GROUNDWATER TECHNOLOGY, INC.
OIL RECOVERY SYSTEMS
4080 Pike Lane, Suite D, Concord, CA 94520 (415) 671-2387

To Alameda County Hazadous Materials **Date** 3/22/90 **Job No.** 203-175-3280

80 Swan Way, Room 200 **Re:** Chevron Service Station # 9-0141

Oakland, CA 94621 900 Otis Drive, Alameda, CA

Attn: Kathren Chesnutt **From** Glen L. Mitchell

We are sending: ☒ Attached ☐ Via _____

The following:

☒ Report ☐ Originals ☐ Shop Drawings ☐ Samples

☐ Specifications ☐ Copy(s) ☐ Proposal ☐ Other _____

Copies	Date	Description
1	10/25/89	Soil coring & well point Report

Transmitted as checked:

☐ Approved ☐ For Approval ☐ Approved as Noted ☐ For Correction

☒ For Your Use ☐ As Requested ☐ For Comments ☐ For Resubmittal

☐ For Your Records ☐ For Distribution ☐ _____

Remarks: If you have any questions, Contact John Rendell or myself..

Copies to: _____

GROUNDWATER TECHNOLOGY, INC.

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

October 25, 1989

Job No. 203 175 3286.01

Mr. John Randall
Chevron U.S.A. Inc.
2410 Camino Ramon
Bishop Ranch #6
San Ramon, CA 94583

Subject: Additional Soil Coring and Well Point Investigation
Chevron Service Station No. 9-0191,
900 Otis Drive, Alameda, California

Dear Mr. Randall:

This letter/report describes the results and findings of the latest phase of soil and groundwater investigation conducted by Groundwater Technology, Inc. (GTI) at operating Chevron U.S.A. Inc. (Chevron) Service Station No. 9-0191 located at 900 Otis Drive in Alameda, California. This work was conducted under Chevron Release Numbers 180-6290 and 246-3310, with Release Number 247-3320 used by GTEL Environmental Laboratories, Inc. (GTEL) to bill laboratory work.

BACKGROUND

On July 23, 1989, GTI conducted a soil-coring program across the site to assess the possibility that the subsurface had been impacted by released gasoline and/or waste-oil. Groundwater was present between 2-1/2- to 3-1/2-feet below grade. This groundwater appeared to be brackish and may have a variable depth with respect to time due to tidal influences. Field and laboratory data from the collected soil samples showed localized zones of subsurface hydrocarbon contamination near the southern pump island, near the south end of the fuel piping trench, and

along the western edge of the tank pit (see attached Site Plan). Due to collapse of the boreholes during the first round of soil coring, groundwater samples from beneath the site could not be collected. Analyses of the gathered data suggested that hydrocarbons in the soil extended off-site to the west. Based on these results, a second phase of soil investigation was recommended at that time to assess the possible extent of off-site hydrocarbons in the soils. To quantitatively assess the off-site water quality, it was also recommended that groundwater samples be collected at the same time for laboratory analyses.

