KAPREALIAN ENGINEERING
INCORPORATED



January 26, 1995

Alameda County Health Care Services
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Attention: Mr. Scott Seery

RE: Unocal Service Station #7376
4191 - 1st Street
Pleasanton, California

Dear Mr. Seery:

Per the request of Mr. Robert A. Boust of Unocal Corporation, enclosed please find our work plan/proposal dated January 11, 1995, for the above referenced site.

If you should have any questions, please feel free to call our office at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\82

Enclosure

cc: Robert A. Boust, Unocal Corporation

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

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reviewed in the field, on-site 2-6-95, and amended as herein SOS

KEI-P94-0903.P1
January 11, 1995

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

Attention: Mr. Robert A. Boust

RE: Work Plan/Proposal
Unocal Service Station #7376
4191 - 1st Street
Pleasanton, California

Dear Mr. Boust:

Per your request, this work plan/proposal for the destruction and reinstallation of existing monitoring well MW2, and the installation of an exploratory boring at the subject site is presented for your consideration. The well is proposed to be destroyed and replaced due to the fact that asphalt tar (Asphaltic) was encountered within the well casing following repaving activities at the site. The exploratory boring is proposed to be installed to further define the extent of soil contamination in the vicinity of the previous sample point P13. Site background information and a summary of our recent field activities are included in our report (KEI-J94-0903.R1) dated October 21, 1994. Additional information is contained in Applied GeoSystem's report (Job No. 87086-3) dated November 3, 1994.

PROPOSED WELL DESTRUCTION

1. KEI proposes to destroy monitoring well MW2 by fully drilling out the existing well seal, all filter pack sand materials, and the PVC well casing. Permits will be obtained from the Alameda County Flood Control and Water Conservation District (ACFCWCD) (Zone 7 Water Agency), prior to beginning work.

2. The former well will be fully sealed by the use of either neat cement grout or 11-sack cement/sand slurry, in accordance with the grout mixing guidelines presented in the California Well Standards, Bulletin 74-90, dated June 1991. All grout will be placed by the use of a tremie pipe. Grout will be placed from the bottom of the boring up to the surface in one continuous pour. The upper 1 to 2 feet of grout may contain a hardening agent to allow for reduced curing time.

3. All soil materials generated during well destruction operations will be stored on-site in DOT-approved, properly

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labeled, 55-gallon drums, or else covered by visqueen pending further analysis and disposal. All ground water removed during grouting of the borehole and all rinsate generated will be stored in drums as specified above pending proper disposal.

4. The results of the well destruction activities will be documented in a technical report. A copy of the report will be submitted to the Alameda County Health Care Services (ACHCS) Agency, and to the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

PROPOSED WELL INSTALLATION

1. KEI proposes to install one two-inch diameter (replacement) monitoring well, designated as MW2B on the attached Figure 1, by the use of hollow-stem auger equipment. Permits will be obtained from the ACFCWCD, as necessary, prior to beginning work.

   The well will be drilled about 10 feet into the saturated zone of the first encountered ground water. If a clay aquitard of at least 5 feet in thickness is encountered beneath the water table, drilling will be halted and the well will be constructed so as to terminate within the aquitard. Ground water is anticipated at approximately 81 to 85 feet below grade, based on the ground water levels found in the other two existing monitoring wells.

2. Soil samples will be collected at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at/or within the soil/ground water interface, beginning at a depth of about 4 to 5 feet below grade. Sample intervals will be chosen so that an accurate profile of the subsurface soil conditions can be determined. Sampling for laboratory analyses and lithologic logging purposes will continue until the first water table is encountered. Sampling for lithologic logging purposes only will continue below the water table to the total depth drilled. A representative soil sample will be collected from the saturated zone and submitted to a laboratory for particle size analysis for verification of screen slot size and filter pack design. Classification of soil will be done using the Unified Soils Classification System (USCS) by KEI's field geologist. Samples will be collected in a California-modified split-spoon sampler lined 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. Samples will be removed from

the sampler and retained in the brass liners. The brass liners will then be sealed with Teflon-lined plastic caps and placed in individually sealed plastic bags. They will be labeled and stored in a cooler, on crushed ice or "blue ice," for delivery to a state-certified laboratory. Properly executed Chain of Custody documentation will accompany all soil samples.

