KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

KEI-J90-1103.P1
February 1, 1991

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

Attention: Mr. Rick Sisk

RE: Work Plan/Proposal
Unocal Service Station #0752
800 Harrison Street
Oakland, California

I. INTRODUCTION

This work plan for Phase I subsurface investigation is prepared in accordance with requirements and format of the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990. All work will be performed under the direct supervision of Mr. Don R. Braun, Certified Engineering Geologist #1310, expiration date 6/30/92.

A. Statement of Scope of Work

The scope of work in this work plan/proposal entails defining the extent of subsurface soil and ground water contamination at the site.

B. Site Location

The service station site occupies the northeast corner at the intersection of Harrison Street and 8th Street in Oakland, California. The site is located northeast and across 8th Street from a Shell Service Station. The site is characterized by gently sloping southward trending topography, and is located approximately 0.5 miles north-northeast from the Oakland Inner Harbor. A Location Map and Site Plans are attached to this work plan.

C. Background

Kaprealian Engineering, Inc's. (KEI) field work was conducted on November 9, 1990, when two underground fuel storage tanks and one waste oil tank were removed from the site. The tanks consisted of one 10,000 gallon super

unleaded fuel storage tank, one 10,000 gallon regular unleaded fuel storage tank, and one 280 gallon waste oil tank. The tanks were made of steel and no apparent holes or cracks were observed in either of the fuel tanks. One hole having an area of approximately 1/8 square inch was observed in the waste oil tank.

Two soil samples, labeled A1 and B1, were collected from beneath the fuel tanks at a depth of approximately 14 feet below grade. Two soil samples, labeled A2 and B2, were collected from the fuel tank pit east sidewall at a depth of approximately 12 feet below grade. One soil sample, labeled WO1, was collected from beneath the waste oil tank at a depth of approximately 6.5 feet below grade. Sample point locations are shown on the attached Site Plan, Figure 1. All of the soil samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline using EPA method 5030 in conjunction with modified 8015, and benzene, toluene, xylenes and ethylbenzene (BTX&E) using EPA method 8020. Analytical results of the soil samples collected from the fuel tank pit indicated non-detectable levels of TPH as gasoline for samples A2 and B2, while samples A1 and B1 showed levels of TPH as gasoline at 1,200 ppm and 45 ppm, respectively. In addition to TPH as gasoline and BTX&E, sample WO1, collected from beneath the waste oil tank, was analyzed for TPH as diesel using EPA method 3550 in conjunction with modified 8015, total oil and grease (TOG) using SM 503D&E, halogenated volatile organics using EPA method 8010, semi-volatile organics using EPA method 8270 and the metals - cadmium, chromium, lead, zinc and nickel. Laboratory analyses indicated non-detectable levels of all constituents analyzed except for metals, which were as follows: chromium at 43 ppm, lead at 1,100 ppm, zinc at 130 ppm and nickel at 12 ppm.

On November 12, 1990, KEI collected an additional sample, labeled C(19), from the fuel tank pit at a depth of approximately 19 feet below grade. The sample point location is shown on the attached Site Plan, Figure 1. Laboratory analyses indicated levels of TPH as gasoline at 3,800 ppm with a benzene level of 11 ppm.

On December 20, 1990, KEI collected six soil samples, labeled D1 through D6, from beneath the product dispensers, and one soil sample, labeled P1, from the product pipe trench. The seven samples were all collected at a depth of about 2.5 feet below grade. Laboratory analyses indicated non-detectable levels of TPH as gasoline and

benzene for all samples except sample D2, which showed TPH as gasoline at 45 ppm with benzene at 0.22 ppm. Sample point locations are shown on the attached Site Plan, Figure 1.

Due to obvious contamination encountered at sample point location D2 during excavation following the previous sampling, KEI returned to the site on December 26, 1990. One additional sample, labeled D2(6), was collected at sample point location D2 from a depth of about 6 feet below grade. The sample point location is indicated on the attached Site Plan, Figure 1. Laboratory analyses indicated levels of TPH as gasoline at 1,200 ppm with benzene at a level of 0.24 ppm.

On January 3, 1991, KEI again returned to the site to observe additional soil excavation in the vicinity of sample point location WO1. Soil was excavated from a depth of 6.5 feet below grade to a depth of about 9.5 feet below grade. One additional soil sample, labeled WO1(9.5), was collected from beneath sample point location WO1 at a depth of about 9.5 feet below grade. Analytical results of the of sample WO1(9.5) for metals indicated a non-detectable level of lead, while chromium, zinc and nickel were detected at 61 ppm, 20 ppm and 40 ppm, respectively. Again, the sample point location is indicated on the attached Site Plan, Figure 1.