SCOPE OF WORK

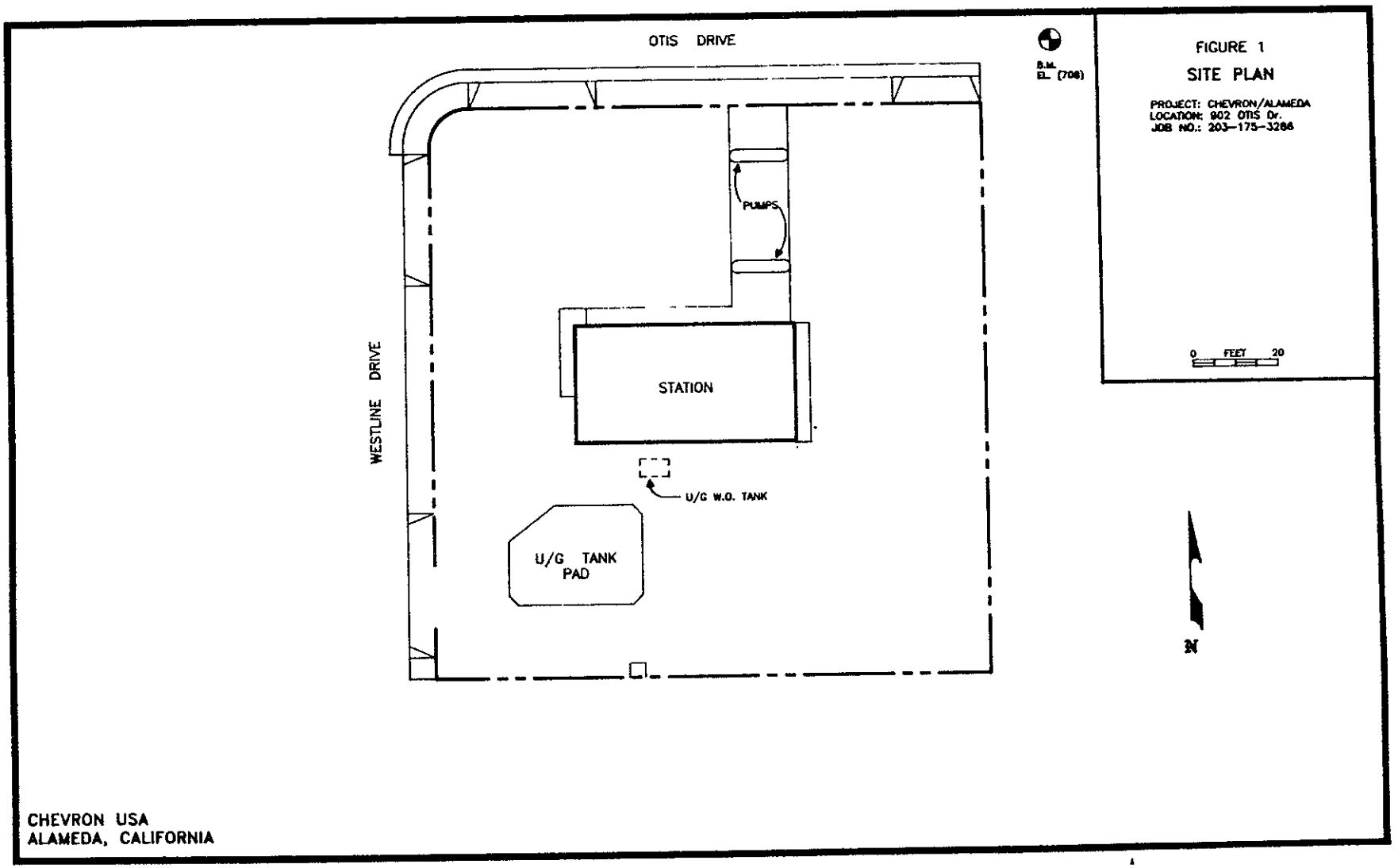
This second phase of site investigation consisted of the following work steps:

- Procured permits from the Alameda Public Works Department, Alameda County Flood Control (Zone 7), and the Water Conservation District to conduct the subject work.

- Drilled seven soil borings (SB-14 through SB-20) off site to the west of the underground fuel-tank pit. Soil borings were drilled in an effort to assess the extent of hydrocarbons in the soils west of the site.

- Collected three groundwater samples (WP-1, WP-2, WP-3) from well points to qualitatively assess the groundwater west of the site for gasoline hydrocarbons.

- Issued this letter report presenting the results and findings of this investigation.


