

8/28/89



KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(707) 746-6915

August 29, 1989

Alameda County Health Agency
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. Lowell Miller

RE: Unocal Service Station #6034
4700 First Street
Livermore, California

Dear Mr. Miller:

Enclosed please find KEI's work plan (KEI-P89-0801.W1) dated August 29, 1989, and Underground Storage Tank Unauthorized Release Contamination Site Report. KEI's work plan should not interfere with the double wall underground steel tank's monitoring system. Also enclosed are well permits to the Alameda County Flood Control District for installation of four monitoring wells.

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

Sincerely,

Kaprealian Engineering, Inc.

Mardo Kaprealian
President

MK:jad\LM

Enc.

cc: Tim Ross, Unocal Corporation



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KEI-P89-0801.W1

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Alameda County Health Agency
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. Lowell Miller

RE: Work Plan/Proposal
Unocal Service Station #6034
4700 First Street
Livermore, California

INTRODUCTION

1. Background:

In August, 1989, Kaprealian Engineering, Inc. (KEI) was hired to obtain soil samples from beneath two 12,000 gallon fuel storage tanks and a waste oil tank during replacement. The soil samples from beneath the fuel tanks were taken at depths of 15 to 16 feet. The soil sample from beneath the waste oil tank was taken at a depth of 8.5 feet. Pipe trench samples were collected at depths ranging from 2.5 to 3.5 feet. Ground water was encountered in the fuel tank pit at 17.5 feet during additional excavation of the location where sample A3 was collected. One ground water sample was collected. The results of the soil analyses for total petroleum hydrocarbon (TPH) as gasoline ranged from non-detectable to 9.6 ppm in all samples except A3, which showed 390 ppm. The sample from beneath the waste oil tank showed low to non-detectable levels of all constituents analyzed. The water sample showed 260 ppb of benzene. For additional information on the tank removal, please see KEI's report (KEI-J89-0801.R2) dated August 15, 1989. Since the results of the laboratory analyses exceed the level set by the Regional Water Quality Control Board (RWQCB), additional investigation is necessary.

2. Site Description:

The service station site occupies the south corner at the intersection of the off-ramp of Interstate 580 and First Street in Livermore. A Location Map and Site Plan are attached.

PROPOSED FIELD WORK

PHASE I - WELL INSTALLATION

1. KEI proposes to install four 2" diameter monitoring wells using hollow stem auger equipment. Permits will be obtained from the Alameda County Flood Control District and/or the Bay Area Air Quality Management District as necessary prior to beginning work.

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

2. Soil samples will be collected at five foot intervals beginning at a depth of five feet until the first water table is encountered. Classification of soil will be done using the Unified Soils Classification System (USCS) by KEI's field engineer or geologist. Samples will be collected in a California modified split-spoon sampler with 2" diameter brass liners. The sampler will be advanced ahead of the drilling augers at designated depths by dropping a 140 pound hammer 30". 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 on ice for delivery to a state certified laboratory.
3. Finalized boring logs will be prepared from field logs and submitted to the Alameda County Health Agency, the Alameda County Flood Control District, and to the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.
4. Ground water is anticipated at approximately 17.5 feet below grade based on the ground water level found during tank removal.
5. Well Construction:

Casing Type: Schedule 40 PVC, flush threaded joints, 0.02" factory slot, 2" diameter. Screen to run from total depth of the well to approximately 12 feet below grade. Monterey sand (#3) will fill the annular space from total depth to 10 feet below grade. A two foot thick bentonite seal will be placed in the annular space on top of the sand pack. Concrete 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.

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

Casing elevations will be surveyed to an assumed datum.

7. Ground Water Sampling:

The wells will be purged with a surface bailer approximately four casing volumes prior to sampling, at least 24 hours after development. After recovery, 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 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 between uses.

8. Laboratory Analyses:

Selected soil and all water samples will be analyzed by Sequoia Analytical Laboratory in Redwood City, California, a state certified laboratory, for TPH as gasoline and BTX&E. In addition, the sample from MW1 will be analyzed for TPH as diesel, TOG and EPA method 8010. All analyses run will use EPA analytical methods recommended by the RWQCB, as 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 cross sectional profile will be constructed as appropriate showing subsurface lithology to depth drilled and first water table depth.

If TPH levels in the soil are detectable but less than 100 ppm, the site will be evaluated for depth to water and lithology to determine if further investigation is necessary.

If TPH levels in excess of 100 ppm are found in the soil during well installation, additional monitoring wells and/or borings will be proposed and installed until zero-lines for soil and ground water contamination are defined.

9. Hydrology:

Ground water flow direction will be determined from survey data and water table depths. The ground water flow direction will be shown on the Site Plan.