3. During drilling operations, all soil materials will be stored on-site in DOT-approved, 55-gallon drums, or else covered by visqueen. Each drum (if used) will be properly labeled and will include, at a minimum, the date, the interval that soil materials were obtained from, a contact individual, and the phone number at KEI.

4. Finalized Boring Logs will be prepared from the field logs and submitted to the ACFCWCD, to the ACHCS, and to the RWQCB, San Francisco Bay Region.

5. Well Construction:

   The well casing will consist of two-inch diameter, Schedule 40 PVC with flush threaded joints and 0.010 inch factory slot. The screen will extend from the total depth of the well to approximately 5 feet above the depth of the first encountered ground water. Monterey sand (#2/12) will fill the annular space from total depth to 2 feet above the perforated casing interval. The choice of screen slot size and sand filter pack material is based on soils encountered in previous borings and will be verified by particle size analysis. A 2-foot thick bentonite seal will be placed in the annular space on top of the sand pack. 11-sack cement/sand slurry or neat cement grout will be placed on top of the bentonite seal to the surface. A Proposed Well Construction Diagram is attached to this proposal.

   The well casing 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 each casing. The elevations of the well casings at the new and existing wells will be surveyed by a licensed land surveyor to Mean Sea Level and to a vertical accuracy of 0.01 foot.

6. The well will be developed approximately one week after well completion. Prior to development, the well will be checked for depth to the water table (by the use of an electronic sounder), and the presence of free product (by the use of an interface probe or paste tape). After recording the monitor-

ing data, the well will be developed by the use of a surge block and a submersible pump. Effluent generated during well development will be contained in DOT-approved drums and hauled from the site by a licensed hazardous materials hauler.

7. Ground Water Sampling (Performed by MPDS Services, Inc.):

The wells will be checked for free product (by the use of an interface probe and/or paste tape) prior to sampling. The wells will also be checked for the presence of a sheen prior to sampling.

The wells will be purged (by the use of a pump or bailer) of a minimum of four casing volumes. Purging will be conducted prior to sampling and at least 72 hours after development. During purging operations, the field parameters pH, temperature, and electrical conductivity will be recorded and presented in a tabular form. Once the field parameters are observed to stabilize and a minimum of approximately four casing volumes have been removed from each well, water samples will then be collected by the use of a clean Teflon bailer and promptly decanted into 40 ml VOA vials. The vials will then be sealed with Teflon-lined screw caps, labeled and stored, on ice, for delivery to a state-certified laboratory. The sampling bailer will be cleaned with non-phosphate soap and clean water rinses between uses.

Properly executed Chain of Custody documentation will accompany all water samples.

8. Laboratory Analyses:

Water and selected soil samples will be analyzed by Sequoia Analytical Laboratory, a state-certified laboratory, for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020, as recommended by the RWQCB, and as specified in the Tri-regional guidelines. + TPH-D

The analytical results will be presented in tabular form, showing the sample depths, and results. The analytical results will be used to delineate the extent of the contaminants in soil and ground water.

9. Hydrology:

The ground water flow direction and ground water gradient will be determined from the water level elevations measured in both

the new and existing monitoring wells. The flow direction will be shown on the Site Plan.

10. Conclusions:

Conclusions and results of this work will be described in a technical report. The technical report will be submitted to the ACHCS, and the RWQCB, San Francisco Bay Region.

PROPOSED EXPLORATORY BORING INSTALLATION

1. KEI proposes to drill and sample one exploratory boring, designated as EB1 on the attached Figure 1, by the use of hollow-stem auger equipment. Permits will be obtained from the ACFCWCD, as necessary, prior to beginning work.

   The boring will be drilled to a depth of approximately 50 feet below grade, at which time drilling will be terminated.

2. Soil samples will be collected at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at/or within the soil/ground water interface, beginning at a depth of about 4 to 5 feet below grade in the boring, and continue to the total depth. Sample intervals will be chosen so that an accurate profile of the subsurface conditions can be determined. Classification of soils will be done using the USCS by KEI's field geologist. Samples will be collected in a California-modified split-spoon sampler lined 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. Samples will be removed from the sampler and retained in brass liners. The brass liners will be sealed with Teflon lined caps and placed in individually sealed plastic bags. They will then be labeled and stored in a cooler on crushed ice or "blue ice" for delivery to a state-certified laboratory. Properly executed Chain of Custody documentation will accompany all soil samples.

