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

April 24, 1991

Alameda County
Department of Environmental Health
470 - 27th Street, Room 322
Oakland, CA 94612

Attention: Mr. Scott Seery

RE: Unocal Service Station #5484
18950 Lake Chabot Road
Castro Valley, California

Dear Mr. Seery:

Per the request of Mr. Ron Bock of Unocal Corporation, enclosed please find our work plan/proposal dated January 9, 1991, for the above referenced site.

Should you have any questions, please feel free to call our office at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\32

Enclosure

cc: Ron Bock, Unocal Corporation

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

KEI-P90-0806.P1
January 9, 1991

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

Attention: Mr. Ron Bock

RE: Work Plan/Proposal
Unocal Service Station #5484
18950 Lake Chabot Road
Castro Valley, California

91 MAR 25 AM 9:09

INTRODUCTION

1. Background:

Previous activities at the site have been conducted by Applied GeoSystems (AGS) of Fremont, California, and have included the installation of six monitoring wells and five soil borings, and also included soil sampling activities related to underground storage tank removal operations. The following discussion of the background data for this site is based on review of the following AGS reports:

1. Quarterly Ground-Water Monitoring for First and Second Quarter 1990, AGS 18061-6, dated 7/3/90;

2. Report, Supplemental Subsurface Investigation, Quarterly Ground-Water Monitoring and Evaluation of Soil Remediation Alternatives, AGS 18061-5, dated 7/3/90;

3. Report, Soil Excavation, Aeration, and Sampling Related to Underground Storage Tank Removal, AGS 18061-4, dated 3/30/90;

4. Report, Supplemental Subsurface Environmental Investigation, AGS 18061-3, dated 9/11/89;

5. Letter Report No. 18061-2 regarding quarterly ground water monitoring, dated 1/6/89;

6. Report, Subsurface Environmental Investigation, AGS 18061-1, dated 8/30/88.

As reported by AGS in the above reports, work began on the site when three two-inch diameter monitoring wells (designated as MW1, MW2 and MW3 on the attached Site Plan, Figures 1 and 2) were installed on July 12 and 13, 1988 to depths of 30.5, 19.5 and 20.5 feet, respectively. Ground water was initially encountered at a depth of 8 feet in MW1 and at 20 feet in MW3, but was apparently not encountered during drilling in MW2.

Analytical results of the soil samples collected from the borings for wells MW1 through MW3 show levels of total petroleum hydrocarbons (TPH) as gasoline ranging from 3 ppm to 79 ppm, with benzene levels ranging from 0.006 ppm to 0.83 ppm, and are presented in Table 1.

Also, a well search was conducted by AGS within 1/2-mile radius of the site. Two wells are apparently located approximately 1/2 mile south of the site. One well (State Well No. 3S/2W 4F 1) is a test well located on Betrose Court, water level is unknown, but total depth is 52 feet. The second well (State Well No. 3S/2W 4H 2) is a domestic well located on Lenard Drive with a water level at 36 feet and a total depth of 220 feet. Both wells are considered downgradient from the subject site.

Apparently during a site monitoring visit conducted on October 14, 1988, AGS observed a nine-inch thick, brown, floating product in well MW3. Through bailing techniques, the product thickness was reduced to less than 0.01 inches on April 14, 1989, and was not detected on May 19, 1989.

On May 23 & 24 and June 5, 1989, three four-inch diameter monitoring wells (designated as MW4, MW5 and MW6 on the attached Site Plan, Figure 2) were installed to depths of 24 to 29 feet. Analytical results of the soil samples collected during drilling showed non-detectable levels of TPH as gasoline and benzene, toluene, xylenes and ethylbenzene (BTX&E) in all samples except S-13.5-B5 collected from well MW5 at a depth of 13.5 feet, which showed a TPH as gasoline level of 2.4 ppm. Analytical results of the soil samples are presented in Table 1.

On June 12 through June 16, 1989, two underground 10,000 gallon (unleaded and super unleaded) storage tanks, and one 280 gallon waste oil storage tank were excavated and removed from the site. The fuel tank pit was excavated to a depth of 14.5 feet, and the waste oil tank pit was excavated to a depth of 8 feet. Only a small amount of ground water was reported to be encountered in the pit. The condition of the excavated tanks was not noted in the AGS reports.

Between June 21 and August 1, 1989, further excavation of soil around the former gasoline tank pit and service islands was conducted. Soil was excavated to the east edge of the City sidewalk, to a depth of 15 feet.

The highest concentrations of TPH as gasoline (up to 4,300 ppm) encountered in soil samples collected promptly after tank removal were detected in samples from the southwest corner of the tank pit. Composite soil samples from the floor and sidewalls of the final excavation apparently indicated TPH as gasoline concentrations of less than detection limits, while discreet soil samples are reported to contain 8.9 ppm or less of TPH as gasoline. Analytical results of two soil samples collected from the waste oil tank pit at a depth of 8 feet indicated 480 ppm and 87 ppm of TPH as gasoline, and 1,300 ppm and 1,800 ppm of total oil and grease (TOG). Analytical results of all soil samples collected from the tank pit excavations are presented as Table 2, and location of soil sample points are presented on the attached Site Plans, Figures 3, 4 and 5. The final depth of the excavation pit, as determined by AGS, is presented as Figure 6.

On June 19, 1989, two new 12,000 gallon fiberglass fuel tanks and a new 520 gallon double-walled fiberglass waste oil tank were placed at the north side of the station building at the locations identified on the attached Site Plan, Figure 7. Monitoring wells MW1 and MW3 are reported to have been destroyed and removed during the soil excavation activities.

Five additional soil borings (designated as B7 through B11 on the attached Site Plan, Figure 7) were drilled at the site on November 17 and 18, 1989 for further evaluation of the lateral and vertical extent of soil contamination at the southwestern and southern portions of the site. The borings were drilled to depths ranging from 15.5 to 20.5 feet. The borings were left open until November 22, 1989, and water levels in the borings reportedly ranged between 6.48 to 12.65 feet. Soil samples collected from depths ranging from 4 to 19.5 feet below grade were analyzed at a laboratory. Analytical results of soil samples collected from the 10 foot depth show levels of TPH as gasoline ranging from 6.1 ppm to 220 ppm. In addition, analytical results of the soil samples collected from depths at and below 15 feet showed levels of TPH as gasoline ranging from 3.4 ppm to 66 ppm. The analytical results are presented in Table 3.

The analytical results of all ground water samples previously collected from the monitoring wells by AGS (from July, 1988 through May, 1990) are presented as Table 4.