10. Discussion and Recommendations:

Results of Phase I will be described in a technical report. If levels of contaminants in the ground water are found to be near or below action levels, KEI will recommend a 12 month program of monthly monitoring and quarterly sampling to document the levels.

If contaminant levels in the ground water are found to significantly exceed action levels, Phase II will be initiated.

The technical report will be submitted to the Alameda County Health Agency, the Alameda County Flood Control District, and to the RWQCB, San Francisco Bay Region.

PHASE II

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.

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PHASE III

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

The first step of phase III will be to conduct pumping tests to define aquifer characteristics.

Interpretations of the subsurface stratigraphy will be used in consideration of various remedial options.

PHASE IV

Implementation of the remediation plan.

Sincerely,

Kaprealian Engineering, Inc.



Mardo Kaprealian
President

Attachments: Location Map
Site Plan

cc: Tim Ross, Unocal Corporation



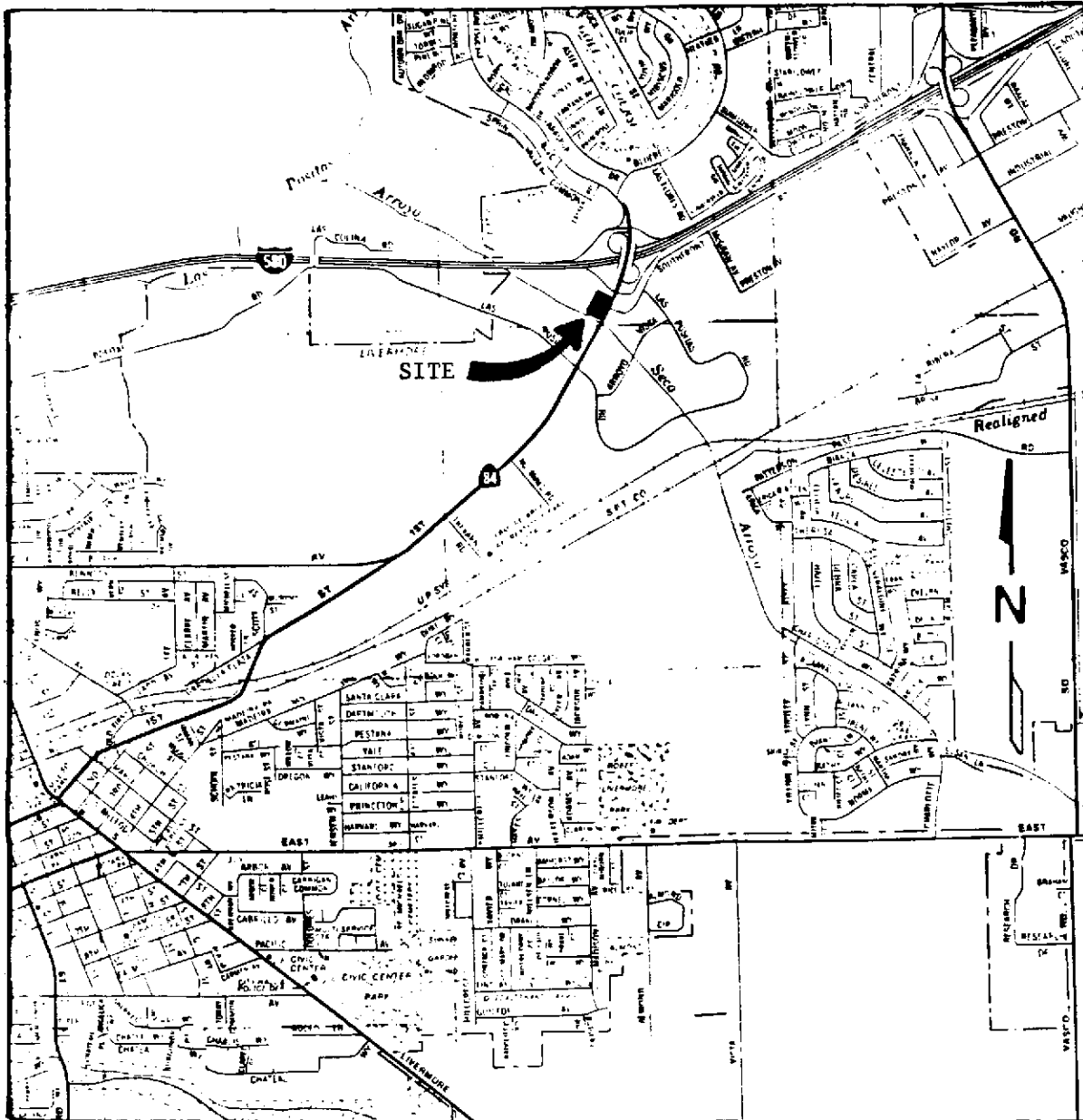
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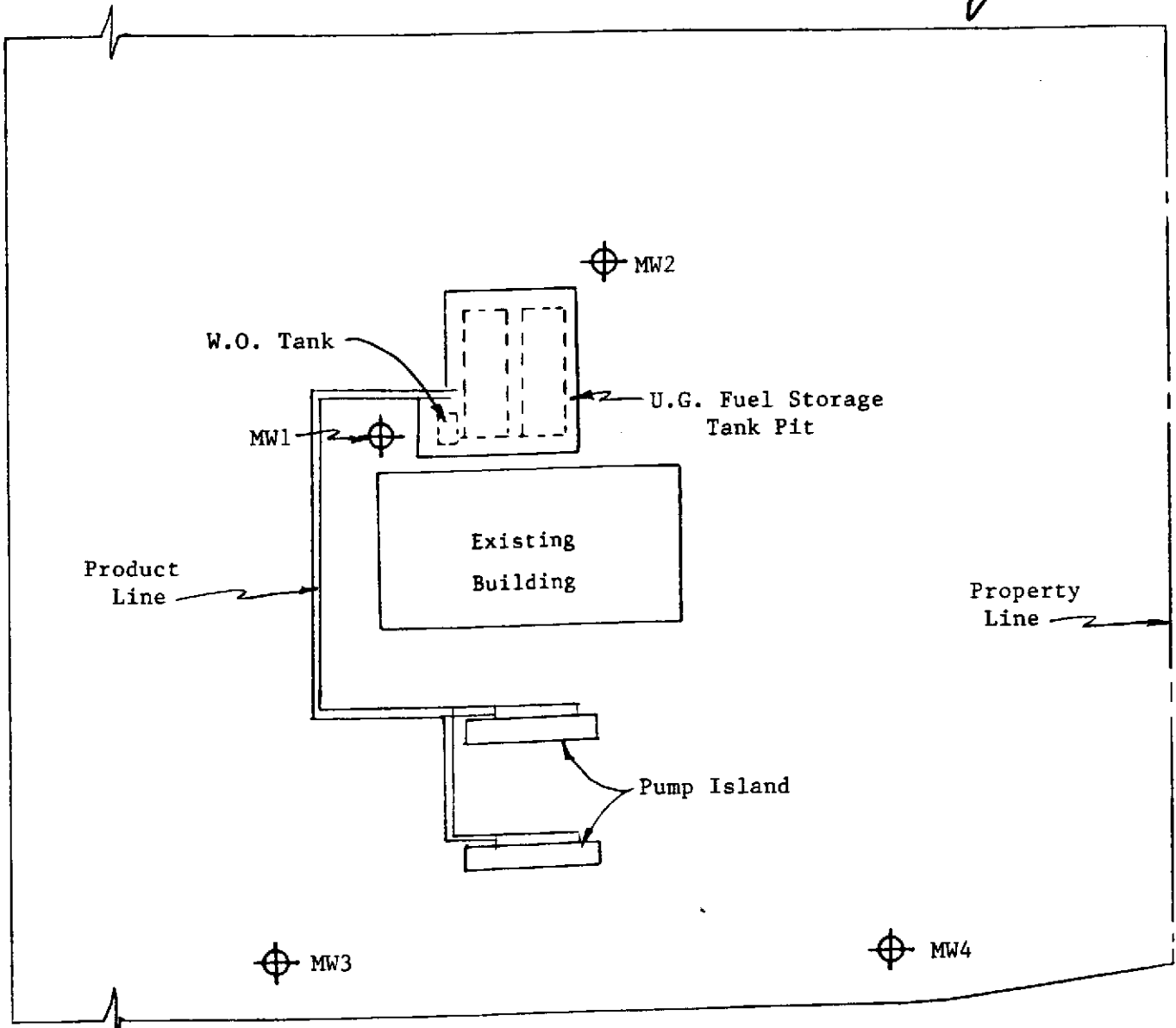


LOCATION MAP

Unocal Service Station #6034
4700 First Street
Livermore, California



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Product Line

W.O. Tank

MW1

MW2

U.G. Fuel Storage Tank Pit

Existing Building

Property Line

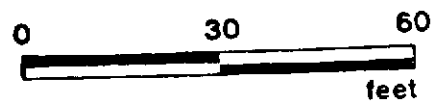
Pump Island


MW3

MW4

FIRST STREET

SITE PLAN



 Monitoring Well

Unocal Service Station #6034
4700 First Street
Livermore, California