3. During drilling operations, all soil materials will be stored on-site in DOT-approved 55-gallon drums, or else covered by visqueen. Each drum (if used) will be properly labeled and will include, at a minimum, the date, the interval that soil materials were obtained from, a contact individual, and the phone number at KEI.

4. A finalized Boring Log will be prepared from the field log and submitted to the ACFCWCD, the ACHCS, and to the RWQCB, San Francisco Bay Region.

5. Borehole Sealing:

   After sampling, the boring will be fully sealed by the use of either neat cement grout or 11-sack cement/sand slurry (in accordance with the grout mixing guidelines presented in the California Well Standards, Bulletin 74-90, dated June 1991). Grout will be placed from the bottom of the boring up to the surface in one continuous pour. The upper 1 to 2 feet of grout may contain a hardening agent to allow for a reduced curing time.

6. Laboratory Analyses:

   ~~Selected~~ All soil samples from the exploratory boring will be analyzed at Sequoia Analytical Laboratory, a state-certified laboratory, for TPH as gasoline by EPA method 5030/modified 8015, and BTEX by EPA method 8020.

   Analytical results will be presented in tabular form, showing sample depths and results. The analytical results will be used to delineate the extent of the contaminants (if any) in soil.

7. Conclusions:

   Conclusions and results of this work will be described in a technical report. The technical report will be submitted to the ACHCS, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in 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 will be based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We will analyze 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 will be performed in accordance with generally accepted professional principles and practices existing for such work.

If you have any questions regarding this work plan/proposal, please do not hesitate to call me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.


