KAPREALIAN ENGINEERING, INC.
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KEI-P89-0111.QR11
March 9, 1992

Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583

Attention: Mr. ~~Ron Beck~~ Timothy Ripp



RE: Quarterly Report
Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, California

Dear Mr. ~~Beck:~~ Ripp

This report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI), per KEI's proposal KEI-P89-0111.P3 dated June 4, 1990, and as modified in KEI's quarterly report KEI-P89-0111.QR10 dated January 3, 1992. The wells are currently monitored on a quarterly basis. Wells MW1 through MW4 are sampled on an annual basis, while MW5 is sampled quarterly. This report covers the work performed by KEI from December 1991 through February 1992.

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a gasoline station. The vicinity of the site is characterized by gently sloping, south-southwest trending topography. The site is also located approximately 0.8 miles northwest of Alameda Creek and approximately four miles northeast of the present shoreline of San Francisco Bay. A Location Map and Site Plans are attached to this report.

KEI's initial work at the site began on January 30, 1989, when KEI was asked to collect soil samples following the removal of two 10,000 gallon underground fuel storage tanks and one 280 gallon waste oil tank. The tanks were made of steel and no apparent holes or cracks were observed in the fuel tanks; however, the waste oil tank was corroded. Water was encountered in the fuel storage tank pit excavation at a depth of 10.5 feet below grade, thus prohibiting the collection of any soil samples from beneath these tanks.

Ten soil samples, labeled SW1 through SW6 and SW2A, SW3A, SW5A, and SW6A, were collected from the sidewalls of the fuel tank pit, each approximately six inches above the water table. Three of these

soil samples (samples SW2, SW3, and SW6) were not analyzed. Samples SW2A, SW3A, SW5A, and SW6A were collected from the sidewalls after additional excavation (see the attached Site Plan, Figure 2). One soil sample, labeled WO1, was collected from beneath the waste oil tank at a depth of 9 feet below grade (see the attached Site Plan, Figure 2). After the soil sampling was completed, approximately 2,000 gallons of ground water were pumped from the fuel tank pit.

On February 1, 1989, the waste oil tank pit was excavated laterally on all sides. The side nearest the existing building was excavated approximately 1 foot laterally, while the other three sides were each excavated approximately 10 feet laterally. The pit was excavated to an area of approximately 21 feet x 29 feet. Four sidewall samples (labeled SWA, SWB, SWC, and SWD) were collected (see the attached Site Plan, Figure 3). In addition, three soil samples were collected from the pipe trenches (labeled P1, P2, and P3), also shown on the attached Site Plan, Figure 3.

On February 14, 1989, in preparation for installation of the new fuel tanks, approximately 17,500 gallons of water were pumped from the fuel tank pit. On this date, after pumping, water samples W1A and W1B were collected.

On February 17, 1989, KEI returned to the site to observe additional excavation of the northeast sidewall of the waste oil tank pit (where sample SWC had previously been collected) for a distance of approximately 3 lateral feet. Sample SWC2 was then collected. Also on this date, water sample WO-W1 was collected from the waste oil tank pit. The water sample was collected after 4,500 gallons were pumped from the waste oil excavation. Based on the analytical results for SWC2 (680 ppm of total oil and grease [TOG]), KEI returned to the site on February 24, 1989, to observe the lateral excavation of an additional 5 feet of soil. Soil sample SWC3 was then collected. Soil sample point locations are shown on the attached Site Plan, Figure 4.

On March 9, 1989, KEI collected four duplicate waste oil excavation sidewall soil samples. The samples, labeled SW-AX, SW-BX, SW-C3X, and SW-DX, were collected at sample point locations SWA, SWB, SWC3, and SWD, respectively. Soil sample point locations are as indicated on the attached Site Plan, Figure 5.

Soil and water samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, for total petroleum hydrocarbons (TPH) as gasoline, and benzene, toluene, xylenes and ethylbenzene (BTX&E). The waste oil tank pit samples were analyzed for TPH as gasoline, BTX&E, TPH as diesel, and TOG (except samples SW-AX, SW-

BX, SW-C3X, and SW-DX, which were analyzed for EPA method 8010 and 8270 constituents, and the metals cadmium, chromium, lead, and zinc). All pipe trench samples were analyzed for TPH as gasoline and BTX&E. After additional excavation, analytical results of soil samples from the fuel tank pit showed less than 1.4 ppm of TPH as gasoline for all samples representing the final pit excavation. After additional excavation in the waste oil pit, the final soil sample analytical results showed low residual levels of contamination. These final results indicated that the majority of contaminated soil had been removed from the site. The results of the soil sample analyses are summarized in Tables 4 and 5, and results of the water sample analyses are summarized in Table 3 of this report.

Based on the results of the laboratory analyses, and in order to comply with the requirements of the regulatory agencies, KEI proposed the installation of five monitoring wells. Documentation of the tank and piping removal procedures, sample collection techniques, and the analytical results of the soil and ground water samples collected in January and February 1989, are summarized in KEI's reports (KEI-J89-0111.R2) dated March 1, 1989, and (KEI-J89-0111.R3) dated March 29, 1989.

Five two-inch diameter monitoring wells (designated as MW1 through MW5 on the attached Site Plan, Figure 1) were installed at the site on April 20 and 21, 1989. The five wells were drilled and completed to total depths ranging from 24 to 28 feet below grade. Ground water was encountered at depths ranging from 7 to 10 feet beneath the surface during drilling. The wells were developed on April 25, 1989, and were initially sampled on April 26, 1989.

Water and selected soil samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California, for TPH as gasoline and BTX&E. In addition, the soil samples collected from MW1 and MW2, and all the water samples, were analyzed for TPH as diesel, TOG, and EPA method 8010 compounds. Analytical results of soil samples collected from the borings for monitoring wells MW1 through MW4 showed non-detectable levels of TPH as gasoline and BTX&E in all samples, except for sample MW4(9), collected at a depth of 9 feet below grade, which showed 1.4 ppm of TPH as gasoline. The soil sample collected from MW5 at a depth of 5 feet below grade showed 900 ppm of TPH as gasoline, and 3.1 ppm of benzene. Analytical results of the water samples collected from MW1 and MW4 showed benzene levels of 2.1 ppb and 0.33 ppb, respectively. Analytical results for all other water samples indicated non-detectable levels for all constituents analyzed. Documentation of the well installation protocol, sampling techniques, and the analytical results are presented in KEI's report (KEI-P89-0111.R5) dated May 18, 1989.

