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

KEI-P91-0102.P1
March 8, 1991

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

Attention: Mr. Ron Bock

RE: Work Plan/Proposal
Unocal Service Station #3292
15008 East 14th Street
San Leandro, California

I. INTRODUCTION

This work plan for Phase I subsurface investigation is prepared in accordance with requirements and format of the Tri-Regional "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks". All work will be performed under the direct supervision of Mr. Don 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 a preliminary defining evaluation of the extent of subsurface contamination at the site.

B. Site Location

The service station site occupies the east corner at the intersection of East 14th Street and 150th Avenue in San Leandro, California. A Location Map and Site Plans are attached.

C. Background

Kaprealian Engineering, Inc's. (KEI) field work was conducted on January 16, 1991 when three underground fuel storage tanks and one waste oil tank were removed from the site. The tanks consisted of one 10,000 gallon regular unleaded fuel tank, one 10,000 gallon super

unleaded fuel storage tank and one 280 gallon waste oil tank. The tanks were made of steel and two holes about 1/2 inch in diameter were observed in the super unleaded fuel tanks.

One soil sample, labeled WO1, was collected from beneath the waste oil tank at a depth of approximately 8.25 feet below grade. Four soil samples, labeled A1, A2, B1 and B2 collected from beneath the fuel tank at depths between 15 and 16 feet below grade. Due to obvious contamination, additional soil was excavated beneath sample points A1, A2, B1 and B2 in order to further define the vertical extent of soil contamination. During excavation activities ground water was encountered in the fuel tank pit at a depth of approximately 16.5 feet, thus prohibiting the collection of any additional soil samples from beneath samples A1, A2, B1 and B2. Sample locations are as shown on the attached Site Plan, Figure 2.

In an attempt to remove as much of the contaminated soil as possible, and in order to collect a water sample, the fuel tank pit was excavated to a depth of about 17.5 feet below grade.

After soil excavation was completed, approximately 15,700 gallons of ground water were pumped from the fuel tank pit. On January 28, 1991, one water sample, labeled W1, was collected from the fuel tank pit.

KEI returned to the site on February 11, 1991, in order to collect soil samples from the product pipe trenches requested by Mr. William Faulhaber of the Alameda County Health Agency. Seven samples, labeled P1 through P7, were collected at depths ranging from 3.5 to 5 feet below grade.

KEI again returned to the site on February 12, 1991, in order to complete the collection of pipe trench samples. Two samples, labeled P8 and P9, were collected at depths of 3.5 feet and 7.5 feet below grade, respectively. After the soil sampling was completed, pipe trenches were excavated to the depth of the sample points. Pipe trench sample point locations are shown on the attached Site Plan, Figure 2. All samples were analyzed by Sequoia Analytical Laboratory in Concord, California, and were accompanied by properly executed Chain of Custody documentation. All soil and water 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. In addition, the soil sample WO1, collected from the waste oil tank pit, was analyzed for TPH as diesel using EPA method 3550 in conjunction with modified 8015, total oil and grease (TOG) by Standard Method 5520E&F, metals - cadmium, chromium, lead, nickel and zinc, and EPA method 8010 constituents.

Analytical results of the soil samples, collected from the fuel tank pit, indicated levels of TPH as gasoline ranging from 150 ppm to 840 ppm, except for sample A1, which showed a level of TPH as gasoline at 2,600 ppm. Note that soil represented by these samples was removed during excavation of the fuel tank pit to a depth of about 17.5 feet or approximately 1 foot below ground water level.

Analyses of soil samples collected from the product pipe trenches, indicated non-detectable levels of TPH as gasoline for samples P1, P3 through P6, and P8. The detectable levels of gasoline in samples P2, P7 and P9 were 1.2 ppm, 7.1 ppm, and 130 ppm, respectively. Benzene was detected at concentrations ranging from non-detectable to 0.89 ppm.

Analytical results of the soil sample WO1, collected from beneath the waste oil tank pit, indicate non-detectable levels of all constituents analyzed except for zinc which showed 31 ppm.

Analytical results of the water sample (W1), collected from the fuel tank pit, indicated 13,000 ppb TPH as gasoline and 64 ppb benzene. Results of the soil analyses are summarized in Table 1, and water analyses in Table 2.

D. Site History

1. The site is presently used as a gasoline station. Two 10,000 gallon capacity fuel tanks and one 280 gallon capacity waste oil tank were at the site prior to their removal on January 16, 1991.