2. Site Description:

The site is presently used as a Unocal Service Station. The site is located at the southeast corner at the intersection of Lake Chabot Road and Quail Avenue in Castro Valley, California. The site is situated on gently to moderately sloping, south-southeast trending topography, and is located near the base of moderately steep, southward sloping, hillside areas. In addition, the site is located approximately 600 feet northeast of an unnamed creek and is situated near the northern boundary of the valley which incorporates Castro Valley.

3. Regional Hydrogeology

Based on review of regional geologic maps (U.S. Geological Survey Open File Report 80-540 "Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, California" by Thomas W. Dibblee, Jr., 1980), the subject site is underlain directly by Quaternary alluvium. However, the site is situated closely adjacent to a geologic contact separating the alluvium materials from bedrock materials of the Upper Cretaceous marine Panoche formation (Kp). The Panoche Formation is described as typically consisting of gray clayey shale, with minor thin sandstone beds. Structurally, the Panoche Formation strikes northwesterly and locally dips toward the northeast. Also, the site is located approximately 1,600 feet northeast of the mapped trace of the East Chabot Fault and approximately 1.2 miles northeast of the mapped trace of the active Hayward Fault.

Review of boring logs prepared by AGS for wells MW1 through MW6 and borings B7 through B11 indicate that mudstone, siltstone, shale bedrock materials underlie the site at relatively shallow depths varying from approximately 3 to 12 feet.

The ground water flow direction at the site, as previously determined by AGS has apparently remained reasonably consistent from July, 1988 through May, 1990, and has been reported to be toward the southwest and south-southwest. The depth to the static water level is reported to be between 5.50 to 9.70 feet below the top of the well casing as of May 8, 1990.

PROPOSED FIELD WORK

PHASE I - WELL INSTALLATION

1. KEI proposes to install one two-inch diameter monitoring well using hollow stem auger equipment and one eight-inch diameter exploratory boring (EB1) as shown on the attached Site Plan, Figure 2. Permits will be obtained from the Alameda County Health Department as necessary prior to beginning work. The scope of the proposed work described above has been previously discussed with Mr. Scott Seery of the Alameda County Health Care Services.

   The well (MW7) will be drilled approximately 10 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 exploration boring (EB1) will be drilled to the soil/ground water interface.

2. Soil/bedrock samples from proposed well MW7 and boring EB1 will be collected at a maximum spacing of 5 foot intervals, 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. Sampling for laboratory analysis purposes will continue 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 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.

3. Finalized Boring Logs will be prepared from field logs and submitted to the Alameda County Health Care Services, and to the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

4. Static ground water level is anticipated at approximately 5.5 feet below grade based on the water levels reported in the adjacent monitoring well MW2.

5. Well Construction:

Casing Type: Schedule 40 PVC, flush threaded joints, 0.01 inch factory slot, two-inch diameter. Slot size was determined based on the reported siltstone and shale bedrock materials encountered in the other borings at the site. Screen to run from total depth of the well to approximately 5 feet above the first encountered ground water. Monterey sand (#2/16) will fill the annular space from total depth to 1 to 2 feet above the perforated casing interval. A one to two foot thick bentonite seal will be placed in the annular space on top of the sand pack. Neat cement 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.

6. All wells (MW2 and MW4 through MW7) 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. 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 undesirable turbidity. Effluent generated during well development will be contained in barrels and hauled from the site by a licensed hazardous materials hauler.

The surface of the traffic rated waterproof cover over the well casing will be surveyed by a licensed land surveyor to Mean Sea Level and to a vertical accuracy of 0.01 feet.

7. Ground Water Sampling:

The wells will be purged with a surface pump a minimum of 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 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 between uses.

8. Laboratory Analyses:

Selected soil 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 using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020. In addition, samples from MW7 will be analyzed for TPH as diesel using EPA method 3510 in conjunction with modified 8015, TOG using EPA methods 503D&E and 503A&E, and EPA method 8010 compounds, 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.

If TPH as gasoline 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 Department of Health, 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 well installed during Phase I and for all existing wells.

The main purpose of Phase II will be to establish a zero line of ground water contamination.

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 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 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

Mardo Kaprealian
President

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Attachments: Tables 1, 2, 3 & 4
Location Map
Site Plans - Figures 1 through 7
Typical Well Completion Diagram

KEI-P90-0806.P1
January 9, 1991

TABLE 1

SOIL SAMPLES

(Data obtained from AGS Report 18061-1, dated 8/3/88 for MW1, MW2 and MW3, collected on 7/12-13/88)

Sample #	Depth	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
S-15-B1	15'	3	0.06	0.56	1.21	0.24
S-5-B2	5'	12	0.16	0.92	3.58	0.66
S-5-B3	5	79	0.83	6.63	26.12	3.81

(Data obtained from AGS Report 18061-3, dated 9/11/89 for MW4, MW5 and MW6, collected on 5/23-24/89 and 6/5/89)

Sample #	Depth	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
S-8.5-B4	8.5'	<2.0	<0.050	<0.050	<0.050	<0.050
S-13.5-B4	13.5'	<2.0	<0.050	<0.050	<0.050	<0.050
S-8.5-B5	8.5'	<2.0	<0.050	<0.050	<0.050	<0.050
S-13.5-B5	13.5'	2.4	<0.050	<0.050	<0.050	<0.050
S-8.5-B6	8.5'	<2.0	<0.050	<0.050	<0.050	<0.050
S-13.5-B6	13.5'	<2.0	<0.050	<0.050	<0.050	<0.050

NOTE: B1 in sample designation refers to MW1, etc.

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

KEI-P90-0806.P1
January 9, 1991

TABLE 2

SOIL SAMPLES - TANK PIT EXCAVATION

(Data obtained from AGS Report 18061-4, dated March 30, 1990)

Sample #	Depth	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG
S-6-T1a	6'	2,100	13	110	230	37	--
S-6-T1b	6'	1,800	5.6	89	210	35	--
S-6-T2a	6'	4,300	12	150	350	57	--
S-6-T2b	6'	1,400	9.7	100	270	47	--
S-6-T2S	6'	1,800	4.2	48	240	39	--
S-15-Tb1	15'	<2.0	<0.050	0.056	0.15	<0.050	--
S-14-Tb2	14'	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-14-Tb3	14'	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-15-Tb4	15'	8.9	<0.050	0.27	0.88	0.13	--
S-12-WF	12'(?)	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-0728-1A	+	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-15-PIT	15'	3.4	<0.050	<0.050	<0.050	<0.050	--
S-0803-1B	+	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-0803-1W	++	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-0711-WT1*	8'	480	<1.0	12.0	74.0	15.0	[redacted]
S-0711-WT2*	8'	87	<0.5	1.3	9.1	2.1	[redacted]
S-0719-1A/1B	11.5'	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-0724-1A/1B	12'	<2.0	<0.050	<0.050	<0.050	<0.050	--
S-0628-WT1,2*	7'	650	<2.0	8.0	26.0	3.0	[redacted]
S-0705-4A-4B*	7'	110	0.026	0.110	0.480	0.065	1,200

-- Indicates analysis not performed.