Results of the soil analyses are summarized in Table 6, and results of the water analyses are summarized in Table 2.

Subsequently, KEI proposed a monthly monitoring and quarterly sampling program for all of the wells that was initiated in June of 1989. This program was modified to quarterly monitoring and sampling as of January 1991, as recommended in KEI's quarterly report (KEI-P89-0111.QR6) dated January 4, 1991. This program was further modified to reduce the sampling frequency for wells MW1 through MW5 from quarterly to annually, as recommended in KEI's quarterly report (KEI-P89-0111.QR10) dated January 3, 1992.

A review of the Regional Water Quality Control Board (RWQCB) files was conducted in June 1991, in order to locate and gain information on nearby underground tank sites. A review of ground water elevation data from three monitoring wells at the Rotten Robbie Service Station at 27814 Hesperian Boulevard, located approximately 1,800 feet northwest of Unocal, indicated a ground water flow direction to the southwest. Results of ground water analysis from the three wells showed elevated levels of TPH as gasoline and BTX&E, as well as free product being observed in one of the wells. No other underground fuel tank sites within a one-half mile radius of the subject site are known to KEI.

RECENT FIELD ACTIVITIES

The five wells (MW1 through MW5) were monitored once, and well MW5 was sampled once during the quarter. Wells MW1 through MW4 are sampled annually and were not sampled this quarter. During monitoring, the wells were checked for depth to water and the presence of free product. Additionally, during sampling, MW5 was checked for the presence of sheen. No free product (or sheen) was noted in any of the wells during the quarter. Monitoring data are summarized in Table 1.

A water sample was collected from well MW5 on February 5, 1992. Prior to sampling, the well was purged of 12 gallons by the use of a surface pump. The sample was then collected by the use of a clean Teflon bailer. The sample was decanted into clean VOA vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps and stored in a cooler, on ice, until delivery to the state certified laboratory.

HYDROLOGY AND GEOLOGY

Based on the water level data gathered on February 5, 1992, the ground water flow direction appeared to be toward the southwest, with a hydraulic gradient varying from approximately 0.0029 to

0.0067. The ground water flow direction has remained relatively unchanged from the previous quarters. Water levels have shown a net increase of between 0.38 and 0.47 feet in all of the wells since November 7, 1991. The measured depth to ground water at the site on February 5, 1992, ranged between 7.05 and 8.25 feet below grade.

Based on review of regional geologic maps (U.S. Geological Survey Professional Paper 943 "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning" by E.J. Helley and K.R. Lajoie, 1979), the subject site is underlain by Holocene-age coarse-grained alluvium (Qhac). The coarse-grained alluvium typically consists of unconsolidated, moderately sorted sand and silt materials with local gravel lenses. In addition, the site is situated closely adjacent to a mapped geologic contact with Holocene-age medium-grained alluvium (Qham), which is described as typically consisting of unconsolidated fine sand, silt, and clayey silt, with a trace of coarse sand.

The results of our previous subsurface investigation (the borings for MW1 through MW5) indicate that the site is predominantly underlain by sandy to silty clay materials. However, in the vicinity of MW1 and MW4, the relatively thick sequence of clay materials are underlain by a clayey sand bed at a depth of about 24 feet below grade in MW1 and about 23 feet below grade in MW4, and extend to the maximum depth explored (28 feet below grade). Clayey sand materials were not encountered in MW2, MW3, or MW5.

## ANALYTICAL RESULTS

The ground water sample from MW5 was analyzed at Sequoia Analytical Laboratory in Concord, California, and was accompanied by properly executed Chain of Custody documentation. The sample was analyzed for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020.

The analytical results of the water sample collected from well MW5 indicated a level of TPH as gasoline at 120 ppb, and benzene at 20 ppb. Results of the analyses are summarized in Table 2. Copies of the analytical results and Chain of Custody documentation are attached to this report.

## DISCUSSION AND RECOMMENDATIONS

Monitoring well MW5 continues to show a variable (but generally low) level of hydrocarbon contamination, while wells MW1 through MW4 have indicated generally non-detectable levels of hydrocarbons since April of 1989. Well MW5 is the most downgradient of all

wells and is located approximately 25 feet downgradient (southwest) of the pump islands. Therefore, KEI recommends the installation of two additional downgradient monitoring wells in order to determine the lateral extent of contamination in the vicinity of the site. Our work plan/proposal for this work is attached for your review and consideration.

Based on the analytical results collected and evaluated to date, and no evidence of free product or sheen in any of the wells, KEI recommends the continuation of the current monitoring and sampling program of the existing wells, per KEI's proposal (KEI-P89-0111.P3) dated June 4, 1990, and as modified by KEI's quarterly report (KEI-P89-0111.QR10) dated January 3, 1992. Wells MW1 through MW4 are sampled annually, and well MW5 is sampled on a quarterly basis. All wells (MW1 through MW5) are monitored quarterly.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Health Care Services Agency, to the City of Hayward, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

Should you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Thomas J. Berkins
Senior Environmental Engineer

Joel G. Greger
Certified Engineering Geologist

License No. 1633
Exp. Date 6/30/92

Timothy R. Ross
Project Manager

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Attachments: Tables 1 through 6
Location Map
Site Plans - Figures 1 through 5
Laboratory Analyses
Chain of Custody documentation
Work Plan/Proposal

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TABLE 1

SUMMARY OF MONITORING DATA

| Well No. | Ground Water Elevation (feet) | Depth to Water (feet) | Product Thickness (feet) | Sheen | Water Purged (gallons) |
|---|---|---|---|---|---|
| **(Monitored and Sampled on February 5, 1992)** | | | | | |
| MW1* | 4.79 | 7.78 | 0 | -- | 0 |
| MW2* | 4.64 | 8.25 | 0 | -- | 0 |
| MW3* | 4.67 | 7.79 | 0 | -- | 0 |
| MW4* | 4.57 | 7.52 | 0 | -- | 0 |
| MW5 | 4.13 | 7.05 | 0 | No | 12 |

| Well # | Surface Elevation** (feet) |
|---|---|
| MW1 | 12.57 |
| MW2 | 12.89 |
| MW3 | 12.46 |
| MW4 | 12.09 |
| MW5 | 11.18 |

-- Sheen determination was not performed.