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

3. a. Two underground fuel tanks and one waste oil tank were removed from the site on January 16, 1991. 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.

b. The tanks were removed on January 16, 1991. There were two holes observed in the super unleaded fuel 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 1/23/91 was filed with the Alameda County Health Agency. A copy of the Unauthorized Release form is attached with this work plan.

e. No tank testing results or inventory reconciliation methods or results for this site are known to KEI at this time.

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.

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

II. SITE DESCRIPTION

A. Vicinity Description and Hydrogeologic Setting

The subject site is developed and contains a Unocal Self-Service Station. The site is located at the east intersection of East 14th Street and 150th Avenue in San Leandro, California. The immediate vicinity of the subject property is generally developed with commercial facilities.

The subsurface soils exposed in the fuel tank pit excavation appeared to consist primarily of clayey and sandy silt to a depth of about 10 feet and silty clay between 10 feet and the maximum depth explored (17.5 feet). The subsurface soils exposed in the waste oil tank pit and product pipe trench excavation appeared to

consist primarily of silty clay. Ground water was encountered at a depth of approximately 16.5 feet within the fuel tank pit excavation.

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 situated closely adjacent to a mapped geologic contact separating Coarse-grained alluvium (Qhac) from Late Pleistocene alluvium (Qpa). The Coarse-grained alluvium is described as typically consisting of unconsolidated, permeable sand and silt locally with coarse sand and gravel. The thickness of this unit ranges from less than 10 feet to as much as 50 feet. The Late Pleistocene alluvium is described as consisting of weakly consolidated, irregular interbedded clay, silt, sand and gravel. This unit has a reported maximum thickness of at least 150 feet. Also, the site is located approximately 2,000 feet southwest of a mapped splay of the active Hayward Fault Zone.

B. & C. Vicinity Map

A Location Map and Site Plans showing various features of the site are attached with this work plan.

D. Existing Soil Contamination and Excavation Results

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

   The collection of the soil samples taken from the fuel tank pit was witnessed by the Alameda County Department of Environmental Health 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.

2. Ground water was encountered in the tank pit at a depth of approximately 16.5 feet below grade. Following soil excavation, approximately 15,700 gallons of ground water were pumped from the fuel tank pit.

3. The subsurface soils exposed in the fuel tank pit excavation appeared to consist primarily of clayey sandy silt to a depth of about 10 feet and silty clay between 10 feet and the maximum depth explored (17.5 feet). The subsurface soils exposed in the waste oil tank pit and product pipe trench excavation appeared to consist primarily of silty clay.

4. Soil sample locations associated with the tank pit and the piping trenches samples are shown on the attached Site Plan, Figure 2.

   Soil samples were collected by employees of KEI. Tabulated soil sample analytical results are provided in Table 1, and water sample in Table 2. Sample collection locations are shown on the attached Site Plan, Figure 2.

5. The locations of existing underground utilities are unknown to KEI at this time.

6. No unusual problems were encountered at the site.

7. Approximately 725 cubic yards of soil were excavated from the fuel tank pit and piping trenches, and stockpiled on-site for further sampling and disposal. For more information, please refer to KEI's report (KEI-J91-0102.R2) dated March 5, 1991.

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

III. PLAN FOR DETERMINING EXTENT OF SOIL CONTAMINATION ON-SITE

A. Method/Technique for Determining Extent of Contamination within the Excavation

The extent of soil contamination was previously determined within the excavations by collecting soil samples from the bottom of the tank pit and piping trenches as described in sections I. C. and II. D. 1. above.

B. 2. KEI proposes the installation of five monitoring wells to further determine the extent of soil contamination and to begin to determine the extent of ground water contamination.

IV. PLAN FOR DETERMINING GROUND WATER CONTAMINATION

A. Placement and Rationale for Location of Monitoring Wells

To begin to define the extent of ground water contamination, KEI proposes the installation of five monitoring wells as shown on the attached Site Plan, Figure 2.

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

KEI proposes to install five two-inch diameter monitoring wells using truck mounted eight-inch outside diameter hollow stem auger drilling equipment. Permits will be obtained from the Alameda County Health Agency and or other regulatory agencies as necessary prior to beginning work.

The wells will be drilled 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. Ground water is anticipated at a depth of about 16.5 feet and therefore the wells are anticipated to be drilled to a depth of about 26 to 30 feet.