Joel G. Greger, C.E.G.
Senior Engineering Geologist

License No. EG 1633
Exp. Date 8/31/96

Robert H. Kezerian
Project Manager

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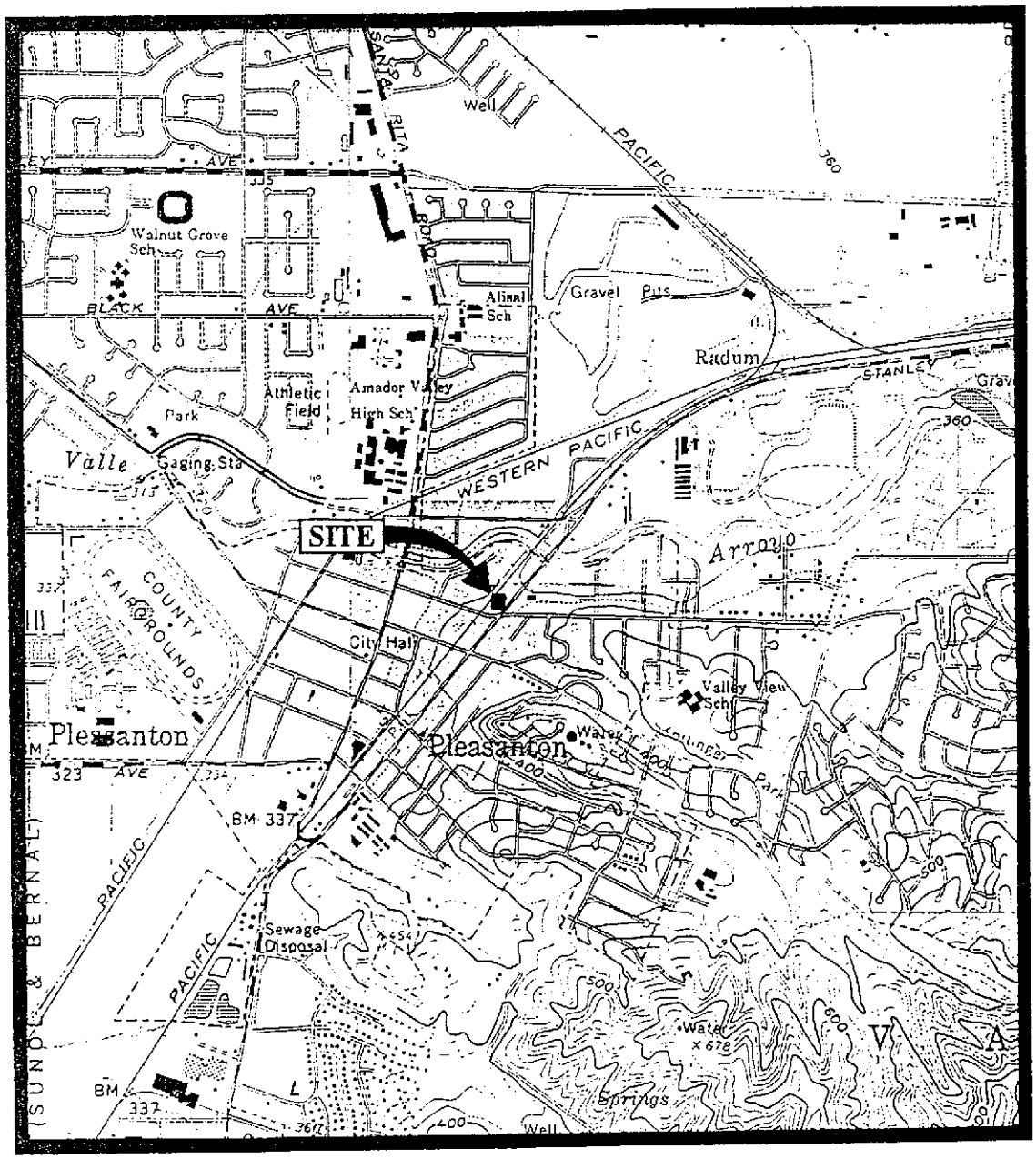
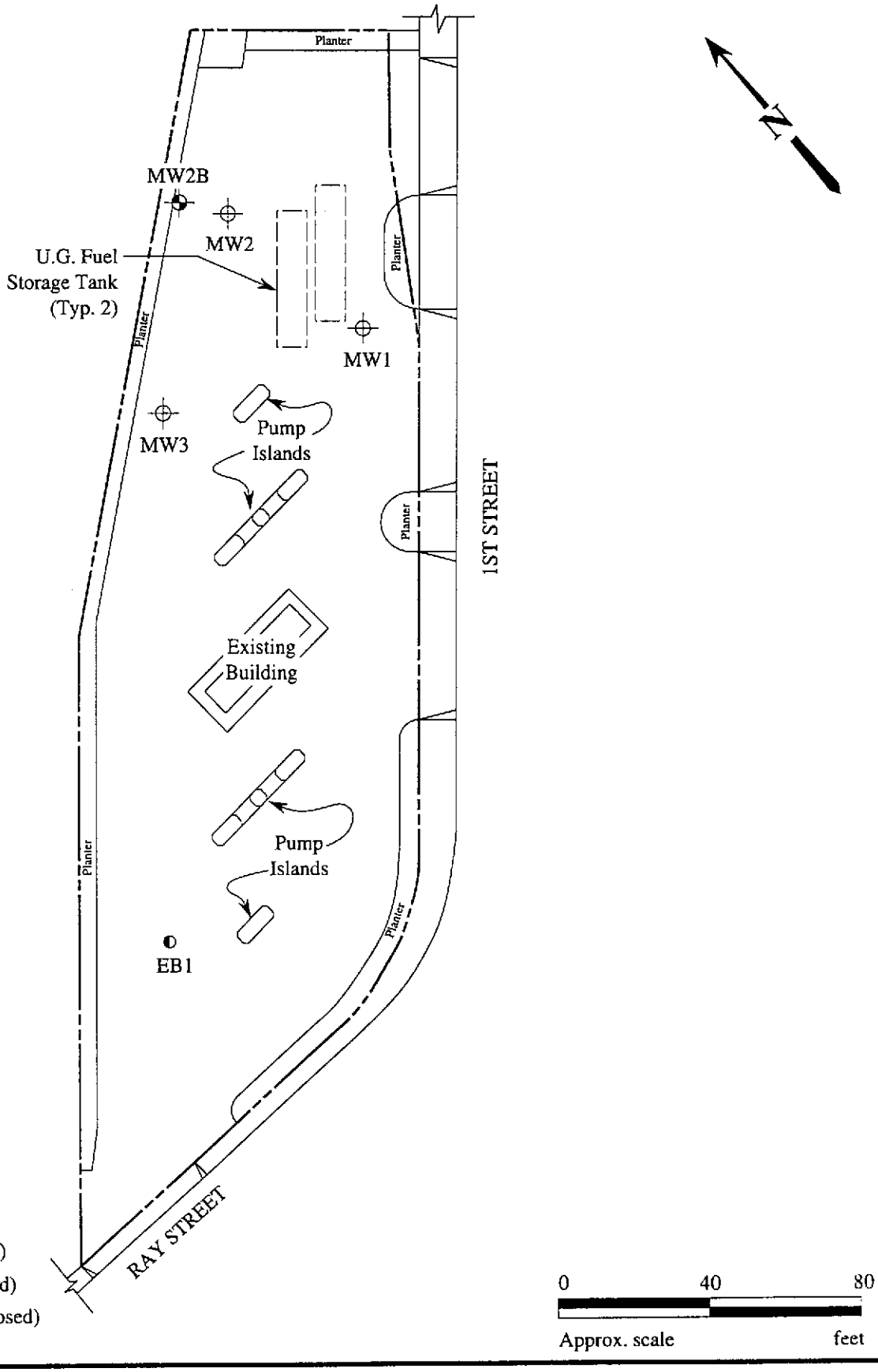
Attachments: Location Map
Figure 1
Proposed Well Construction Diagram