* Monitored only.

** Elevations of the tops of the well covers have been surveyed to Mean Sea Level (MSL) by Kier & Wright of Pleasanton, California.

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

| Date | Sample Well # | TPH as Diesel | TPH as Gasoline | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| 2/05/92 | MW5 | -- | 120 | 20 | ND | 4.7 | 4.4 |
| 11/07/91 | MW1 | -- | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 700 | 43 | 1.7 | 24 | 29 |
| 8/02/91 | MW1 | -- | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 100 | 43 | 0.33 | 5.2 | 12 |
| 5/10/91 | MW1 | -- | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | ND | ND | ND | ND | ND |
| | MWD+ | -- | ND | ND | ND | ND | ND |
| 2/11/91 | MW1* | ND | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 58 | 23 | ND | 1.3 | 2.9 |
| 11/15/90 | MW1* | ND | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | ND | ND | ND | 0.47 | ND |
| 8/29/90 | MW1* | ND | ND | ND | ND | 0.74 | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | 0.52 | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | ND | 0.70 | ND | 1.1 | 0.57 |

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TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

| Date | Sample Well # | TPH as Diesel | TPH as Gasoline | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| 5/16/90 | MW1* | ND | ND | ND | ND | ND | ND |
| | MW2* | ND | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 1,100 | 310 | 2.8 | 110 | 70 |
| 2/16/90 | MW1* | ND | ND | ND | ND | ND | ND |
| | MW2 | -- | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | ND | ND | ND | ND | ND |
| 11/14/89 | MW1* | ND | ND | ND | ND | ND | ND |
| | MW2* | ND | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 73 | 4.7 | 0.97 | 16 | 2.9 |
| 8/31/89 | MW5 | -- | 910 | 120 | 7.1 | 53 | 50 |
| 8/16/89 | MW1** | ND | ND | ND | ND | ND | ND |
| | MW2** | ND | ND | ND | ND | ND | ND |
| | MW3 | -- | ND | ND | ND | ND | ND |
| | MW4 | -- | ND | ND | ND | ND | ND |
| | MW5 | -- | 4,400 | 1,400 | 84 | 950 | 200 |
| 4/26/89 | MW1*** | ND | ND | 2.1 | ND | ND | ND |
| | MW2*** | ND | ND | ND | ND | ND | ND |
| | MW3*** | ND | ND | ND | ND | ND | ND |
| | MW4*** | ND | ND | 0.33 | ND | ND | ND |
| | MW5*** | ND | ND | ND | ND | ND | ND |
| Detection Limits | | 50 | 30 | 0.30 | 0.30 | 0.30 | 0.30 |

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TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

\+ MWD is a quality assurance duplicate water sample collected from well MW5.

* TOG and all EPA method 8010 constituents were non-detectable.

** TOG for these samples were 23 ppm and 7.4 ppm, respectively. All EPA method 8010 constituents were non-detectable for both samples.

*** TPH as diesel, TOG, and all EPA method 8010 constituents were non-detectable.

-- Indicates analysis not performed.

ND = Non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

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TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

| Date | Sample Well # | TPH as Diesel | TPH as Gasoline | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| 2/14/89 | W1A | 110 | -- | 2.2 | 0.55 | 12 | <0.5 |
| | W1B* | -- | -- | -- | -- | -- | -- |
| 2/17/89 | WO-W1+ | 1,300 | 500 | 52 | 8.6 | 100 | 9.2 |

-- Indicates analysis not performed.

* All EPA method 601 constituents were non-detectable.

+ TOG and all EPA method 601 constituents were non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

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TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on January 30, and February 2, 14 & 17, 1989)

| Sample # | Depth (feet) | TPH as Gasoline | TPH as Diesel | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| SW1 | 10.0 | 1.4 | -- | 0.14 | <0.1 | <0.1 | <0.1 |
| SW2A | 10.0 | 1.1 | -- | <0.05 | <0.1 | <0.1 | <0.1 |
| SW3A | 10.0 | <1.0 | -- | <0.05 | <0.1 | <0.1 | <0.1 |
| SW4 | 10.0 | <1.0 | -- | <0.05 | <0.1 | <0.1 | <0.1 |
| SW5 | 10.0 | 130 | -- | 1.1 | 4.6 | 18 | 3.7 |
| SW5A | 10.0 | <1.0 | -- | <0.05 | <0.1 | <0.1 | <0.1 |
| SW6A | 10.0 | <1.0 | -- | <0.05 | <0.1 | <0.1 | <0.1 |
| P1 | 3.5 | 7.8 | -- | 2.0 | <0.1 | 2.4 | 0.53 |
| P2 | 3.5 | 12 | -- | 1.9 | 0.91 | 0.70 | 3.0 |
| P3 | 3.5 | 11 | -- | 0.37 | 0.36 | 0.29 | 1.7 |
| SWA* | 10.0 | <1.0 | 1.0 | <0.05 | <0.1 | <0.1 | <0.1 |
| SWB* | 10.0 | 1.1 | 2.4 | <0.05 | <0.1 | <0.1 | <0.1 |
| SWC* | 10.0 | 110 | 180 | 0.68 | <0.1 | 5.6 | 1.9 |
| SWC2* | 10.0 | 89 | 57 | <0.05 | <0.1 | 0.42 | 0.76 |
| SWC3* | 10.0 | <1.0 | <1.0 | <0.05 | <0.1 | <0.1 | <0.1 |
| SWD* | 10.0 | <1.0 | <1.0 | <0.05 | <0.1 | <0.1 | <0.1 |
| WO1** | 9.0 | 60 | 800 | 3.6 | 9.2 | 9.5 | 2.5 |

* TOG for SWA was 35 ppm, SWB was 44 ppm, SWC was 500 ppm, SWC2 was 680 ppm, SWC3 was <30 ppm, and SWD was 77 ppm.