\+ Floor of Excavation.

++ Sidewall of Excavation.

* VOC was non-detectable other than BTX&E, except in composite sample S-00628-WT1,2 which showed levels of various halogenated volatile organics ranging from non-detectable to 0.0078 ppm.

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

KEI-P90-0806.P1
January 9, 1991

TABLE 3

SOIL SAMPLES FROM BORINGS B7 THROUGH B11

(Collected on November 17-18, 1989 - Data obtained from AGS Report 18061-5, dated July 3, 1990)

Sample #	Depth	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG	EPA 8010
S-5.0-B7	5'	<2	<0.050	<0.050	0.090	<0.050	--	--
S-10.0-B7	10'	6.1	0.062	0.540	0.910	160	--	--
S-15.0-B7	15'	--	--	--	--	--	--	ND
S-20.0-B7	20'	--	--	--	--	--	--	ND
S-5.0-B8	5'	--	--	--	--	--	--	ND
S-9.5-B8	9.5'	200	0.340	0.910	23.0	4.1	--	--
S-10.0-B8	10'	--	--	--	--	--	--	ND
S-15.0-B8	15'	66	0.120	0.430	5.90	1.1	--	--
S-10.0-B9	10'	86	1.1	0.670	3.70	2.0	--	--
S-17.0-B9	17'	3.7	<0.050	0.092	0.130	0.076	--	--
S-10.0-B10	10'	220	0.270	<0.050	16.0	5.6	--	--
S-19.5-B10	19.5'	16	0.081	0.120	1.80	0.620	--	--
S-10.0-B11	10'	45	0.074	0.330	3.10	1.2	<50	--
S-14.5-B11	14.5'	--	--	--	--	--	--	ND
S-15.0-B11	15'	3.4	<0.050	0.061	2.50	0.086	<50	--

-- Indicates analysis not performed.

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

KEI-P90-0806.P1
January 9, 1991

TABLE 4

WATER - MONITORING WELLS

(Data derived from AGS Report 18061-6, dated 7/3/90)

Sample	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
			(Collected in July, 1988)		
MW1	540	6.1	82.7	180.3	35.6
MW2	1,080	72	139	157.0	33
MW3	7,800	385	640	2,258	369
			(Collected in October, 1988)		
MW1	1,420	13.2	4.1	58.1	163.8
MW2	1,140	80	10	26.0	25
MW3	WELL NOT SAMPLED - FLOATING PRODUCT				
			(Collected in January, 1989)		
MW1	410	6.5	10.4	44.2	11.8
MW2	4,040	103	673	527	78
MW3	WELL NOT SAMPLED - FLOATING PRODUCT				
			(Collected in June, 1989)		
MW1	WELL DESTROYED DURING TANK EXCAVATION				
MW2	550	2.7	1.9	34	10
MW3	WELL DESTROYED DURING TANK EXCAVATION				
MW4	<20	<0.50	<0.50	<0.50	<0.50
MW5	<20	0.83	<0.50	0.94	0.57
			(Collected in August, 1989)		
MW6	26	<0.50	<0.50	<0.50	<0.50
			(Collected in November, 1989)		
MW2	720	1.4	1.4	34	5.9
MW4	<20	<0.50	<0.50	<0.50	<0.50
MW5	<20	<0.50	<0.50	0.63	<0.50
MW6	<20	<0.50	<0.50	<0.50	<0.50

KEI-P90-0806.P1
January 9, 1991

TABLE 4 (Continued)

WATER - MONITORING WELLS

(Data derived from AGS Report 18061-6, dated 7/3/90)

Sample	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
		(Collected in March, 1990)			
MW2	420	5.0	<0.50	17	3.0
MW4	<20	<0.50	<0.50	<0.50	<0.50
MW5	<20	<0.50	<0.50	<0.50	<0.50
MW6	<20	<0.50	<0.50	<0.50	<0.50
		(Collected in May, 1990)			
MW2	1,100	9.7	0.95	48	14
MW4	<20	<0.50	<0.50	<0.50	<0.50
MW5	<20	<0.50	<0.50	<0.50	<0.50
MW6	<20	<0.50	<0.50	<0.50	<0.50

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

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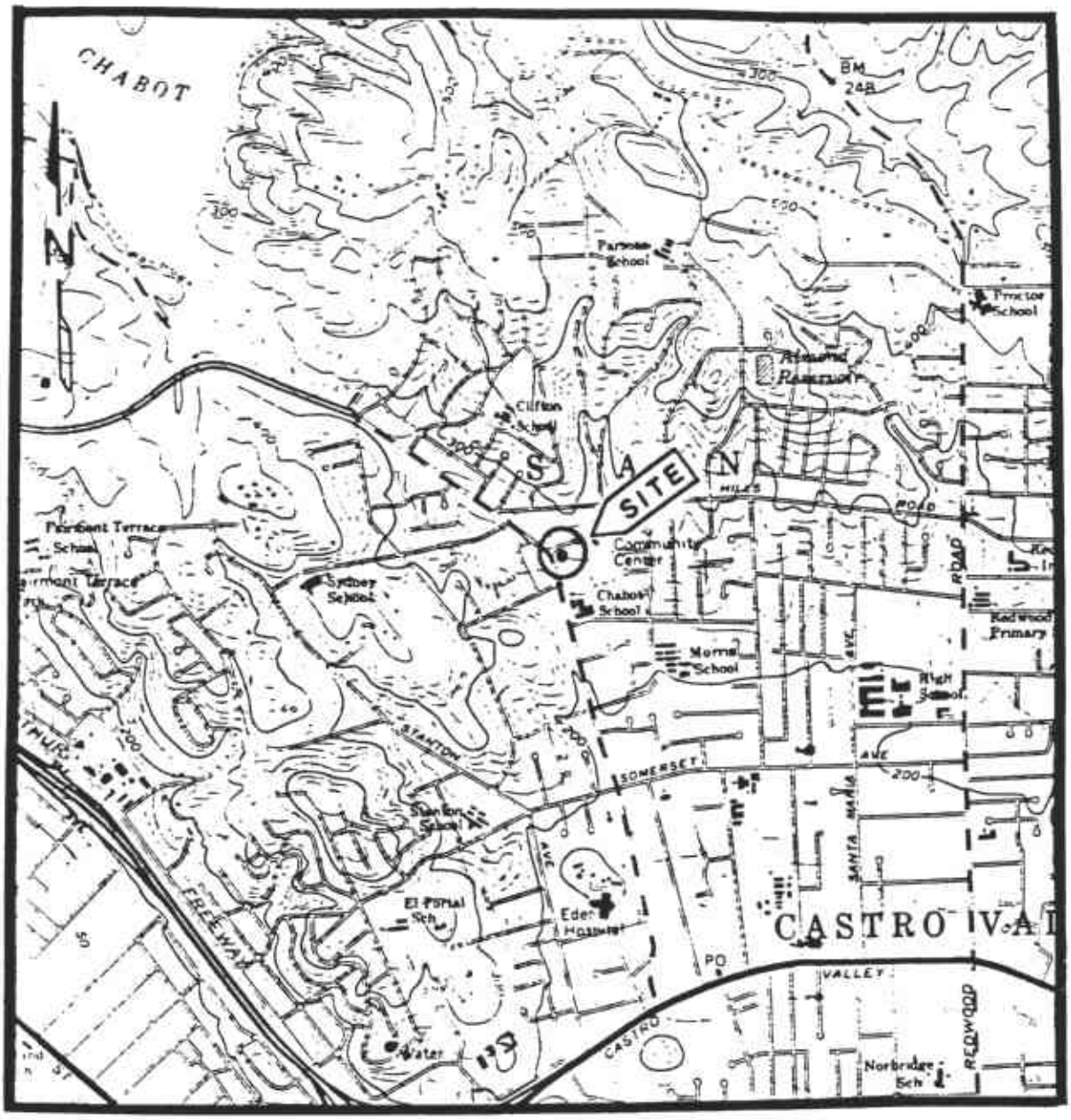