Soil samples will be collected at a maximum spacing of 5 foot intervals, at significant changes in lithology, at any areas of obvious contamination and at the soil/ground water interface beginning at a depth of approximately 5 feet below grade. Sampling for laboratory analysis will continue until the first water table is encountered, but sampling for lithologic logging purposes will continue to the total depth drilled. However, the first boring drilled will be sampled at a maximum spacing of 2.5 foot intervals to determine soil and alluvium stratigraphy, and also a representative soil sample of the aquifer materials will be obtained for a sieve and/or hydrometer analysis to verify well construction 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 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, 0.01 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 (#2/16) will fill the annular space from total depth to 2 feet above the screened interval. A 2 foot thick bentonite seal will be placed in the annular space on top of the sand pack. A 10-sack cement/sand slurry or neat cement grout will be placed 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 (Mean Sea Level) and to a vertical accuracy of 0.01 feet by a licensed land surveyor.

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 wells will be purged with a surface bailer of a minimum of four casing volumes prior to sampling, at least 72 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.

Selected soil and all water samples will be analyzed by Sequoia Analytical Laboratory in either Concord or Redwood City, California, both state certified laboratories, for TPH as gasoline using EPA method 5030 in conjunction with modified 8015 and BTX&E using EPA method 8020, as recommended by the Regional Water Quality Control Board (RWQCB), and specified in the Tri-Regional guidelines.

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 - DEFINING THE EXTENT OF CONTAMINATION

Phase II will discuss the alternatives for continuing the subsurface investigation if Phase I reveals contamination levels in the 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.

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.

Hagop Kevork
Staff Engineer

Don R. Braun
Certified Engineering Geologist

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

\bam:jad

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

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TABLE 1

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on January 16, and
February 11 & 12, 1991)

Sample	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
A1	15.5	2,600	7.1	55	170	55
A2	16.0	290	1.3	1.1	1.2	1.5
B1	15.5	840	1.5	2.7	9.9	1.3
B2	15.0	150	1.6	3.3	11	2.0
P1	3.5	ND	0.0072	0.019	0.026	ND
P2	4.75	1.2	0.014	0.041	0.11	0.019
P3	3.75	ND	ND	ND	ND	ND
P4	3.75	ND	ND	ND	ND	ND
P5	3.5	ND	ND	ND	ND	ND
P6	5	ND	ND	ND	ND	ND
P7	5	7.1	0.89	0.23	0.70	0.57
P8	3.5	ND	ND	ND	ND	ND
P9	7.5	130	0.068	0.37	0.076	0.66
WO1*	8.25	ND	ND	ND	ND	ND
Detection Limits		1.0	0.0050	0.0050	0.0050	0.0050

ND = Non-detectable.

* TOG, TPH as diesel and all EPA method 8010 constituents and metals were non-detectable except for zinc which, showed 31 ppm.

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

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

(Collected on January 28, 1991)

Sample #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
W1	13,000	64	37	85	25
Detection Limits	30	0.30	0.30	0.30	0.30

ND = Non-detectable.

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

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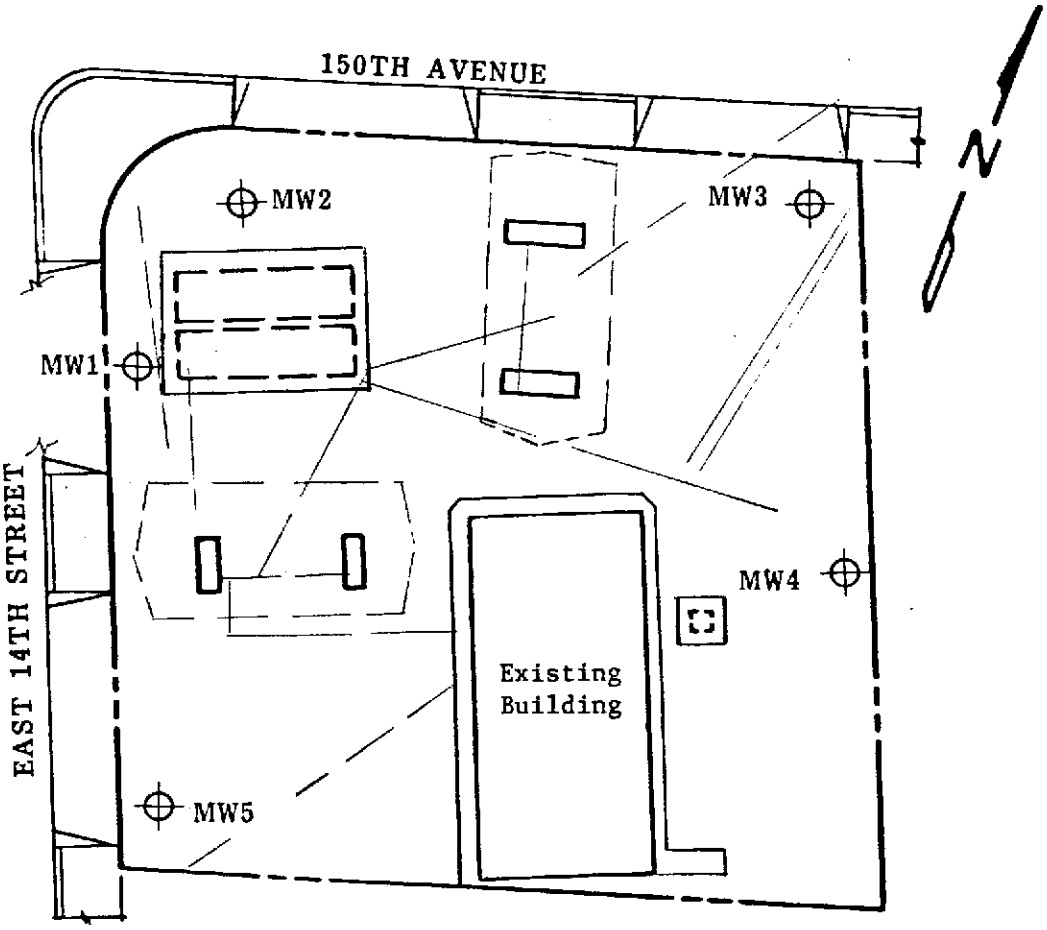