Laboratory results for soil samples collected from November 9, 1990 through January 3, 1991, are summarized in Table 1. The details of the soil sampling activities are presented in KEI's report (KEI-J90-1103.R1) dated February 1, 1991.

D. Site History

1. The site is used as a gasoline station. Two 10,000 gallon capacity fuel tanks and one 280 gallon waste oil tank were at the site prior to their removal on November 9, 1990.

2. No previous businesses at the site are known to KEI.

3. a. Two underground fuel tanks and one waste oil tank were removed from the site on November 9, 1990. All of the tanks were made of steel. The fuel tanks were each 10,000 gallons in capacity, and contained regular unleaded gasoline, and super unleaded gasoline. The waste oil tank was 280 gallons in capacity and contained waste oil.

   b. The tanks were removed on November 9, 1990. No apparent holes or cracks were observed in either the regular unleaded or super unleaded gasoline tanks. One hole of approximately 1/8 square inch in area was observed in the waste oil tank.

   c. Tank removal was performed by Dan Brenton Construction of San Jose, California. For tank removal documentation and associated manifests, the reader is referred to Dan Brenton Construction.

   d. An Unauthorized Release Form dated November 13, 1990 has been filed with the ACHA. A copy of the Unauthorized Release Form is attached to this work plan.

   e. KEI understands that all underground storage tanks and piping were precision tested annually from 1986 through 1990. All underground systems tested "tight", with the exception of the super unleaded system in 1989. A high level failure was detected in this system at that time. However, the super unleaded product piping passed the subsequent precision test. Therefore, minor repairs were made on a fitting on the top of the tank, and the system was retested as "tight". An inventory reconciliation was performed by Unocal prior to the tank replacement in November of 1990. No reportable variances were found during the audit.

   f. An unknown quantity of petroleum hydrocarbons was released into the subsurface environment.

4. No other leaks, spills or previously removed tanks at the site are known to KEI at this time.

5. No previous subsurface work at the site or adjacent sites is known to KEI.

II. SITE DESCRIPTION

A. Vicinity Description and Hydrogeologic Setting

The subject site is developed and consists of an Unocal Service Station. The station occupies the northeast corner at the intersection of Harrison Street and 8th Street in Oakland, California.

The depth of the water table and the ground water direction of flow are presently unknown at the site; however, the direction of ground water flow is inferred to be toward the south (south-southeast to south-southwest) toward Oakland Inner Harbor and roughly parallel with the surface topography.

B. & C. Vicinity Map

A Location Map and Site Plans showing various features of the site are attached to this work plan. Figure 2 shows the locations of known subsurface utilities, the former tank locations and affiliated piping. No wells are known to KEI to be located on or near the site.

D. Existing Soil Contamination and Excavation Results

1. Soil sample collection associated with the removal of the fuel tanks and waste oil tank was performed in the following manner:

   The collection of the soil samples taken on November 9, 1990 was witnessed by ACHA personnel. The undisturbed samples were collected from bulk material excavated by backhoe. The samples were placed in clean, two-inch diameter brass tubes, sealed with aluminum foil, and plastic caps, and stored in a cooler on ice prior to delivery to a state-certified laboratory. Chain of Custody procedures were observed.

2. Ground water was not encountered at the site to the maximum depth explored (-19 feet).

3. 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 Quaternary-age dune sand deposits

referred to as the Merritt Sand (Qps). The Merritt Sand is described as typically consisting of loose, well-sorted, fine-to medium-grained sand with silt and reaches a maximum depth of about 50 feet near Oakland.

The subsurface soils exposed in the excavations appeared to consist primarily of silty sand.

4. Soil sample collection locations associated with the former fuel and waste oil tank pits, product dispensers and product pipe trenches are shown on the attached Site Plan, Figure 1.

   Soil samples were collected on November 9 & 12, December 20 & 26, 1990, and January 3, 1991 by Mr. Hagop Kevork of KEI. Tabulated soil analytical results are provided in Table 1. Sample collection locations are shown on the attached Site Plan, Figure 1. Copies of the signed laboratory data sheets are attached to this work plan.

5. Any known subsurface conduits or utilities are identified on the attached Site Plan, Figure 2.

6. No unusual problems were encountered during sampling, except that the tank pit was required to be shored for slope protection purposes.

7. Approximately 300 cubic yards of soil excavated from the fuel tank pit have been sent to a Class III disposal site, after aeration if required. Approximately 240 cubic yards of soil excavated from the new fuel tank pit were used on-site as backfill material in the fuel tank pit. The balance of the soil excavated from the new fuel tank pit has been sent to a Class III disposal site. Soil excavated from the waste oil tank pit was been sent to a Class I disposal facility.