** TOG for WO1 was 1,900 ppm; cadmium was 0.3 ppm; chromium was 39 ppm; lead was 10 ppm, and zinc was 42 ppm. Seventeen EPA method 8270 compounds and two EPA method 8010 compounds were detected at concentrations ranging from 100 ppb to 10,000 ppb.

-- Indicates analysis not performed.

Results in parts per million (ppm), unless otherwise indicated.

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TABLE 5

SUMMARY OF LABORATORY ANALYSES
SOIL

| Date | Sample Number | Cadmium | Chromium | Lead | Zinc |
|---|---|---|---|---|---|
| 3/09/89 | SW-AX* | 0.2 | 96 | 4.7 | 35 |
| | SW-BX* | 0.16 | 91 | 5.1 | 29 |
| | SW-C3X* | 0.33 | 140 | 6.8 | 41 |
| | SW-DX* | 0.19 | 92 | 4.8 | 32 |
| Detection Limits | | 0.1 | 0.05 | 0.05 | 0.1 |

* All EPA method 8010 and 8270 constituents were non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

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TABLE 6

SUMMARY OF LABORATORY ANALYSES
SOIL

| Date | Sample Number | Depth (feet) | TPH as Gasoline | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| 4/20/89 | MW1* | 5 | ND | ND | ND | ND | ND |
| | MW2* | 5 | ND | ND | ND | ND | ND |
| | MW3 | 5 | ND | ND | ND | ND | ND |
| | MW3 | 9 | ND | ND | ND | ND | ND |
| | MW4 | 5 | ND | ND | ND | ND | ND |
| | MW4 | 9 | 1.4 | ND | ND | ND | ND |
| | MW5 | 5 | 900 | 3.1 | 3.1 | 110 | 30 |
| | MW5 | 9 | ND | ND | ND | ND | ND |
| Detection Limits | | | 1.0 | 0.05 | 0.1 | 0.1 | 0.1 |

* TPH as diesel, TOG, and all EPA method 8010 constituents were non-detectable.

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

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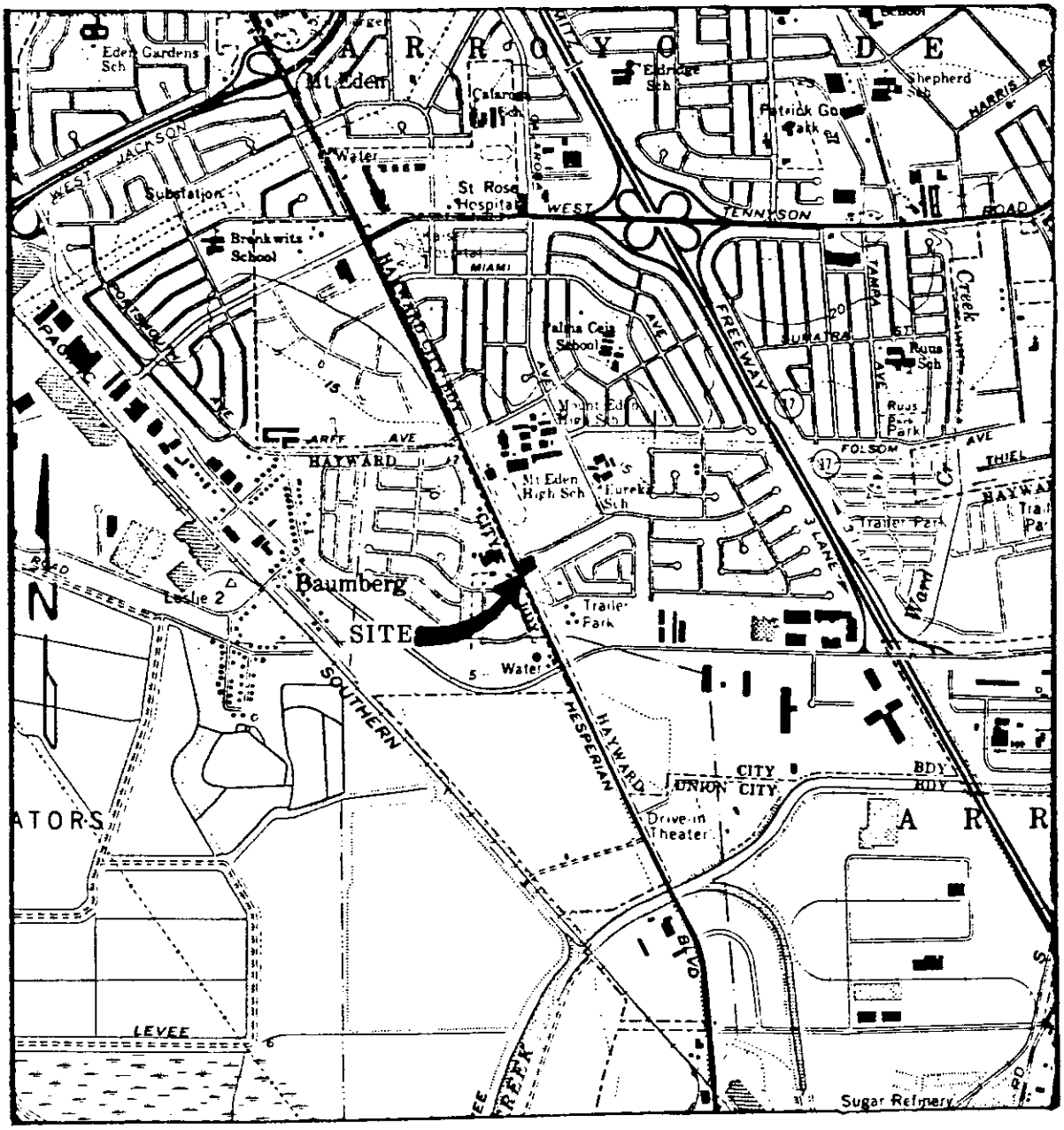