SITE PLAN
Figure 1

0 30 60
Approx. scale feet

LEGEND

⊕ Monitoring well

Unocal S/S #3292
15008 E. 14th Street
San Leandro, CA

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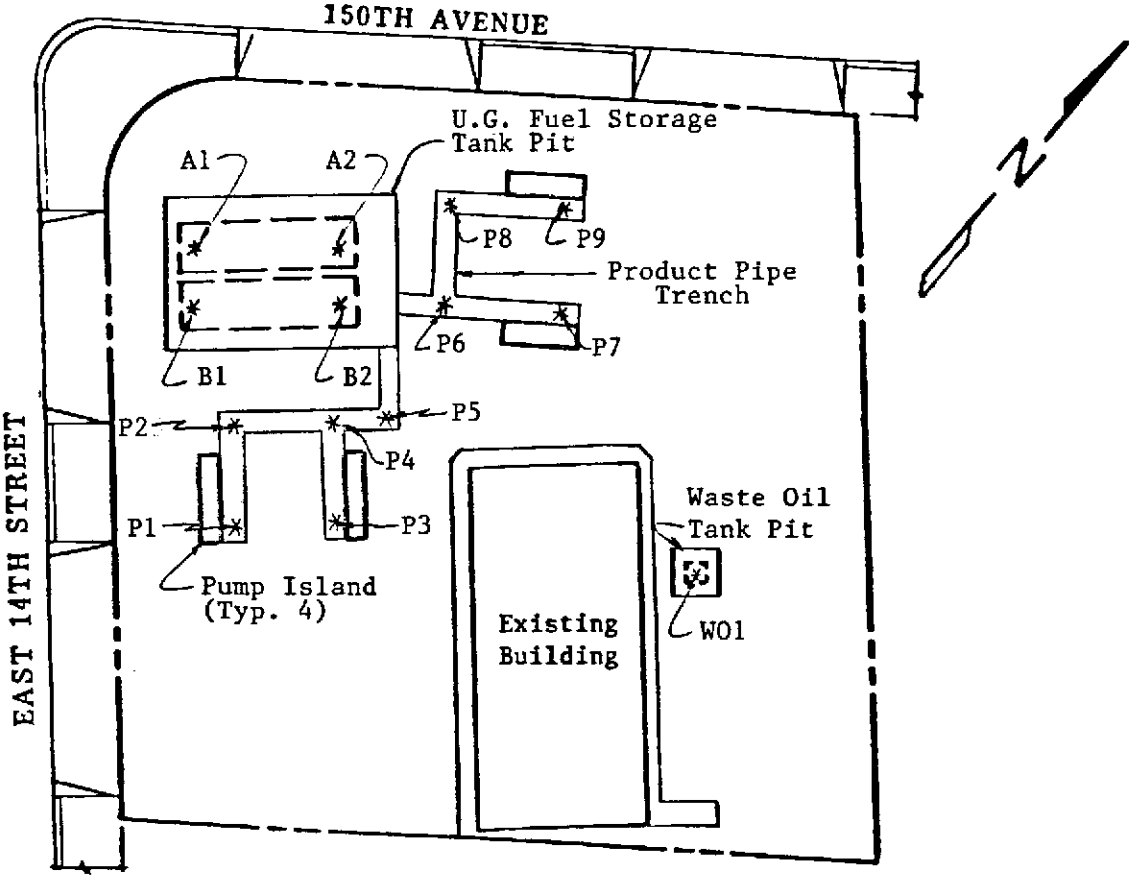