8. All required permits for tank removal were acquired by Dan Brenton Construction of San Jose. For copies of such permits, the reader is referred to Dan Brenton Construction.

III. PLAN FOR DETERMINING EXTENT OF SUBSURFACE SOIL AND GROUND WATER CONTAMINATION ON-SITE

A. Placement and Rationale for Location of Monitoring Wells

As Phase I subsurface investigation, KEI proposes the installation of three monitoring wells and two exploratory borings to delineate the lateral extent of soil contamination, to determine whether or not ground water has been impacted, and to determine the local ground water flow direction. The well locations were determined using an inferred southward ground water flow direction at the site. Approximate locations of the wells and exploratory borings are shown on the attached Site Plan, Figure 2.

B. Drilling Method for Construction of Monitoring Wells, including Decontamination Procedures

KEI proposes to install three two-inch diameter monitoring wells and drill two exploratory borings using truck mounted eight-inch outside diameter hollow stem auger drilling equipment. Permits will be obtained from the Alameda County Flood Control and Water Conservation District and the City of Oakland as necessary prior to beginning work.

The wells will be drilled approximately 10 to 15 feet into the saturated zone of the first encountered ground water unless a 5 foot thick clay aquitard is encountered first, at which time drilling will be terminated.

The borings will be drilled to the depth of the ground water table, at which time drilling will be terminated and the boring backfilled with a neat cement grout or a cement/sand slurry from the total depth drilled up to the surface.

Soil samples will be collected at a maximum spacing of 5 foot intervals, significant changes in lithology, at areas of obvious contamination, and at the soil/ground water interface beginning at a depth of approximately 4 to 5 feet below grade. Sampling for lithologic logging and laboratory analysis purposes will continue until the first water table is encountered for all borings. Sampling for lithologic logging purposes will continue below the ground water table to the maximum depth explored for the wells only. A representative soil sample from below the ground water table will be collect-

ed for a sieve/hydrometer analysis to verify monitoring well slot size and filter pack design. Classification of soil will be done using the Unified Soil Classification System (USCS) by KEI's field engineer or geologist. Samples will be collected in a California modified split-spoon sampler with two-inch diameter brass liners. The sampler will be advanced ahead of the drilling augers at designated depths by dropping a 140 pound hammer 30 inches. Blow counts will be recorded. The samples will be removed from the sampler, retained in the brass liners, and sealed with aluminum foil, plastic caps and tape. They will be labeled and stored in a cooler on ice for delivery to a state certified laboratory.

California modified split-spoon samplers and brass tubes will be decontaminated prior to each use with a trisodium phosphate or Liquinox solution wash followed by a clean water rinse. Hollow stem augers will be steam cleaned prior to each use. Steam cleaning will be performed on visqueen. Water from the steam cleaning will be contained on the visqueen and placed in DOT-approved 55-gallon drums, pending appropriate disposal.

The wells will be constructed in the following manner:

Casing Type: Schedule 40 PVC, flush threaded joints, 0.02 inch factory slot, two-inch diameter. Screen to run from total depth of the well to approximately 5 feet above first encountered ground water. Monterey sand (#3) will fill the annular space from total depth to 2 feet above the screened casing interval. A two foot thick bentonite seal will be placed in the annular space on top of the sand pack. Neat cement will be poured from the top of the bentonite seal to the surface.

Well casings will be secured with a waterproof cap and a padlock. A round, watertight, flush-mounted well cover will be concreted in place over the top of the casing. A typical well construction diagram is attached to this work plan.

Drilled cuttings will be stored on-site in DOT-approved, 55-gallon drums, or under visqueen, until appropriate disposal can be determined.

Casing elevations will be surveyed to an established benchmark and to a vertical accuracy of 0.01 feet.

The wells will be developed using a surface pump approximately one week after well completion. Wells will be pumped until expelled water is clear and free of turbidity. Effluent generated during well development will be contained in barrels and hauled from the site by a licensed hazardous waste hauler.

C. Ground Water Sampling Plans

Wells will be checked for depth to the water table, the presence of free product and sheen (using an interface probe and/or paste tape) prior to both development and sampling. Water levels will be measured with an electronic sounder or paste tape.