LOCATION MAP

Unocal S/S #5487
28250 Hesperian Boulevard
Hayward, CA

**KAPREALIAN ENGINEERING, INC.**
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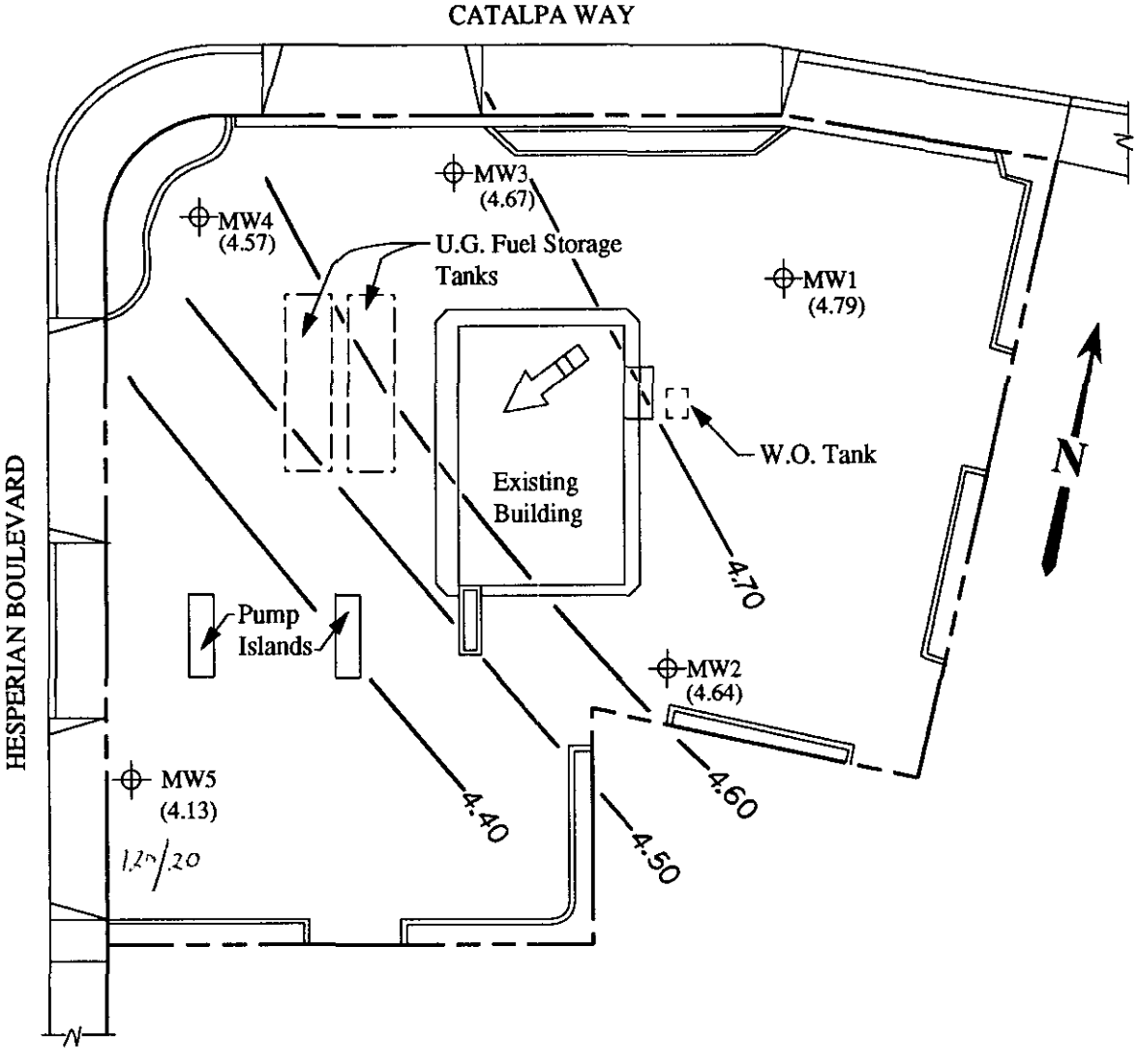


SITE PLAN
Figure 1

LEGEND

- Monitoring well
- Direction of ground water flow
- ( ) Water table elevation in feet above Mean Sea Level on 2/5/92
- Contours of equal elevation of ground water surface in feet

0 30 60
Approx. scale feet

Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, CA

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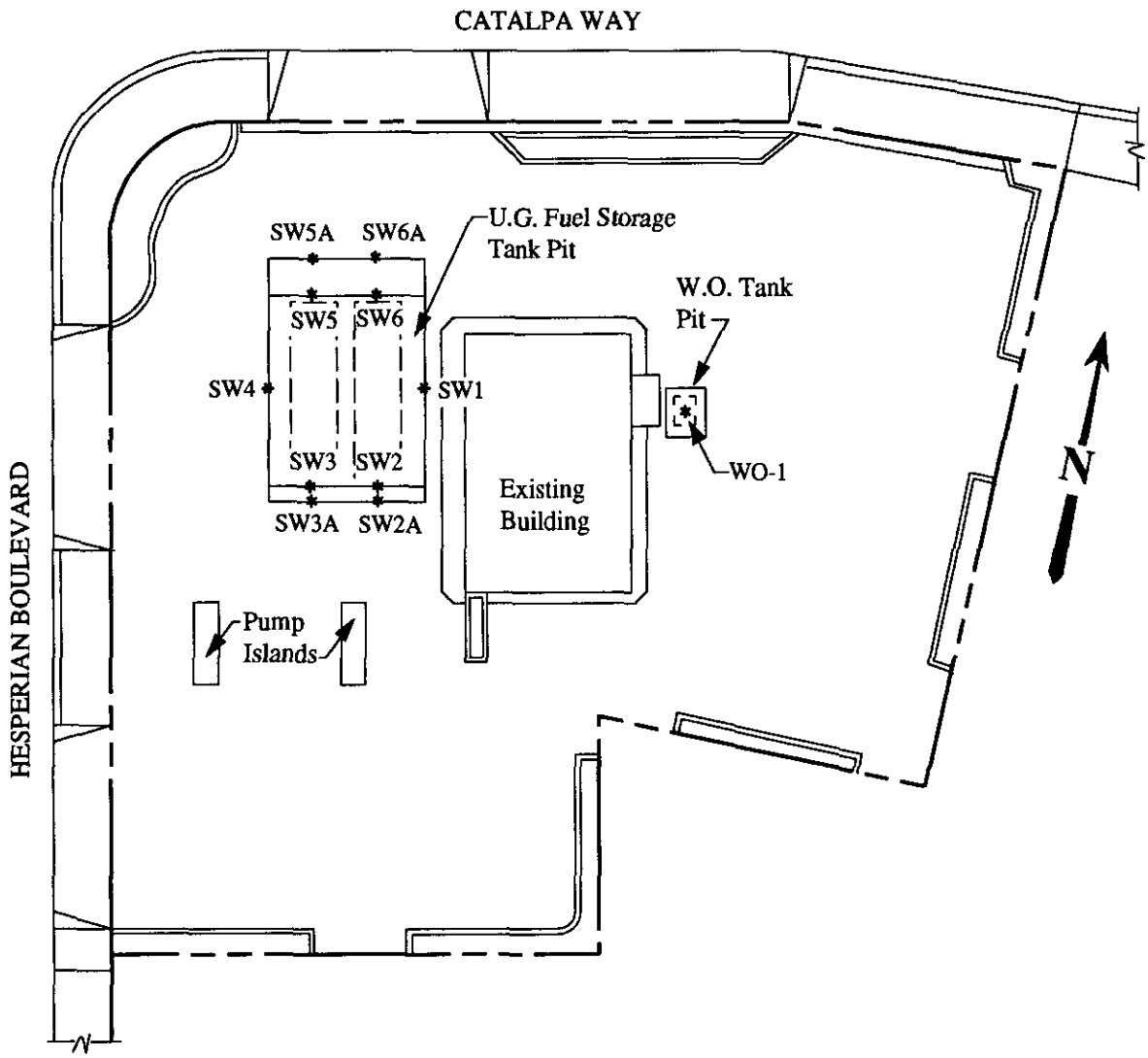