LOCATION MAP

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

Unocal S/S #5484
18950 Lake Chabot Road
Castro Valley, CA

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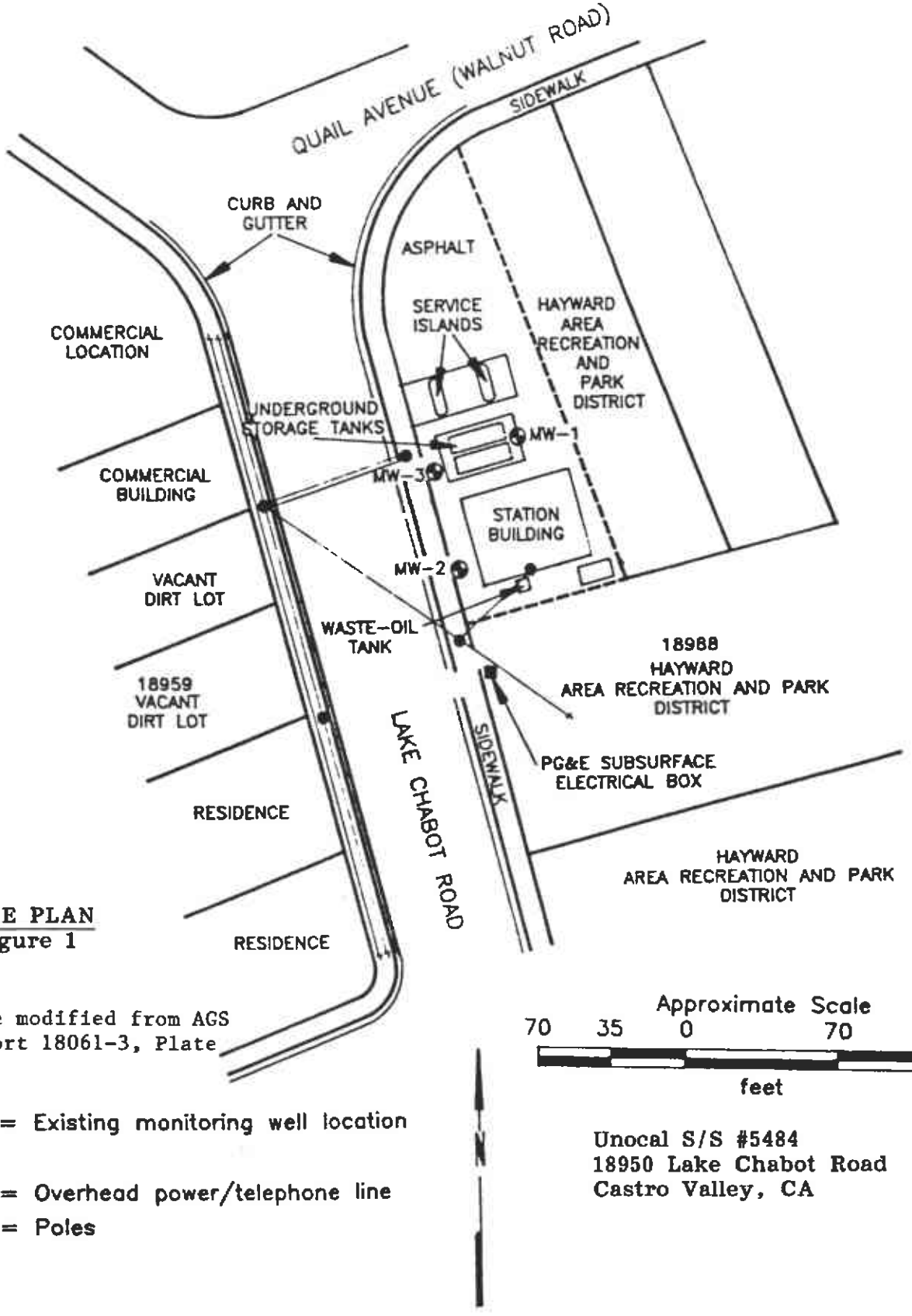

