities. Approximately 1,100 cubic yards of soil was excavated from the former UST and pump island areas and aerated on site. Upon approval from Alameda County Health Care Services, the remediated soil was then used as backfill material. Approximately 40 cubic yards of soil were removed from the vicinity of the waste oil tank, sump, and hoists. This material was disposed of at Redwood Landfill in Novato, California.

- Laboratory analytical results of confirmatory soil samples collected from the sidewalls of the UST and product island excavations contained concentrations of TPH-g and benzene which were negligible or below method detection limits. A confirmatory soil sample collected at five feet bgs from beneath the two hydraulic lifts and the oil water separator contained 1,400 ppm TPH-g, 25 ppm TPH calculated as diesel (TPH-d), and was non-detect for benzene, total oil and grease (TOG), and all 8010 and 8270 compounds. A soil sample collected at five feet bgs from beneath the former waste oil tank was non-detect for TPH-g, benzene, TPH-d, and TOG.
- Groundwater analytical results from a groundwater sample collected from a temporary well installed within the UST excavation contained TPH-g and benzene at concentrations of 10,000 and 560 ppb, respectively.

SCOPE OF WORK

Based on previous investigations conducted at the site, all potential primary sources which posed a threat to soil and groundwater degradation have been excavated and removed from the site. Hydrocarbon concentrations in soil beneath and near former primary source areas have been defined to non-detectable or negligible levels, and there appears to be some hydrocarbons present in groundwater underlying the site. To define the lateral extent of petroleum hydrocarbons in groundwater, PACIFIC proposes the installation of six groundwater monitoring wells (MW-2 through MW-7), the collection of soil samples for laboratory analysis, development and sampling of the newly installed groundwater monitoring wells, and surveying the new wells. Proposed well locations are shown on Figure 2. Field and laboratory procedures are presented as Attachment A. The specific scope of work for this investigation is described below:

On-Site Monitoring Well Installation

PACIFIC proposes the installation of two on-site groundwater Monitoring Wells MW-2 and MW-3 to monitor groundwater conditions downgradient the former product islands and the former UST complex, respectively.

Off-Site Monitoring Well Installation

PACIFIC proposes the installation of four groundwater Monitoring Wells MW-4 through MW-7 to monitor groundwater conditions around the site. Wells MW-4 and MW-5 are proposed to be installed near the southeast and northeast corners of the site.

November 29, 1994

Page 4

Well MW-6 is proposed to be installed in a median located approximately 60 feet northwest of the site. Well MW-7 is proposed to be installed, approximately 170 feet to the southwest, in an access road to Crown State Beach.

Soil samples for laboratory analysis from the new wells will be collected at 5-foot depth intervals and at the soil water interface. Selected soil samples will be analyzed for the presence of TPH-g and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). Groundwater samples collected from the newly installed wells will be analyzed for TPH-g and BTEX compounds. Additionally, one groundwater sample will be analyzed for the presence of total dissolved solids (TDS) to determine if the groundwater beneath the site has a TDS value less than 3,000 milligrams per liter and is therefore suitable, or potentially suitable, for municipal or domestic water supply.

SCHEDULE

This work, based on attainment of encroachment, is scheduled to be performed during December 1994. A report of findings, including certified analytical reports, borings logs, and well permits will be prepared and submitted in January 1994.

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

Sincerely,

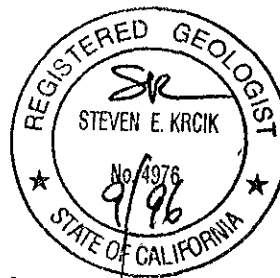
Pacific Environmental Group, Inc.



Dave A. Kemsma
Senior Staff Geologist



Steven E. Krcik
Senior Geologist
RG 4976



REFERENCES

Groundwater Technology, Inc., August 23, 1989, *Soil Coring Project, Former Chevron U.S.A. Station 9-0191.*

Groundwater Technology, Inc., October 25, 1989, *Additional Soil Coring and Well Point Investigation, Former Chevron U.S.A. Station 9-0191.*

Touchstone Developments, August 31, 1994, *UST Removal and Overexcavation Report, Former Chevron U.S.A. Station 9-0191.*

Attachments: Figure 1 - Site Location Map
 Figure 2 - Proposed Well Location Map
 Attachment A - Field and Laboratory Procedures