SITE PLAN

Figure 2

0 30 60

Approx. scale feet

LEGEND

* Sample Point Location

Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, CA

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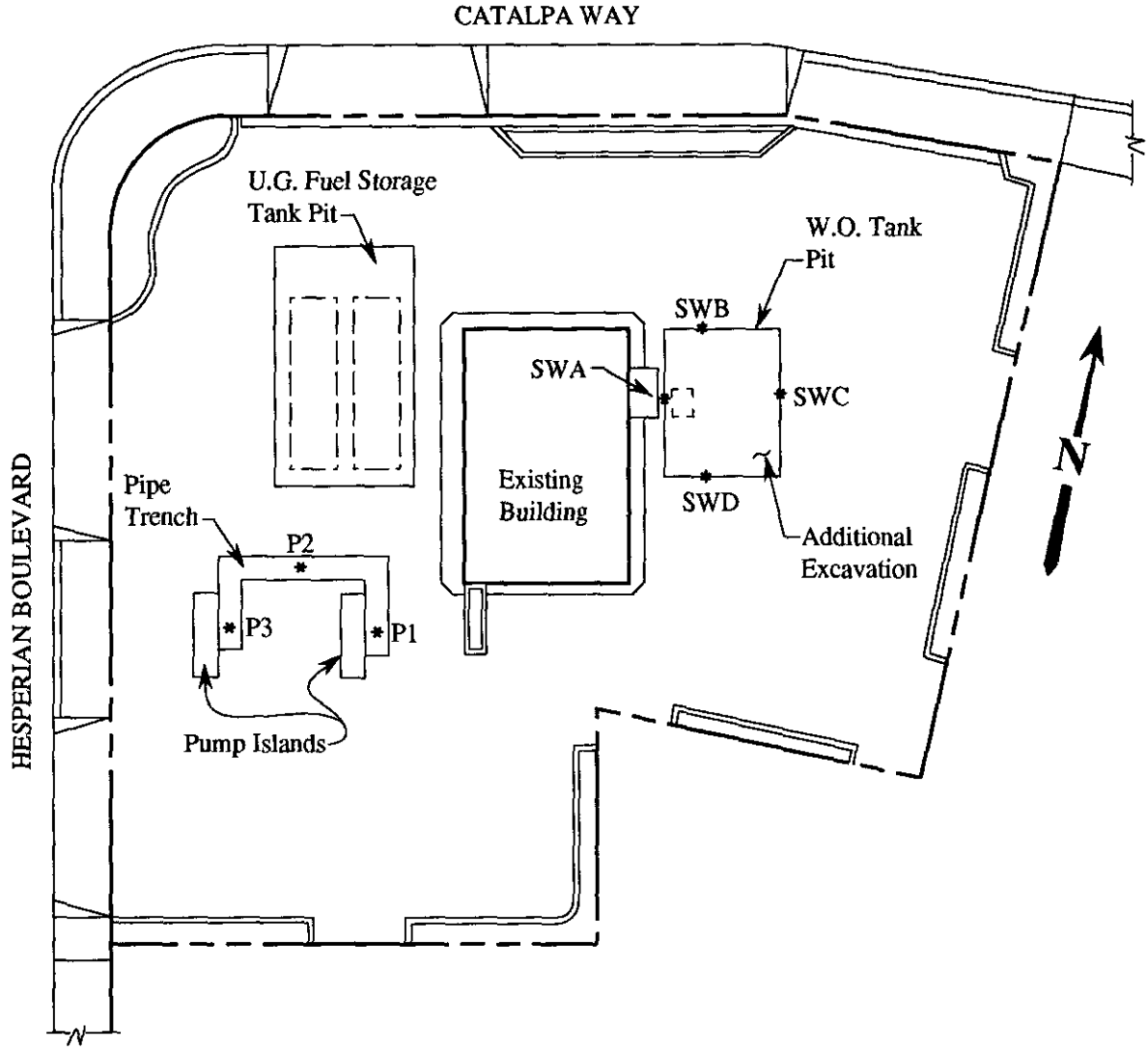