SITE PLAN
Figure 1

*Base modified from AGS report 18061-3, Plate P-1

MW-3 = Existing monitoring well location

—— = Overhead power/telephone line

● = Poles

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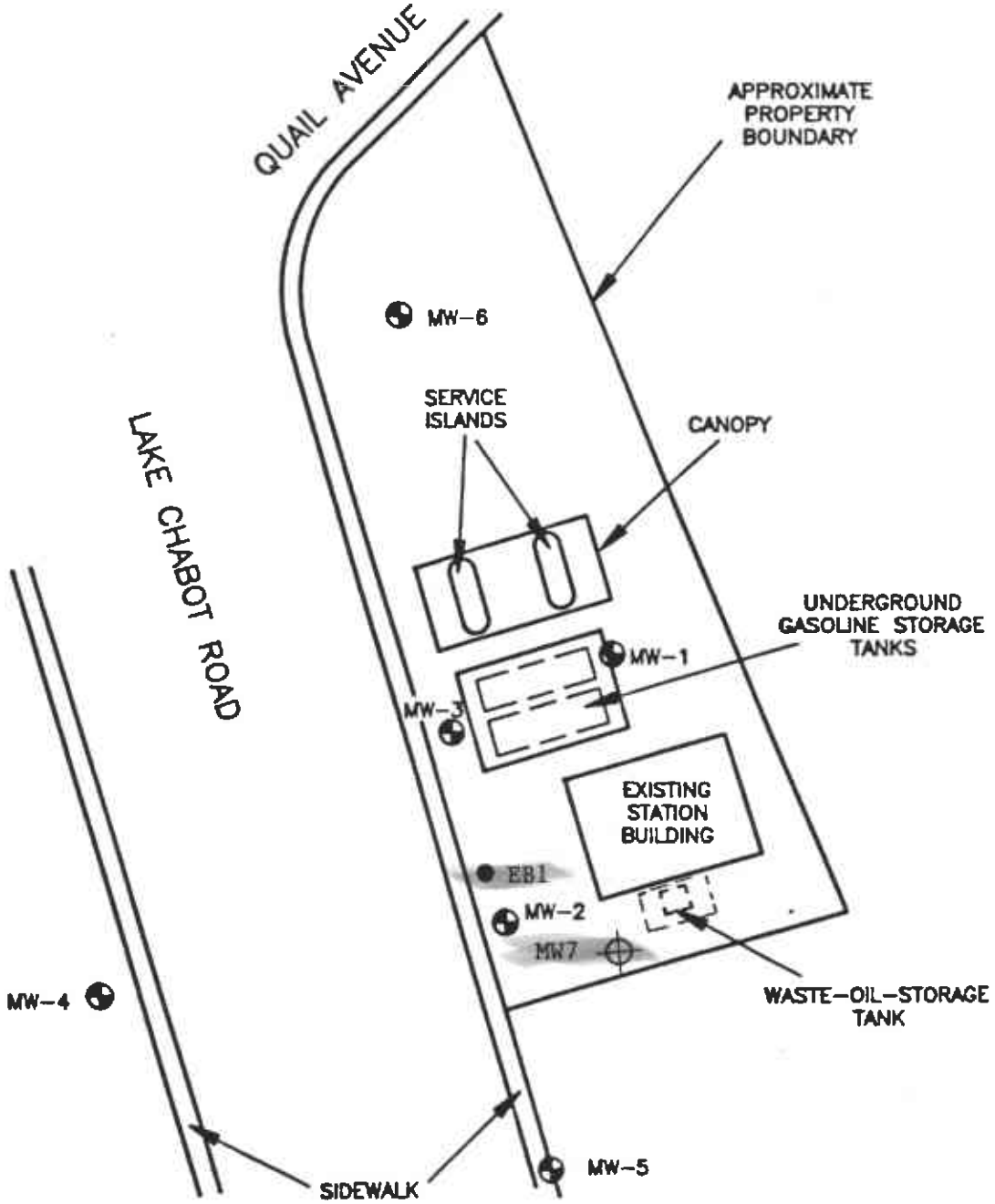

SITE PLAN
Figure 2

Approximate Scale
40 20 0 40 80
feet

*Base modified from AGS report 18061-4, Plate P-2

MW-6 = Monitoring well (by AGS)
= Monitoring Well (Proposed)
= Exploratory Boring (Proposed)

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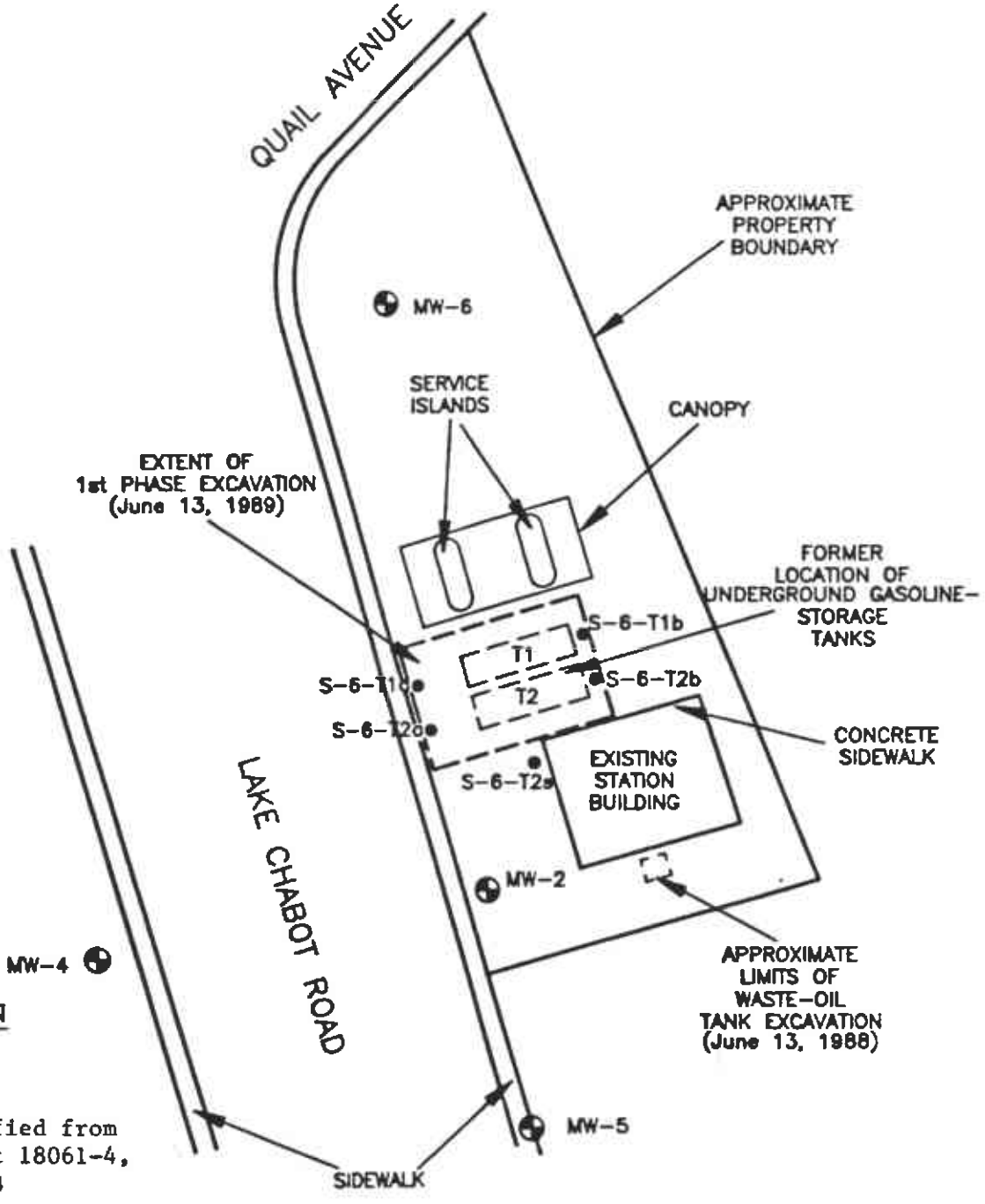