The monitoring wells will be purged with a surface bailer of a minimum of four casing volumes prior to sampling and at least 24 hours after development. Samples will be collected using a clean Teflon bailer and will be promptly decanted into 40 ml VOA vials and/or one liter amber bottles as appropriate. Vials and/or bottles will be sealed with Teflon-lined screw caps, labeled and stored in a cooler on ice for delivery to a state certified laboratory. Properly executed chain of custody documentation will accompany all samples. The sampling bailer will be cleaned with soap and a clean water rinse prior to each use.

One soil sample from each sampling interval (above the water table only) corresponding to a maximum spacing of 5 foot intervals, and all water samples will be analyzed by Sequoia Analytical Laboratory in Concord or Redwood City, California, a state certified laboratory, for TPH as gasoline and BTX&E using EPA analytical methods (EPA 5030/8015/8020) as recommended by the Regional Water Quality Control Board, and specified in the Tri-regional guidelines. In addition, soil and ground water samples collected from monitoring well MW1 located adjacent to the waste oil tank pit will be analyzed for TPH as diesel using EPA method 3510 in conjunction with modified 8015, TOG by method 503A&E (water) and 503D&E (soil), EPA method 8010 constituents, and for the metals - cadmium, chromium, lead, zinc and nickel.

Analytical results will be presented in tabular form, showing sample depths, results and detection limits. The results will be used to delineate the vertical and lateral extent of the subsurface contaminants.

A report documenting field activities and sample results will be submitted within 45 days after the completion of the field work. The report will set out the collected information in an orderly fashion, and include any recommendations for additional needed work.

PHASE II

Phase II will discuss the alternatives for continuing the subsurface investigation if Phase I reveals contamination levels in the soil or ground water significantly in excess of action levels.

Phase II will include a proposal for additional monitoring wells to define a zero line of ground water contamination. It will also propose a ground water monitoring and sampling program for the wells installed during Phase I.

The main purpose of Phase II will be to establish a zero line of ground water contamination. The proposal/work plan will be submitted to the regulatory agencies as appropriate.

PHASE III

Once the zero line is established through the completion of Phase II, a final remedial plan will be developed. This plan will also be submitted.

PHASE IV

Implementation of the remediation plan.

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

Sincerely,

Kaprealian Engineering, Inc.

Don R. Braun
Certified Engineering Geologist

License No. 1310
Exp. Date 6/30/92

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Attachments: Table 1
Location Map
Site Plans - Figures 1 & 2
Unauthorized Release Form
Well Construction Diagram

PRICING

All invoicing will be based upon actual time and material expended for the project in accordance with KEI's current fee schedule. Based on this, we estimate that our charges would not exceed $20,000.00.

KEI-J90-1103.P1
February 1, 1991

TABLE 1

SUMMARY OF LABORATORY ANALYSES

(Collected on November 9 & 12, December 20 & 26, 1990 and January 3, 1991)

Sample	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
A1	14	1,200	3.0	38	170	25
A2	12	ND	ND	0.0082	0.024	ND
B1	14	45	0.29	2.7	10	1.4
B2	12	ND	0.0063	0.0056	0.011	ND
C(19)	19	3,800	11	90	210	36
WO1*	6.5	ND	ND	ND	ND	ND
WO1(9.5)**	9.5	ND	ND	ND	ND	ND
D1	2.5	ND	ND	ND	ND	ND
D2	2.5	45	0.22	1.8	5.5	0.71
D2(6)	6	1,200	0.24	28	170	28
D3	2.5	ND	ND	ND	ND	ND
D4	2.5	ND	ND	ND	ND	ND
D5	2.5	ND	ND	ND	ND	ND
D6	2.5	ND	ND	ND	ND	0.018
P1	2.5	ND	ND	ND	ND	ND
Detection Limits		1.0	0.0050	0.0050	0.0050	0.0050

* TOG, TPH as diesel, all EPA method 8010 and 8270 constituents, and cadmium were non-detectable. Chromium, lead, zinc and nickel were detected at 43 ppm, 1,100 ppm, 130 ppm and 12 ppm, respectively.

** TOG and lead were non-detectable. Chromium, zinc and nickel were detected at 61 ppm, 20 ppm and 40 ppm, respectively.

ND = Non-detectable.