OTIS DRIVE

MW-6

MW-5

MW-2

FORMER PRODUCT ISLANDS

FORMER STATION BUILDING

WP-2

LEGEND

- WP-1 ● TEMPORARY GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-1 ∅ ABANDONED WELL LOCATION AND DESIGNATION
- MW-2 ⊕ PROPOSED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

FORMER WASTE OIL TANK

MW-3

MW-1

MW-4

FORMER UNDERGROUND FUEL STORAGE TANK COMPLEX

WP-3

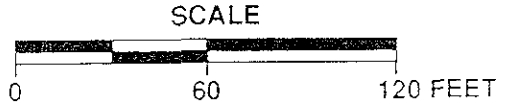
WESTLINE DRIVE

ROBERT CROWN MEMORIAL STATE BEACH

MW-7



PACIFIC ENVIRONMENTAL GROUP, INC.



FORMER CHEVRON U.S.A. SERVICE STATION 9-0191
900 Otis Drive at Westline Drive
Alameda, California

PROPOSED WELL LOCATION MAP

FIGURE 2
PROJECT 320-122 1A

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

ATTACHMENT A

FIELD AND LABORATORY PROCEDURES

Exploratory Drilling and Monitoring Well Installation

The soil borings for well installations will be drilled using 8-inch hollow-stem auger drilling equipment and logged by a Pacific Environmental Group, Inc. geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging will be collected at 5-foot intervals using a California-modified split-spoon sampler. The sampler will be driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. All soil samples for chemical analysis will be retained in brass liners, capped with Teflon squares and plastic end caps, taped, and sealed in clean zip-lock bags. The samples will be placed on ice for transport to the laboratory accompanied by chain-of-custody documentation. All down-hole drilling and sampling equipment will be steam-cleaned following the completion of the soil boring. Down-hole sampling equipment will be washed in a tri-sodium phosphate solution between samples.

The borings will be converted to groundwater monitoring wells by installing 2-inch diameter, flush-threaded, Schedule 40 PVC casing with 0.020-inch factory-slotted screen. Approximately 10 feet of screen will be placed in the bottom of the boring. A RMC 2 x 12 sand pack will be placed in the annular space across the entire screened interval, and will extend approximately 1 foot above the top of the screen for the well. A bentonite and Portland cement seal will extend from the sand pack to the ground surface.

Following well completion, the vault box elevation and the elevation of the top of the PVC well casing of the monitoring wells will be surveyed to the nearest 0.01 foot, relative to mean sea level, by a licensed surveyor. The boring logs will show well construction details and the wellhead elevations.

Organic Vapor Procedures

Soil samples collected at 5-foot depth intervals during drilling will be analyzed in the field for ionizable organic compounds using the HNU Model PI-101 (or equivalent) photo-ionization detector (PID) with a 10.2 eV lamp. The test procedure will involve 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 will be warmed for approximately 20 minutes (in the sun), then the foil will be pierced and the head-space within the jar will be tested for total organic vapor, measured in ppm (volume/volume). The instrument will be calibrated prior to drilling using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 55 which relates the photo-ionization potential of benzene to that of isobutylene at 100 ppm. The results of the field testing will be noted on the boring logs. PID readings are useful for indicating relative levels of contamination, but cannot be used to evaluate hydrocarbon levels with the confidence of laboratory analyses.

Well Development and Groundwater Sampling

The groundwater monitoring wells will be developed and sampled after completion. The development procedure for each well will consist of pumping or bailing water from the well until the water is visibly clear, or until a minimum of 10 casing volumes have been removed. The sampling procedure will consist of first measuring the water level in the well, and checking it for the presence of separate-phase hydrocarbons (SPH) using an MMC oil-water interface probe. If no SPH is present the well will then be purged of a minimum of five casing volumes of water using a centrifugal pump. During purging, temperature, pH, and electrical conductivity will be monitored until stable to document that a representative sample is collected. After the water level recovers, a sample will be collected from each well using a Teflon bailer and placed into appropriate EPA-approved containers. The samples will be labeled, logged onto a chain-of-custody document, and transported on ice to the laboratory.

Laboratory Procedures

Selected soil samples from the soil borings and groundwater samples collected from the monitoring wells will be analyzed for the presence of total petroleum hydrocarbons calculated as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) using modified EPA Methods 8015 and 8020. A groundwater sample collected from one site well will be analyzed for the presence of total dissolved solids using EPA Method 160.3.