SITE PLAN
Figure 3

*Base modified from AGS report 18061-4, Plate, P-3

= Sidewalls of excavation
S-6-T2s● = Soil sample point
└► = Sample depth
MW-6 ⊕ = Monitoring well

Approximate Scale
40 20 0 40 80
feet

Unocal S/S #5484
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Castro Valley, CA

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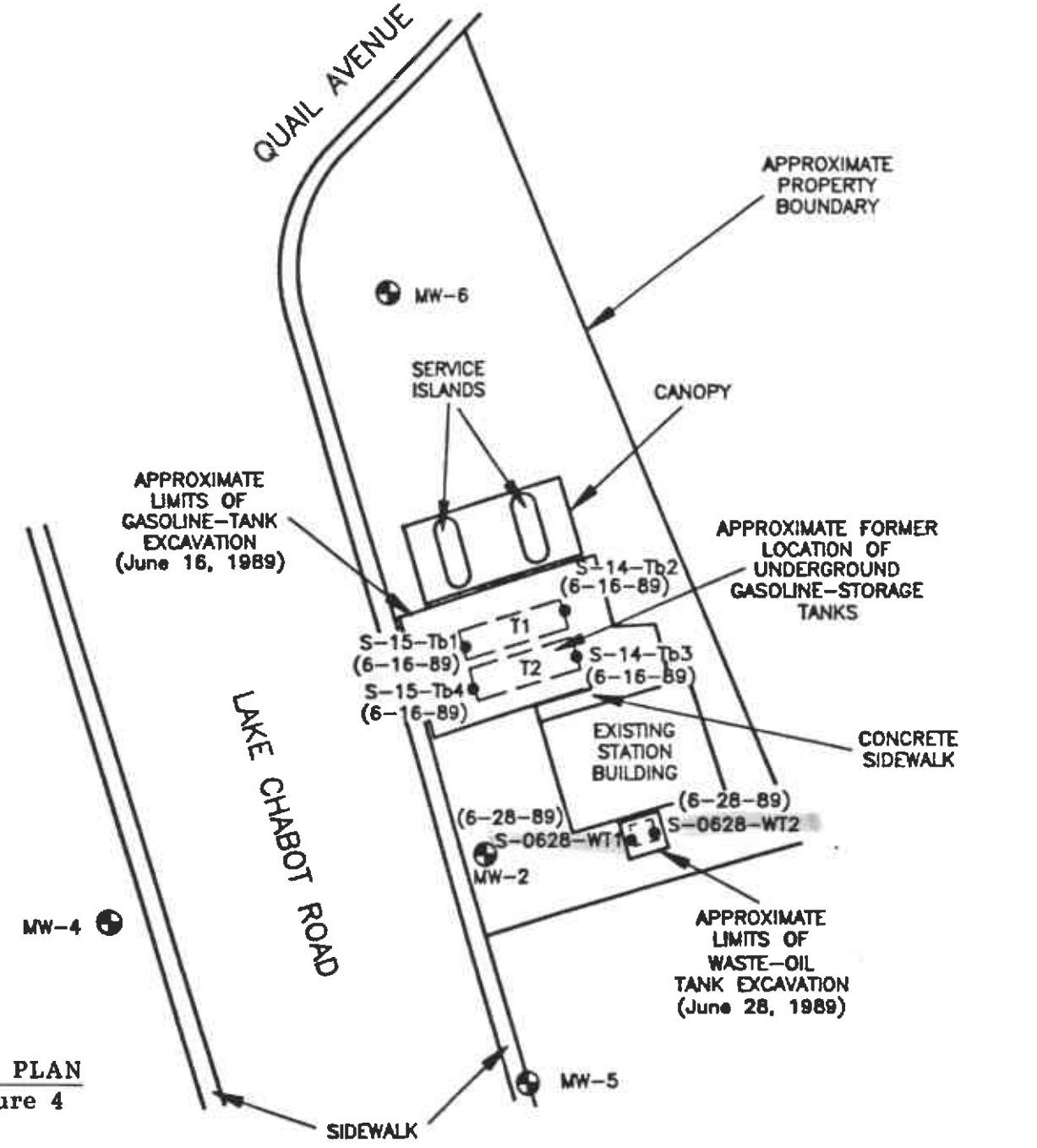
Consulting Engineers
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581