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

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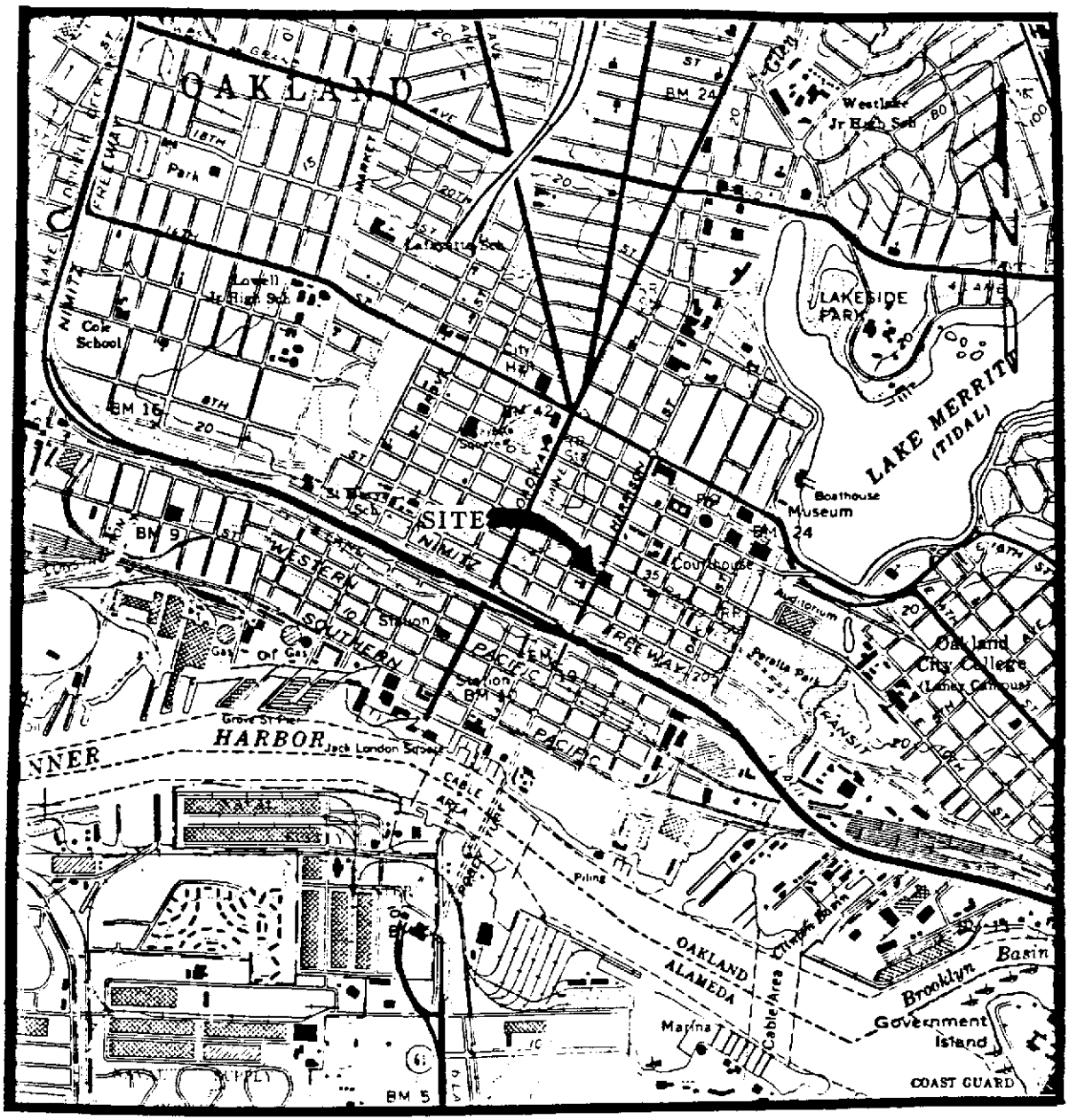

LOCATION MAP

Base from U.S.G.S. 7.5 minute Oakland West Quadrangle (photorevised 1980)