SITE PLAN
Figure 2

LEGEND

* Sample Point Location

Unocal S/S #3292
15008 E. 14th Street
San Leandro, 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: 01/23/91

CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
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: Ron Bock
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 #3292
OPERATOR: Johnny Y.S. Mui
PHONE: (415)276-0179
ADDRESS: 15008 E. 14th Street (STREET) San Leandro (CITY) Alameda (COUNTY) 94577 (ZIP)
CROSS STREET: 150th

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Agency
CONTACT PERSON: William Faulhaber
PHONE: (415)271-4320
REGIONAL BOARD: San Francisco Bay Region
PHONE: (415)464-1255

SUBSTANCES INVOLVED

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

DISCOVERY/ABATEMENT

DATE DISCOVERED: 01/16/91
HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER _____
DATE DISCHARGE BEGAN: ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE 01/16/91
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☒ REMOVE CONTENTS ☐ CLOSE TANK & REMOVE ☐ REPAIR PIPING ☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE ☒ REPLACE TANK ☐ OTHER _____

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

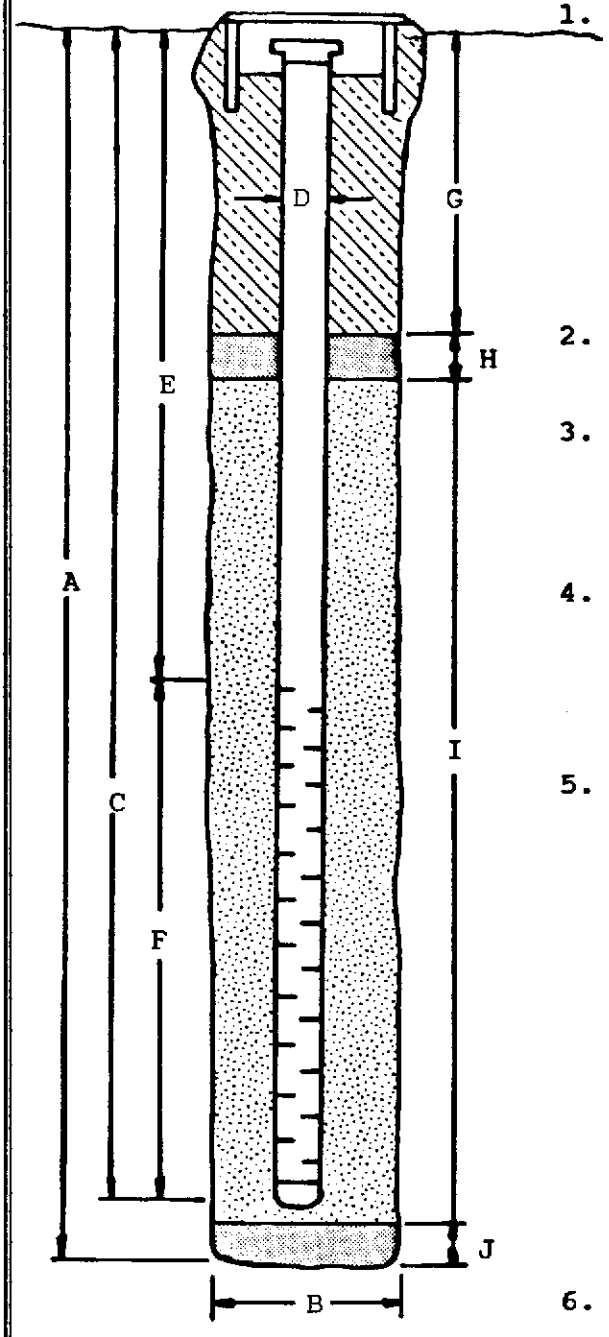
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ CONTAINMENT BARRIER (CB) ☐ VACUUM EXTRACT (VE)
☒ EXCAVATE & DISPOSE (ED) ☒ EXCAVATE & TREAT (ET) ☐ NO ACTION REQUIRED (NA) ☒ OTHER (OT) if contamination exists, install monitoring wells
☐ REMOVE FREE PRODUCT (FP) ☐ PUMP & TREAT GROUNDWATER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

COMMENTS

HSC 05 (8/90)

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 a[illegible] a flush-mounted well co[illegible]er.

* See text for additional information.