SITE PLAN
Figure 4

*Base modified from AGS report 18061-4, Plate P-4

S-15-Tb4 ● = Soil sample point
└→ = Sample depth
MW-6 ⊕ = Monitoring well

Approximate Scale
40 20 0 40 80
feet

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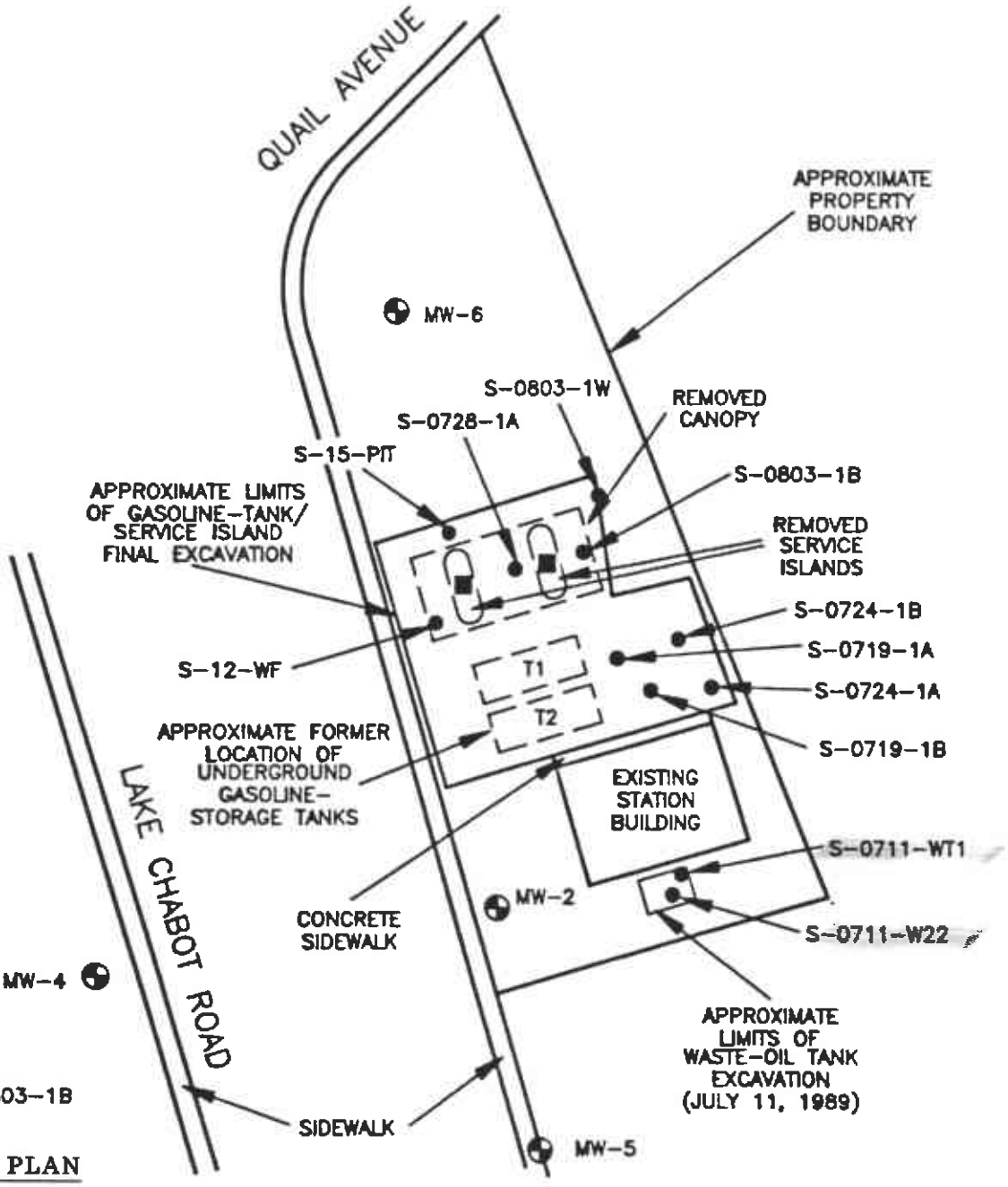

SITE PLAN
Figure 5

*Base modified from AGS report 18061-4, Plate P-6

S-0803-1B ● = Soil sample point
■ = Canopy posts
MW-6 ⊕ = Monitoring well

Approximate Scale
40 20 0 40 80
feet

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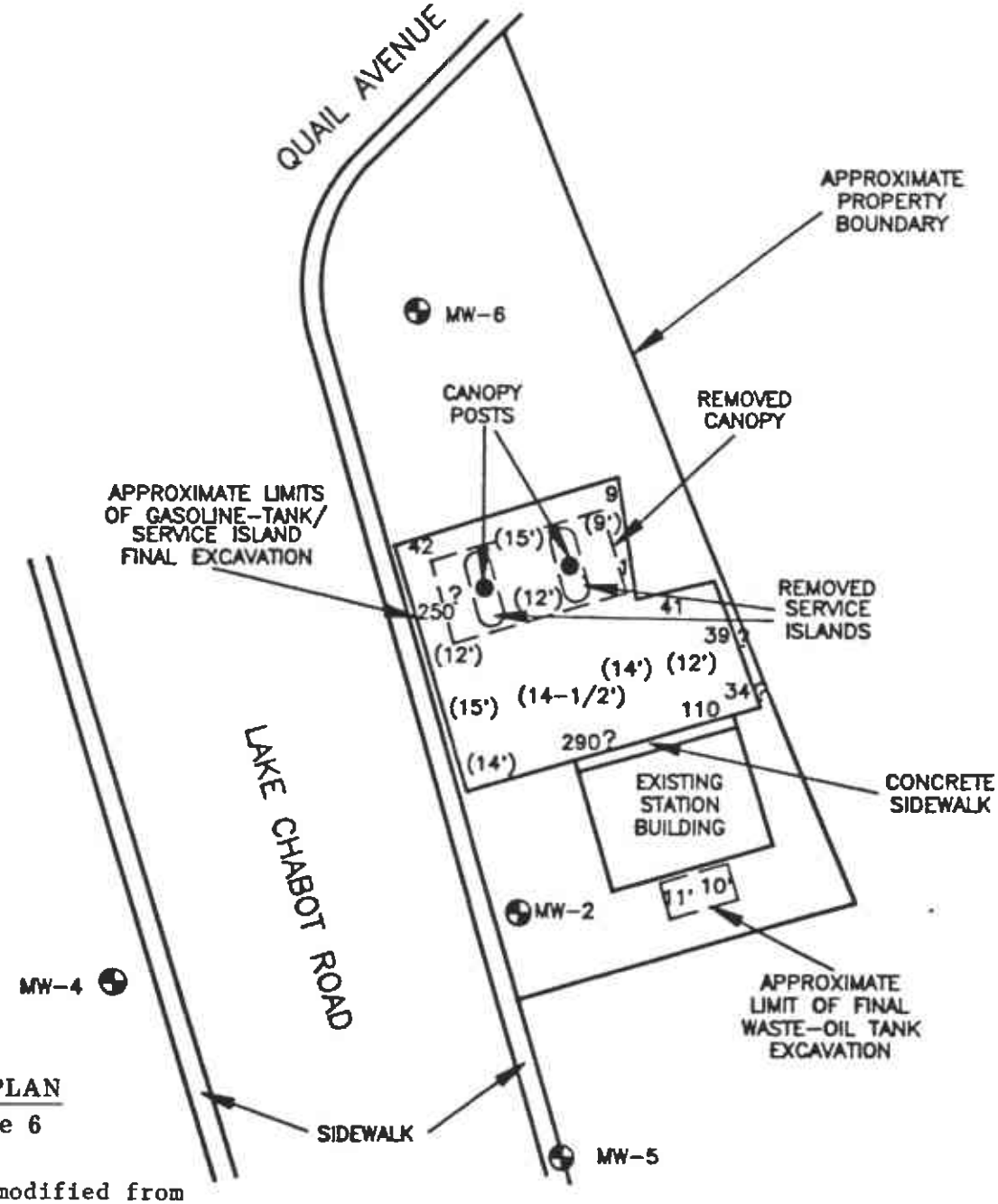