Base modified from 7.5 minute U.S.G.S. Dublin and Livermore Quadrangles
(both photorevised 1980)

| | | |
|---|---|---|
| KAPREALIAN ENGINEERING INCORPORATED | UNOCAL SERVICE STATION #7376<br>4191 1ST STREET<br>PLEASANTON, CALIFORNIA | LOCATION MAP |




**MONITORING WELL AND EXPLORATORY BORING LOCATION MAP**

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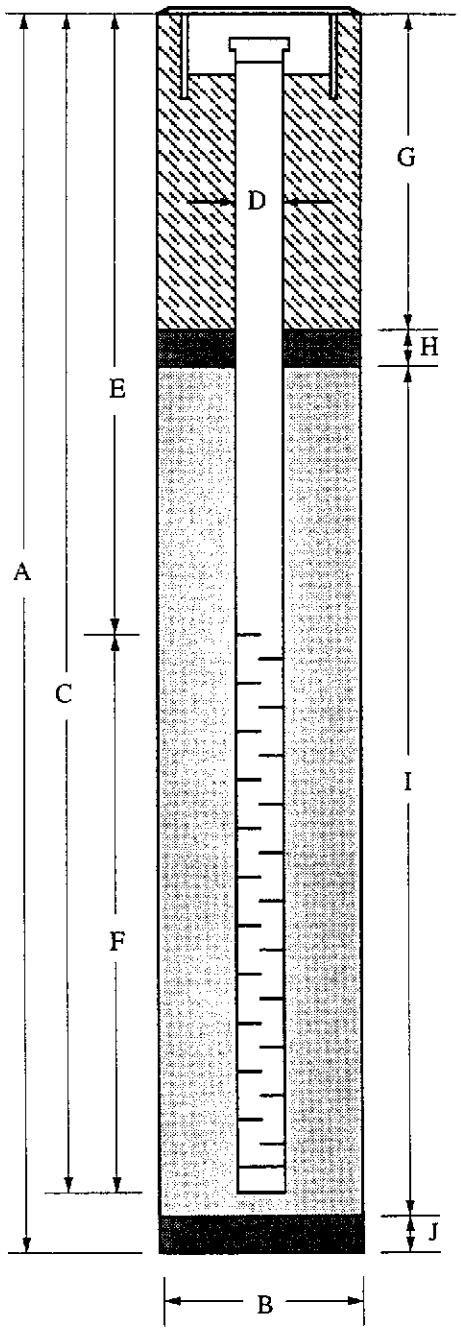
**UNOCAL SERVICE STATION #7376**
**4191 1ST STREET**
**PLEASANTON, CALIFORNIA**

FIGURE
**1**

# PROPOSED WELL CONSTRUCTION DIAGRAM

Flush-mounted Well Cover




WELL DETAILS*

1. Well will be terminated 10 feet into the first encountered ground water, unless an aquitard five feet or greater in thickness is encountered below the water table, in which case the bottom of the boring will be backfilled with bentonite pellets and the well terminated at the top of this aquitard [A].

2. Boring diameter [B] is 8 inches for 2 inch wells, 10 inches for 4 inch wells, and 12 inches for 6 inch wells.

3. Perforated interval [F] will extend from bottom of casing to five feet above the first encountered ground water table (unless water <5 feet deep).

4. Schedule 40 PVC casing, 2 inch in diameter [D], will be used. 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.) One to 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.