Unocal S/S #0752
800 Harrison Street
Oakland, CA

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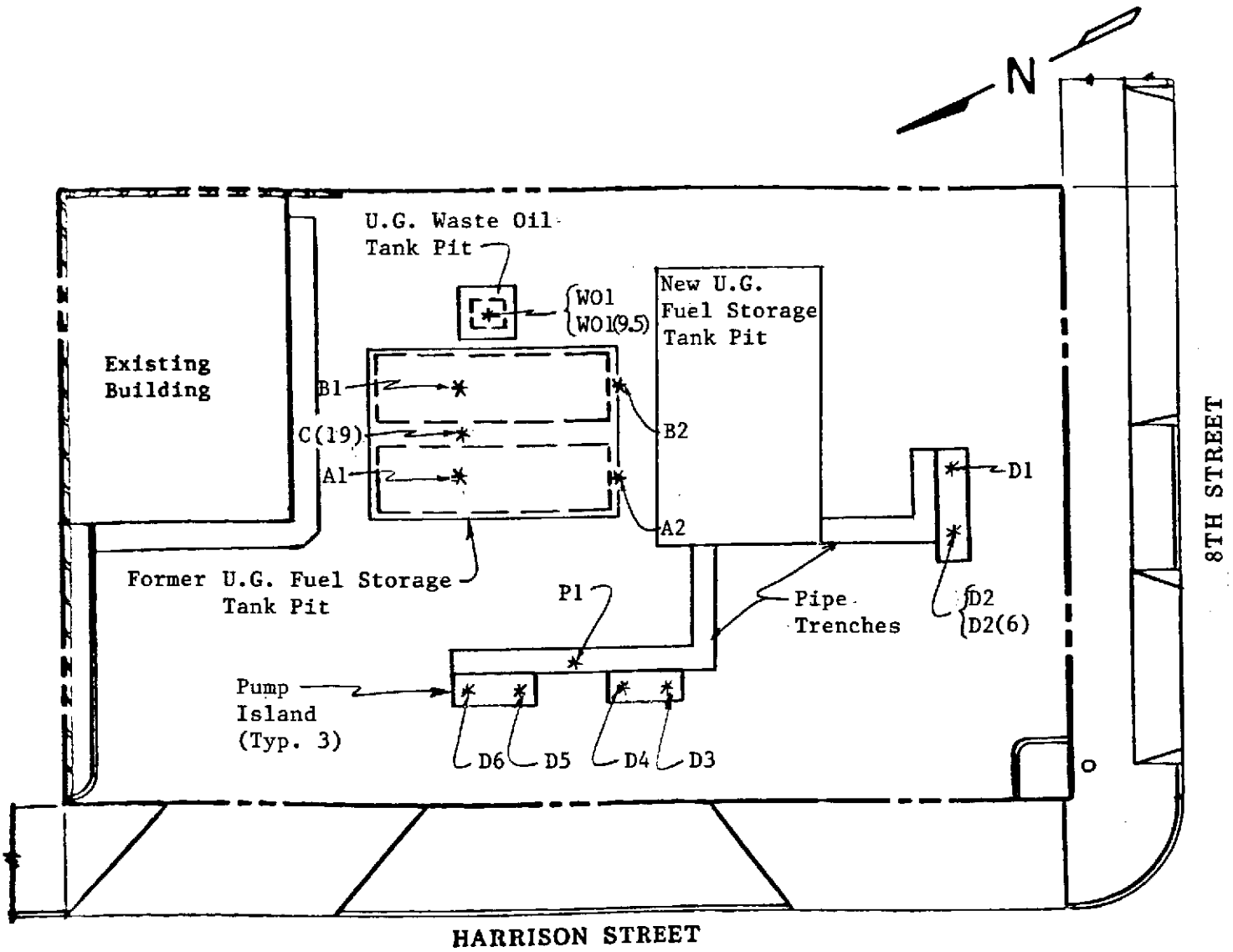