SITE PLAN
Figure 6

*Base modified from AGS report 18061-4, Plate P-7

(15') = Approximate depth of excavation in feet

290 = OVM reading in sidewall of excavation in ppm

W-6 = Monitoring well

Approximate Scale

40 20 0 40 80

feet

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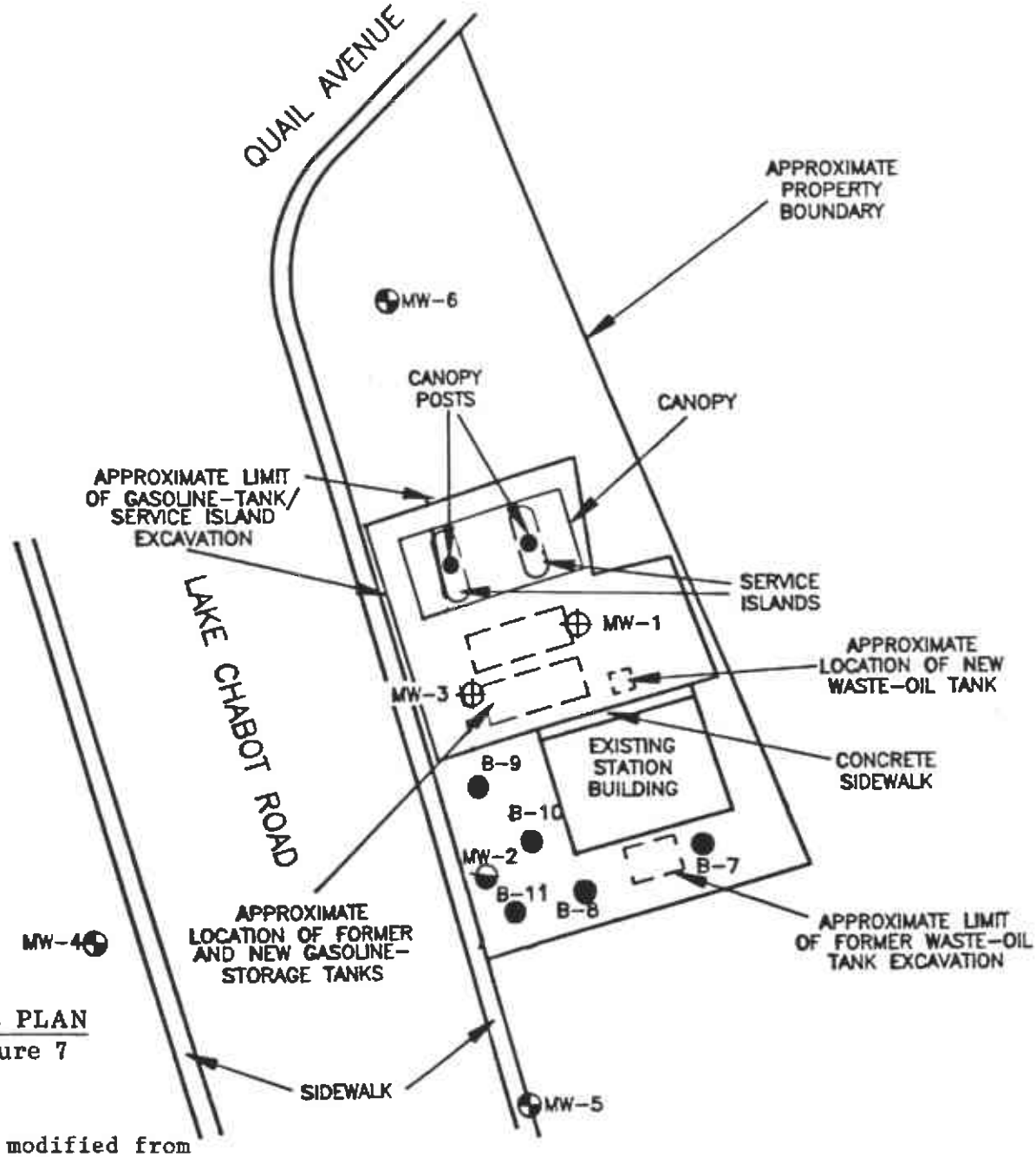

SITE PLAN
Figure 7

*Base modified from AGS report 18061-5, Plate P-9

B-12 ● = Soil boring
MW-6 ◔ = Monitoring well installed by Applied GeoSystems (1989)
MW-2 ◒ = Monitoring well installed by Applied GeoSystems (1988)
MW-3 ⊕ = Former monitoring well installed by Applied GeoSystems (1988)

N

Approximate Scale
40 20 0 40 80
feet

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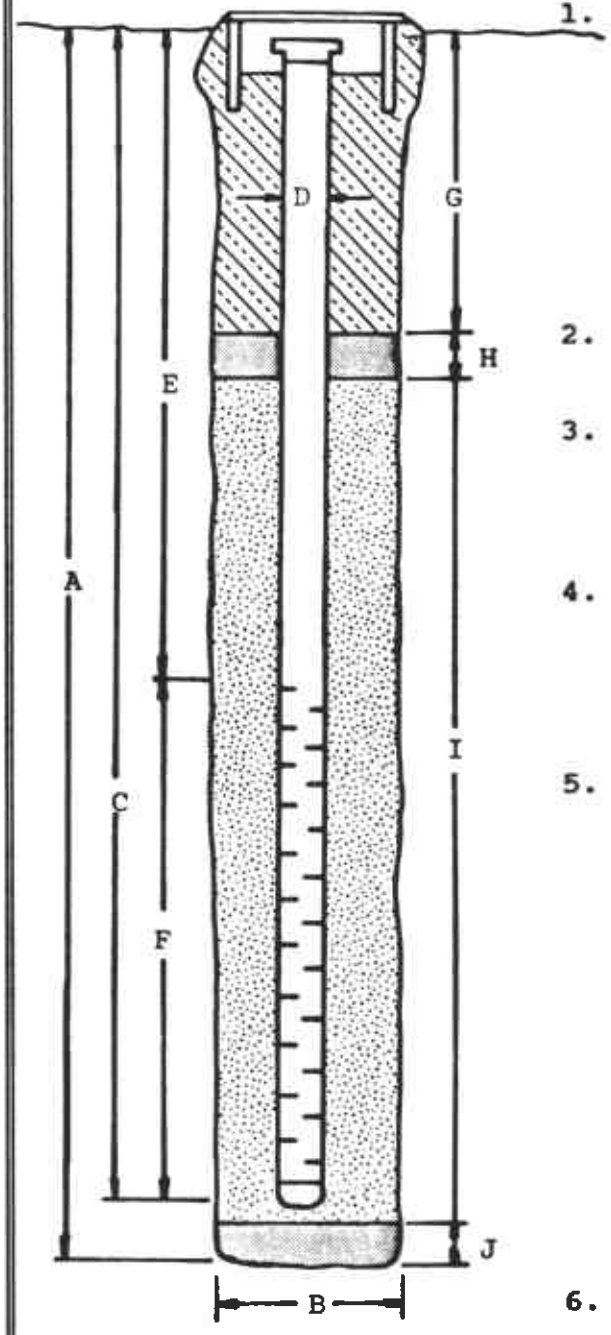
WELL COMPLETION DIAGRAM
(SCHEMATIC)

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.