OTIS DRIVE
B.M.
EL. (706)
PUMPS
STATION
WESTLINE DRIVE
U/G W.O. TANK
U/G TANK
PAD
N
FIGURE 1
SITE PLAN
PROJECT: CHEVRON/ALAMEDA
LOCATION: 902 OTIS Dr.
JOB NO.: 203-175-3286
0 FEET 20
CHEVRON USA
ALAMEDA, CALIFORNIA

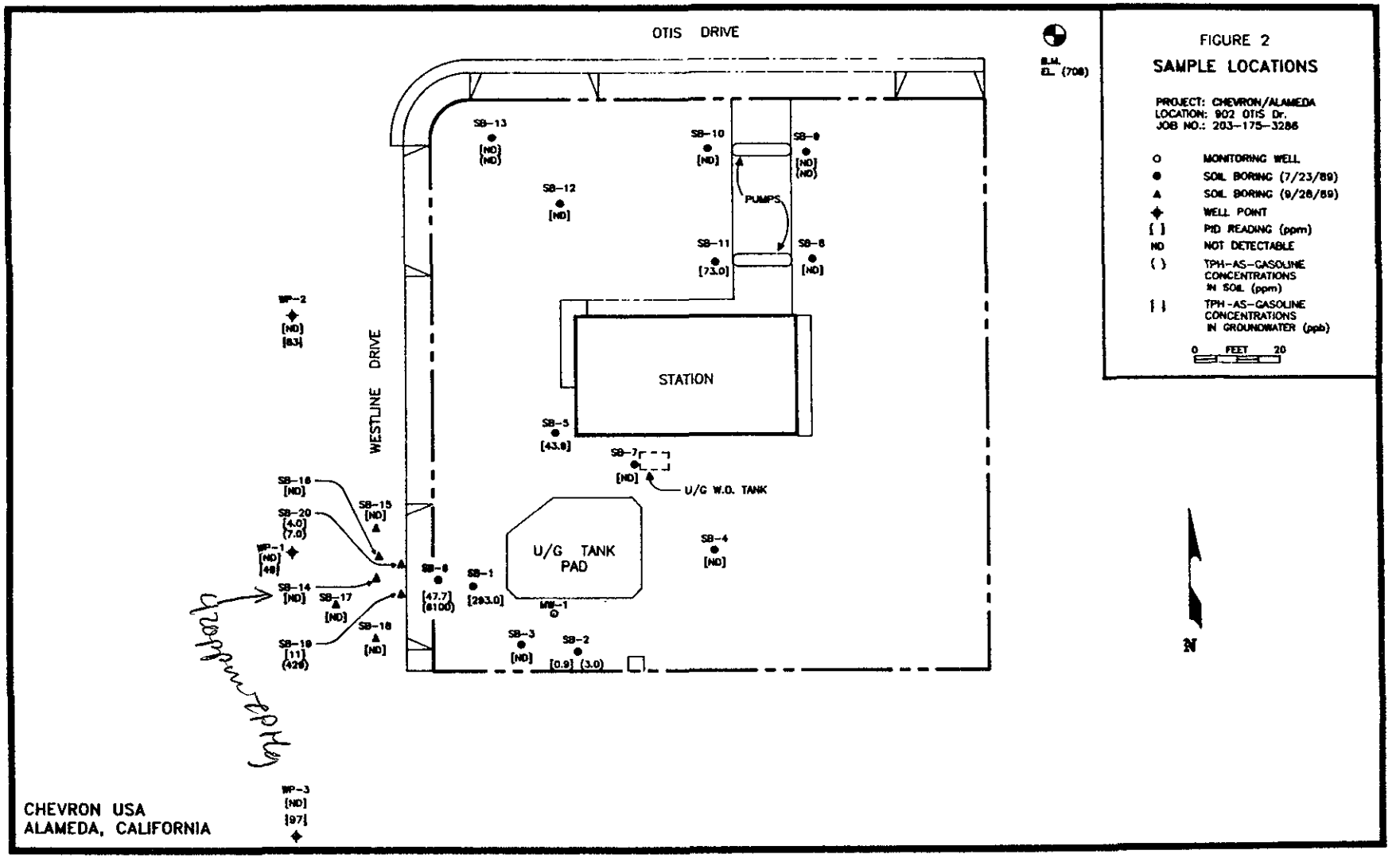
10/11/89 CEY

Only two permits were required to perform the subject work; a permit to excavate in the right-of-way of the City of Alameda (issued by the City of Alameda Central Permit Office) and a Groundwater Protection Ordinance Permit (issued by Zone 7). Copies of these permits are attached.