SITE PLAN
Figure 1

0 20 40
Approx. scale feet

LEGEND

* Sample Point Location

Unocal S/S #0752
800 Harrison Street
Oakland, CA

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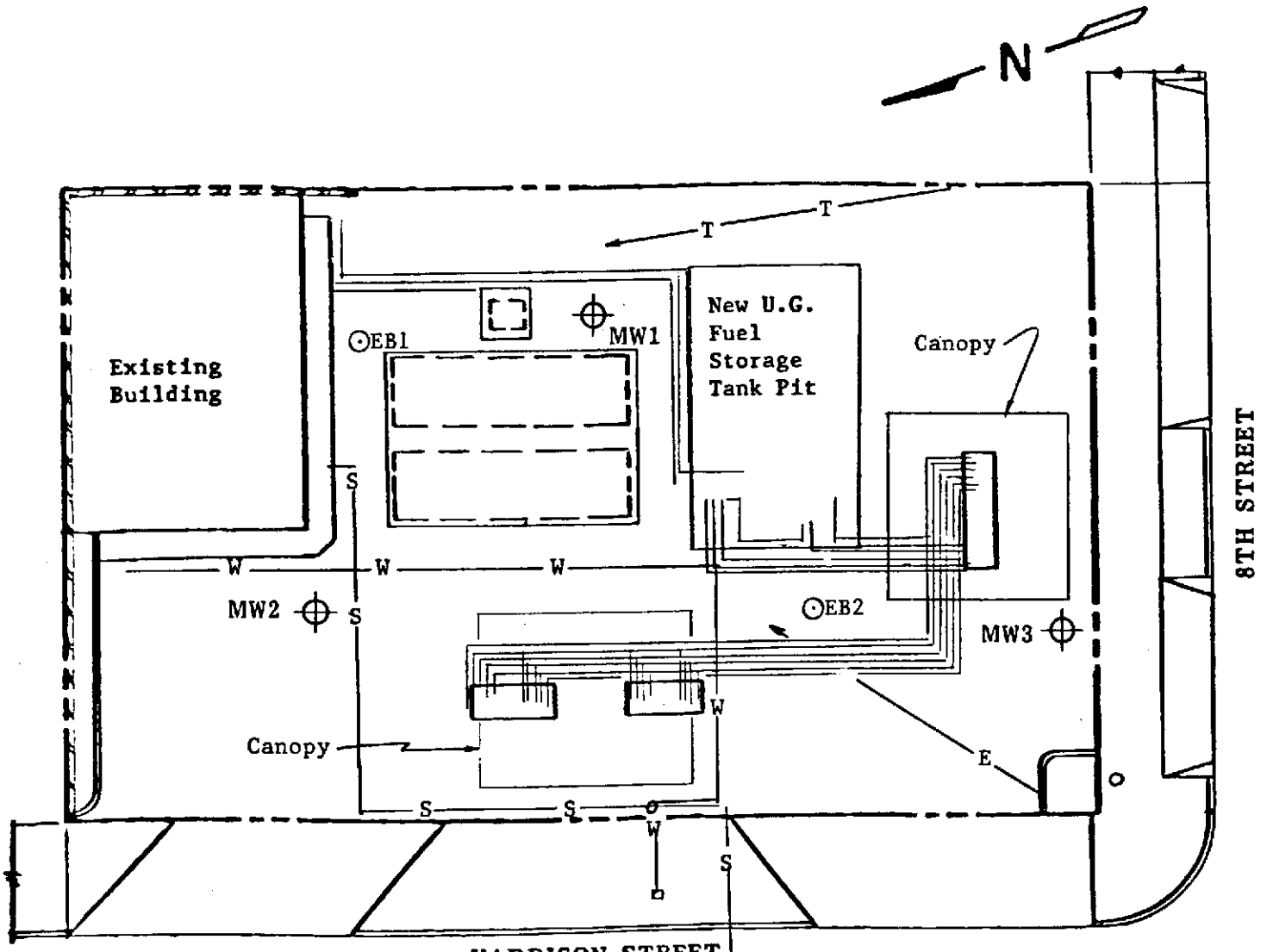


SITE PLAN
Figure 2

0 20 40
Approx. scale feet

LEGEND

E = Electrical lines
T = Telephone lines
W = Water lines
S = Sewer lines
⊕ Monitoring well (proposed)
⊙ Exploratory Boring (proposed)

Unocal S/S #0752
800 Harrison Street
Oakland, CA

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☐ NO

REPORT DATE: 11/13/90

CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.

SIGNED: _____ DATE: _____

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Kristin Mascarenas

PHONE: (707)746-6915

SIGNATURE: K. Mascarenas

REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____

COMPANY OR AGENCY NAME: Kaprealian Engineering, Inc.

ADDRESS: 940 Adams Street Suite R (STREET) Benicia (CITY) CA (STATE) 94510 (ZIP)

RESPONSIBLE PARTY

NAME: Unocal Corporation ☐ UNKNOWN

CONTACT PERSON: Rick Sisk

PHONE: (415) 277-2303

ADDRESS: 2000 Crow Canyon Place, Suite 400 (STREET) San Ramon (CITY) CA (STATE) 94583 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Unocal S/S #0752

OPERATOR: Chester C.Y. Lau

PHONE: (415) 832-7838

ADDRESS: 800 Harrison Boulevard (STREET) Oakland (CITY) Alameda (COUNTY) 94607 (ZIP)

CROSS STREET: 8th Avenue

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Department

CONTACT PERSON: Dennis Byrne

PHONE: (415) 271-4320

REGIONAL BOARD: San Francisco Bay Region

PHONE: (415) 464-1255

SUBSTANCES INVOLVED

(1) NAME: gasoline — QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN

(2) waste oil — _____ ☒ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 10/9/90

HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER _____

DATE DISCHARGE BEGAN: ☒ UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☒ REMOVE CONTENTS ☒ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER _____

HAS DISCHARGE BEEN STOPPED? ☐ YES ☒ NO IF YES, DATE 10/9/90

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☒ UNKNOWN ☐ OTHER _____

CASE TYPE

CHECK ONE ONLY: ☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY: ☐ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ POLLUTION CHARACTERIZATION ☐ LEAK BEING CONFIRMED ☒ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS ☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ CLEANUP UNDERWAY