SITE PLAN

Figure 3

LEGEND

* Sample Point Location

0 30 60

Approx. scale feet

Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, CA

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*Consulting Engineers*
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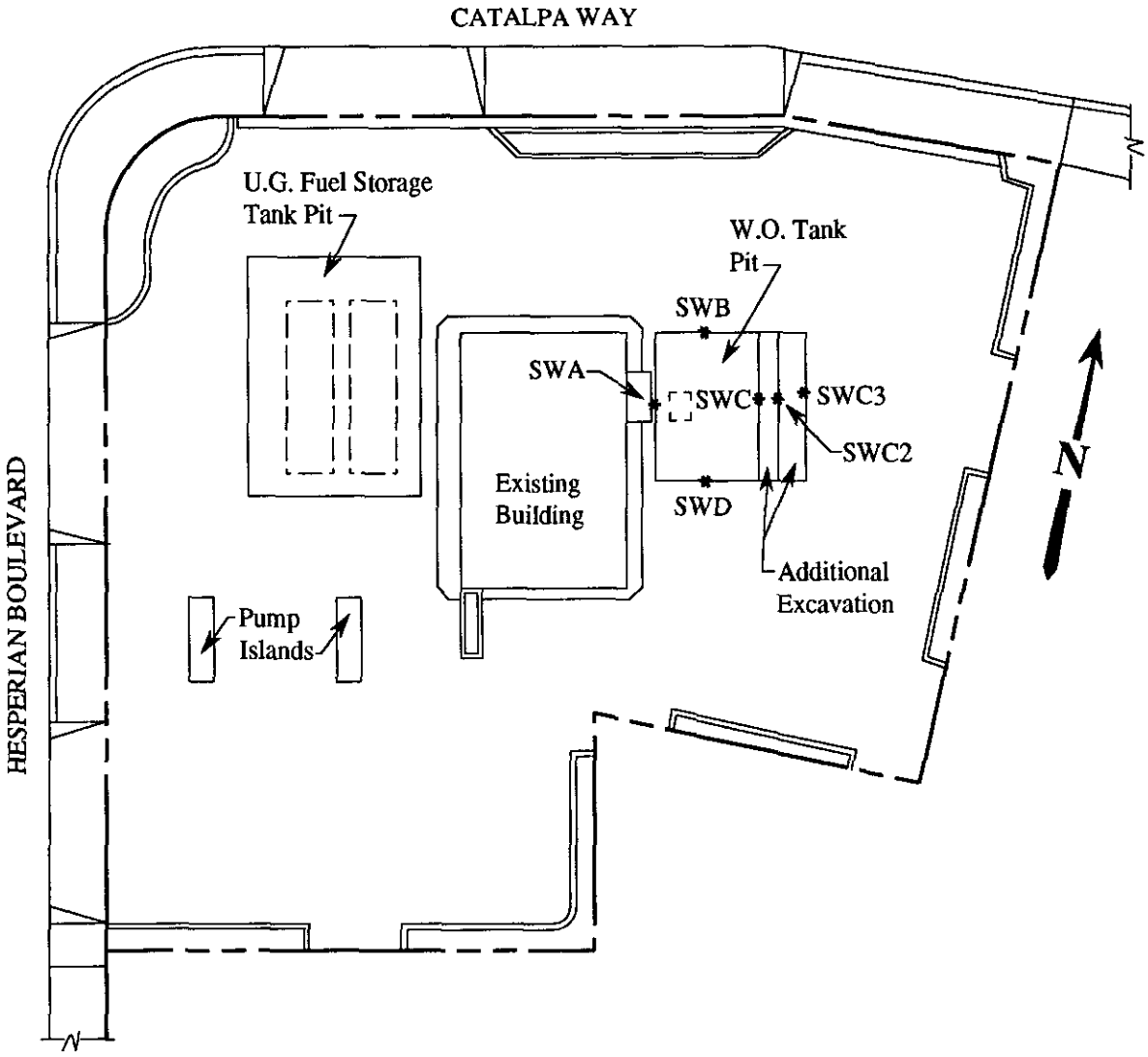
(707) 746-6915 • (707) 746-6916 • FAX (707) 746-5581




SITE PLAN

Figure 4

LEGEND

* *Sample Point Location*

0 30 60

Approx. scale feet

Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, CA

**KAPREALIAN ENGINEERING, INC.**
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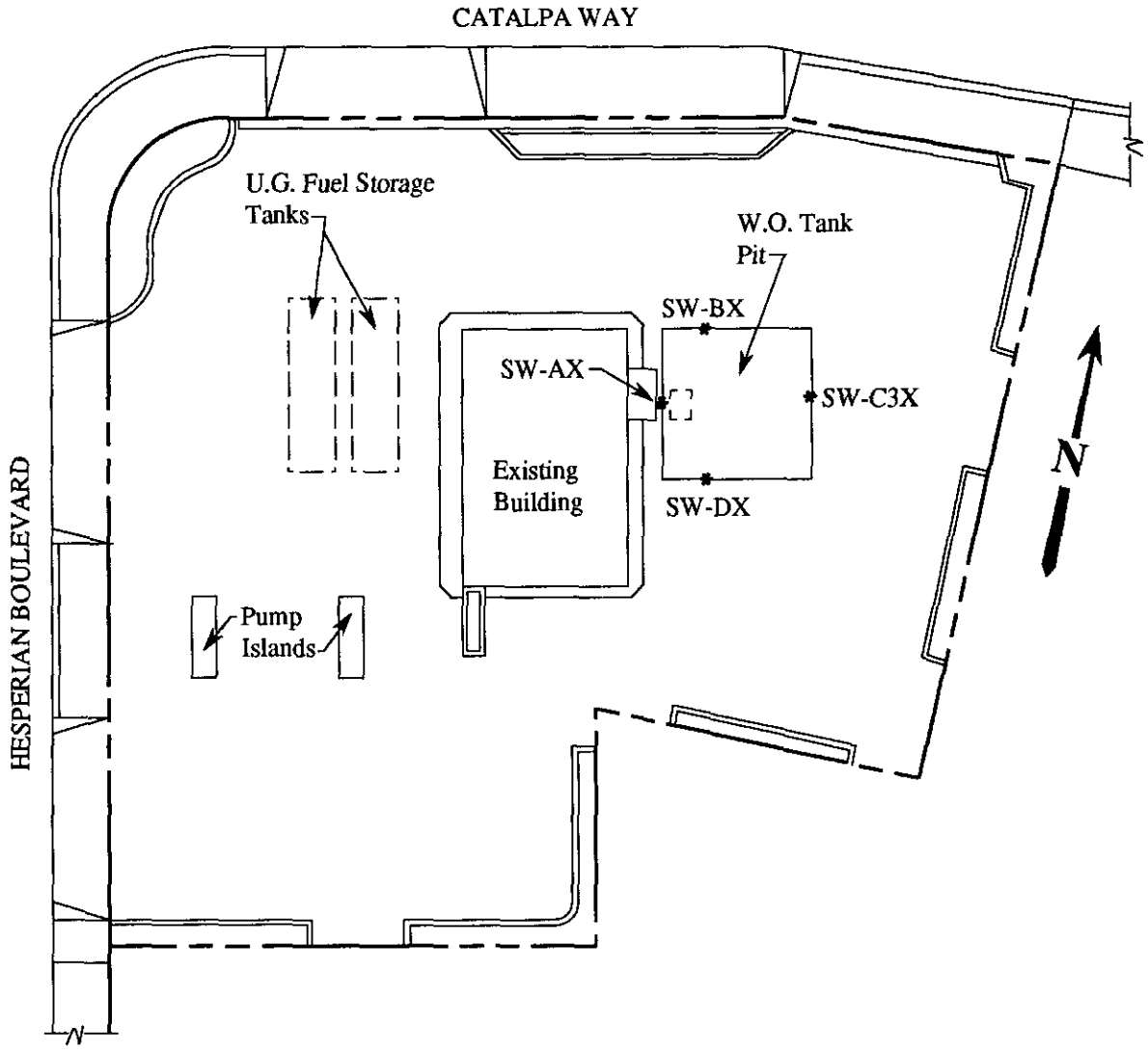