Groundwater Technology, Inc. supervised the drilling of seven, 3/4-inch-diameter boreholes in Westline Drive, west of the underground-storage tank pit. All boreholes were advanced to a depth of 3-feet below grade. The boreholes were drilled using a man-portable, soil-sampling system. This system uses a gasoline-powered percussion hammer to drive a steel sampler into the soil. The sampler is a 3/4-inch-diameter steel tube equipped with a steel drive head and is lined with 6-inch-long brass Shelby tubes. As the sampler is driven into the soil, the soil is forced into the sampler, filling the brass liner. When the rod is extracted, the brass tubes can be removed and the collected soils examined.

Seven samples were collected from the east side of Westline Drive. All borings showed saturated conditions at between 2- and 3-feet below grade. The encountered soils were predominantly fine- to medium-grained sands with minor amounts of silts and clays. Figure 2 shows the locations of all samples collected to date.

Soil samples from each borehole were screened in the field for volatile organic vapors by headspace analyses using an HNU brand photo-ionization detector (PID). One sample from each borehole was retained for possible laboratory analyses. These samples


OTIS DRIVE
B.M. EL. (708)
WESTLINE DRIVE
STATION
PUMPS
U/G TANK PAD
U/G W.O. TANK
SB-13 [ND] [ND]
SB-10 [ND]
SB-9 [ND] [ND]
SB-12 [ND]
SB-11 [73.0]
SB-8 [ND]
SB-5 [43.8]
SB-7 [ND]
SB-4 [ND]
SB-6 [47.7] (8100)
SB-1 [293.0]
MW-1
SB-3 [ND]
SB-2 [0.9] (3.0)
WP-2 [ND] [83]
SB-16 [ND]
SB-20 [4.0] (7.0)
SB-15 [ND]
WP-1 [ND] [48]
SB-14 [ND]
SB-17 [ND]
SB-18 [ND]
SB-19 [11] (420)
WP-3 [ND] [97]
Chappell Hy
N
FIGURE 2
SAMPLE LOCATIONS
PROJECT: CHEVRON/ALAMEDA
LOCATION: 902 OTIS Dr.
JOB NO.: 203-175-3286
MONITORING WELL
SOIL BORING (7/23/89)
SOIL BORING (9/28/89)
WELL POINT
[ ] PID READING (ppm)
ND NOT DETECTABLE
( ) TPH-AS-GASOLINE CONCENTRATIONS IN SOIL (ppm)
| | TPH-AS-GASOLINE CONCENTRATIONS IN GROUNDWATER (ppb)
0 FEET 20
CHEVRON USA
ALAMEDA, CALIFORNIA
10/11/89 CSY

were sealed with aluminum foil, capped and taped with plastic tape to produce an air-tight seal. The samples were then labeled and placed on ice in an insulated cooler for transportation to the State of California-certified GTEL facility in Concord, California. Proper Chain-of-Custody manifests accompanied the samples at all times, and copies are included with the attached laboratory reports.

Groundwater Technology, Inc. extracted three groundwater samples from along the center line of Westline Drive to assess the off-site water quality. During the first phase of the site investigation, GTI planned on collecting groundwater samples from all the on-site boreholes. This was not possible. The saturated sands below the water table flowed into the boreholes once the sampling rods were removed, plugging the holes below the water table. To collect water samples in the second phase, GTI used well points.

Each well point is 3/4-inch-diameter and 5-feet-long and made of stainless steel. Except for a pointed drivehead and a short-drive coupling, the entire length of the well point is slotted to allow for the entrance of groundwater. The well point samples WP-1, WP-2 and WP-3 were collected by first drilling a 5-foot-deep borehole using the above-referenced drilling techniques. Once the sample rods were withdrawn, the well point was inserted into the borehole and pushed to a depth of approximately 5 feet. Water samples were extracted using clean plastic tubing and syringes.