REMEDIAL ACTION

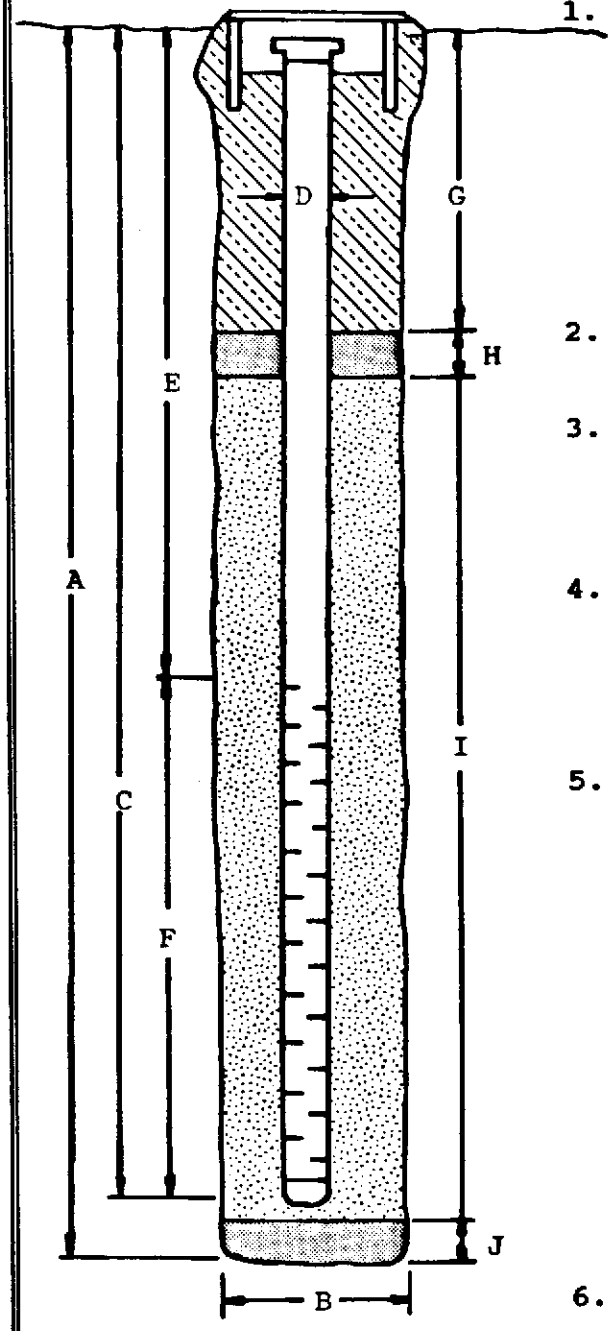
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS): ☐ CAP SITE (CD) ☐ CONTAINMENT BARRIER (CB) ☐ VACUUM EXTRACT (VE) ☒ EXCAVATE & DISPOSE (ED) ☒ EXCAVATE & TREAT (ET) ☐ NO ACTION REQUIRED (NA) ☒ OTHER (OT) if contamination exists, install monitoring wells ☐ REMOVE FREE PRODUCT (FP) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ TREATMENT AT HOOKUP (HU) ☐ ENHANCED BIO DEGRADATION (IT) ☐ REPLACE SUPPLY (RS) ☐ VENT SOIL (VS)

COMMENTS

HSC 05 (11/89)

WELL COMPLETION DIAGRAM
(SCHEMATIC)

Flush-mounted Well Cover



WELL DETAILS*

1. Well will be terminated 10 to 15 feet into first ground water unless a five foot thick aquitard is encountered below the water table, in which case the aquitard will be backfilled with bentonite pellets and the well terminated at the top of this aquitard [A].
2. Boring diameter [B] is 9 inches for 2 inch wells and 12 inches for 4 inch wells.
3. Perforated interval [F] will extend from bottom of casing to five feet above first ground water table (unless water <5 feet deep).
4. Schedule 40, PVC casing, 2 inch in diameter [D], will be used [C]. Screen is 0.020 or 0.010 inch factory machined slots, depending on filter pack grain size.
5. Filter pack will be placed from bottom of casing to two feet above perforated interval [I]. (Bottom seal [J] is not installed unless required.) Two feet of bentonite [H] will be placed above the filter pack. Concrete grout [G] will be placed from top of bentonite seal to the surface (unless modified due to shallow water). Blank casing [E] will extend from the top of the perforated casing to the top of the hole.
6. The well will be installed with a waterproof cap, padlock and a flush-mounted well cover.

* See text for additional information.