SITE PLAN

Figure 5

LEGEND

* Sample Point Location

0 30 60

Approx. scale feet

Unocal Service Station #5487
28250 Hesperian Boulevard
Hayward, CA

**SEQUOIA ANALYTICAL**
1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal/ 28250 Hesperian, Hayward | Sampled: | Feb 5, 1992 |
| P.O. Box 996 | Sample Descript.: | Water, MW-5 | Received: | Feb 5, 1992 |
| Benicia, CA 94510 | Analysis Method: | EPA 5030/ 8015/8020 | Analyzed: | Feb 6, 1992 |
| Attention: Mardo Kaprealian, P.E. | Lab Number: | 202-0130 | Reported: | Feb 11, 1992 |

## TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

| Analyte | Method Detection Limit µg/L (ppb) | Sample Results µg/L (ppb) |
|---|---|---|
| Low to Medium Boiling Point Hydrocarbons | 30 | 120 |
| Benzene | 0.30 | 20 |
| Toluene | 0.30 | N.D. |
| Ethyl Benzene | 0.30 | 4.4 |
| Xylenes | 0.30 | 4.7 |

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

**SEQUOIA ANALYTICAL**

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal/ 28250 Hesperian, Hayward
QC Sample Group: 202-0130
Reported: Feb 11, 1992

## QUALITY CONTROL DATA REPORT

**SURROGATE**

| | EPA | EPA |
|---|---|---|
| Method: | 8015/8020 | 8015/8020 |
| Analyst: | K.N. | K.N. |
| Reporting Units: | µg/L | µg/L |
| Date Analyzed: | Feb 6, 1992 | Feb 6, 1992 |
| Sample #: | 202-0130 | Blank |
| **Surrogate % Recovery:** | 100 | 100 |

**SEQUOIA ANALYTICAL**

Scott A. Chieffo
Project Manager

| | | |
|---|---|---|
| % Recovery: | Conc. of M.S. - Conc. of Sample / Spike Conc. Added | x 100 |
| Relative % Difference: | Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2 | x 100 |

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Kaprealian Engineering, Inc. Client Project ID: Unocal/ 28250 Hesperian, Hayward
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E. QC Sample Group: 202-0130 Reported: Feb 11, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl-Benzene | Xylenes |
|---|---|---|---|---|
| Method: | EPA 8015/8020 | EPA 8015/8020 | EPA 8015/8020 | EPA 8015/8020 |
| Analyst: | K.E./K.N./J.F. | K.E./K.N./J.F. | K.E./K.N./J.F. | K.E./K.N./J.F. |
| Reporting Units: | µg/L | µg/L | µg/L | µg/L |
| Date Analyzed: | Feb 6, 1992 | Feb 6, 1992 | Feb 6, 1992 | Feb 6, 1992 |
| QC Sample #: | Matrix Blank | Matrix Blank | Matrix Blank | Matrix Blank |
| **Sample Conc.:** | N.D. | N.D. | N.D. | N.D. |
| **Spike Conc. Added:** | 20 | 20 | 20 | 60 |
| **Conc. Matrix Spike:** | 25 | 25 | 25 | 81 |
| **Matrix Spike % Recovery:** | 125 | 125 | 125 | 135 |
| **Conc. Matrix Spike Dup.:** | 21 | 21 | 20 | 66 |
| **Matrix Spike Duplicate % Recovery:** | 105 | 105 | 100 | 110 |
| **Relative % Difference:** | 17 | 17 | 21 | 22 |

**SEQUOIA ANALYTICAL**

Scott A. Chieffo
Project Manager

| | | |
|---|---|---|
| % Recovery: | Conc. of M.S. - Conc. of Sample / Spike Conc. Added | x 100 |
| Relative % Difference: | Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2 | x 100 |

# KAPREALIAN ENGINEERING, INC.

## CHAIN OF CUSTODY

| SAMPLER | SITE NAME & ADDRESS | ANALYSES REQUESTED | TURN AROUND TIME: |
|---|---|---|---|
| Vartkes | Unocal / Hayward | TPHG & BTXE | Regular |
| WITNESSING AGENCY | 28250 Hesperian | | |

| SAMPLE ID NO. | DATE | TIME | SOIL | WATER | GRAB | COMP | NO. OF CONT. | SAMPLING LOCATION | TPHG & BTXE | 8020 | 130AB | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-5 | 2/5/92 | 12:30 P.M. | | ✓ | ✓ | | 2 | Monitoring Well | ✓ | 8020 | 130AB | VOA's Preserved in HCl. |

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
|---|---|---|
| W. Vartkes | 2/5/92 1:10 PM | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| | 2592 1:50 PM | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |

The following MUST BE completed by the laboratory accepting samples for analysis:

1. Have all samples received for analysis been stored in ice? YES
2. Will samples remain refrigerated until analyzed? YES
3. Did any samples received for analysis have head space? NO
4. Were samples in appropriate containers and properly packaged? YES

Signature | DM Title | 2-5 Date