Water samples were placed in 40-milliliter screw-cap vials with Teflon^{R} lined caps. Water samples were labeled, placed on ice in an insulated cooler and transported to the GTEL facility in Concord, California accompanied by Chain-of-Custody Manifests.

Since well points do not use an implaced filter pack, water samples collected from them tend to contain a large percentage of suspended sediments. This has two effects. First, the samples could not be preserved using hydrochloric acid (HCL). The acid produced a "foaming" of the sample, presumably caused by a reaction between the HCL and carbonate in the sediment, generating headspace in the sample container. Secondly, due to the possible adsorption of hydrocarbons onto suspended clay minerals, the laboratory results of the analyses of these samples can only be interpreted as a qualitative measure for the presence of dissolved hydrocarbons and not a quantitative indication of accurate concentrations.

Based on PID readings and field observations, three soil samples were selected for analyses. All three water samples were also analyzed. Samples were analyzed for the presence of benzene, toluene, ethylbenzene, and xylenes (BTEX), and for total petroleum hydrocarbons (TPH)-as-gasoline using modified U.S. Environmental Protection Agency (EPA) Methods 5030/8020/8015. Copies of the laboratory reports are attached.

Laboratory analyses of the three selected soil samples indicated measurable concentrations of BTEX and/or TPH-as-gasoline compounds in two samples. The SB-14 sample showed 1 part per million (ppm) each of benzene and toluene, 4 ppm ethylbenzene, 20 ppm xylenes and 420 ppm TPH-as-gasoline. THe SB-20 samples showed no BTEX compounds and 7 ppm TPH-as-gasoline. The SB-14 sample showed no detectable concentrations of BTEX and TPH-as-gasoline.

The results of the analyses of the three water samples are presented in Table 1.

TABLE 1

WELL POINT WATER SAMPLE ANALYTICAL RESULTS
(in parts per billion)

COMPOUND	WP-1	WP-2	WP-3
Benzene	ND	1	1
Toluene	2	4	5
Ethylbenzene	1	2	2
Xylenes	6	12	13
Total BTEX	9	19	21
C4-C12 Hydrocarbons	40	64	76
TPH-as-Gasoline	44	83	97

ND = Compound not detected at Method Detection Limit
WP = Well Point

CONCLUSIONS AND SUMMARY

The results of the investigation indicate that the native soils have been impacted by fuel hydrocarbons, most likely emanating from the underground fuel-storage tank pit. The data gathered indicate the soil hydrocarbon contamination extends at most, 3- or 4-feet west of the property line.

The results of the laboratory analyses of well-point water samples indicate that a plume of dissolved hydrocarbon extends off site to the west. The full extent of this plume is not defined.

Both the well-point water samples and the soil samples show that hydrocarbons encountered are primarily in the C4 to C12 range with very low occurrences of the BTEX compounds. Benzene is almost absent from all samples. This indicates that the released hydrocarbons are undergoing natural degradation. The adsorbed hydrocarbons are relatively shallow and the sandy soils which were encountered allow for good porosity. These factors indicate that the adsorbed hydrocarbons are in an environment with good air flow. The natural degradation of hydrocarbons is an aerobic process that is stimulated by the presence of adequate oxygen.

A copy of this report should be submitted to:

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

Groundwater Technology, Inc. is pleased to provide Chevron U.S.A. Inc. with this report. If you have any questions on the content, or require additional information, please contact our Concord office at (415) 671-2387.

Sincerely,
GROUNDWATER TECHNOLOGY, INC.

Glen L. Mitchell
Project Geologist

Allen B. Storm
Registered Geologist
No. 4394

REGISTERED GEOLOGIST
ALLEN B. STORM
No. 4394
Exp. 6-90
STATE OF CALIFORNIA

GLM:smm
LR328601.A