aqua science engineers inc.

August 22, 1994

WORKPLAN
for
ADDITIONAL SITE ASSESSMENT
at
Former Alameda Max's Property
1357 High Street
Alameda, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
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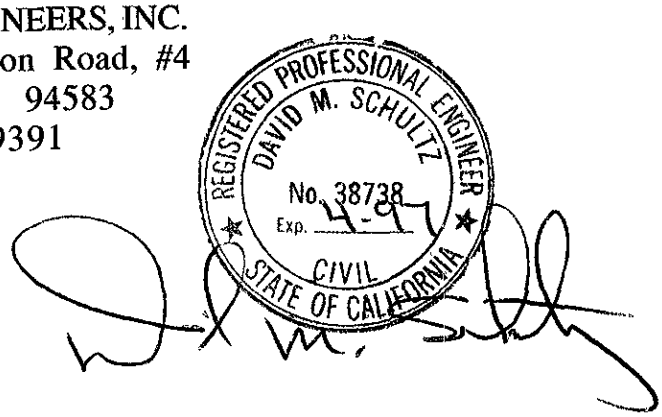


INTRODUCTION

This submittal outlines Aqua Science Engineer's, Inc. (ASE) proposed workplan for additional environmental investigation activities at 1357 High Street in Alameda, California (Figure 1). The work is being performed to further define the extent of soil and groundwater contamination at the site.

PROPOSED SCOPE OF WORK (SOW)

ASE's proposed SOW is as follows:

1) Obtain all necessary permits from the appropriate agencies including a permit to install a monitoring well from the Alameda County Flood Control and Water Conservation District (Zone 7) and an encroachment permit from the City of Alameda;

2) Drill one soil boring at the location shown on Figure 2;

3) Collect soil samples at least every 5-feet from the boring and analyze at least one soil sample from the boring for total petroleum hydrocarbons as gasoline (TPH-G), total petroleum hydrocarbons as diesel (TPH-D), oil and grease (O&G), benzene, toluene, ethylbenzene and total xylenes (BTEX), and volatile organic compounds (VOCs);

4) Complete the boring as a 2-inch diameter groundwater monitoring well;

5) Develop the new monitoring well;

6) Collect groundwater samples from the new well for analyses;

7) Analyze the groundwater samples for TPH-G, TPH-D, O&G, BTEX and VOCs;

8) Survey the top of casing elevation of the new well relative to the elevations of the pre-existing site wells;

9) Report the subsurface investigation results.

Each of these tasks are described in detail below.

TASK 1 - OBTAIN ALL NECESSARY PERMITS FROM THE APPROPRIATE AGENCIES FOR MONITORING WELL INSTALLATION

ASE will obtain an encroachment permit from the City of Alameda to install a well within their High Street right-of-way. ASE will also obtain a well construction permit from the Alameda County Flood Control and Water Conservation District (Zone 7). ASE will send a notification card to the California Department of Water Resources (DWR). ASE will contact Underground Service Alert (USA) to mark all known utilities in the immediate site vicinity. After the wells are completed, ASE will send well completion reports to Zone 7 and the DWR as required.

TASK 2 - DRILL ONE SOIL BORING

ASE will drill one soil boring at the site in the location shown on Figure 2. The boring will be located to assess the extent of groundwater contamination downgradient of the site. This boring will be completed as a groundwater monitoring well. The boring will be drilled with a drill rig equipped with 8-inch diameter hollow-stem augers. The drilling will be directed by a qualified ASE geologist. Undisturbed soil samples will be collected at least every 5-feet, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The samples will be described by the ASE geologist according to the Unified Soil Classification System. The samples will be collected in brass or stainless steel tubes using a split-barrel drive sampler advanced ahead of the auger tip by successive blows from a 140-lb. hammer dropped 30-inches. Each sample will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, secured with duct tape, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed into an ice chest containing wet ice for delivery under chain of custody to a CAL-EPA certified analytical laboratory. Soil from the remaining tubes not sealed for laboratory analysis will be removed for hydrogeologic description and will be screened for volatile compounds with an OVM. The soil will be screened by emptying soil from one of the tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole, punched in the bag. These OVM readings will be used to decide which samples will be analyzed at the

analytical laboratory. Soil cuttings will be stockpiled on and covered with plastic sheeting. Soil disposal will be arranged by the client at a later date.

All sampling equipment will be cleaned in buckets with brushes and a TSP or Alconox solution, then rinsed twice with tap water. The drill rig and augers will be steam cleaned prior to departure. Rinsates will be contained on-site in 55-gallon DOT 17H drums for future disposal by the client.

TASK 3 - ANALYZE AT LEAST ONE SOIL SAMPLE FROM THE BORING

At least one soil sample from the boring will be analyzed at a CAL-EPA certified environmental laboratory for TPH-G, TPH-D, O&G, BTEX and VOCs.

TASK 4 - COMPLETE THE BORING AS A MONITORING WELL

ASE will complete the soil boring as a 2-inch diameter groundwater monitoring well. The well will be constructed with 2-inch diameter, flush-threaded, schedule 40, O.020-inch slotted PVC well screen and blank casing. The well casing will be lowered through the augurs and #3 Monterey sand will be placed in the annular space between the well casing and the borehole to about 1-foot above the screened interval. Approximately 1-foot of bentonite pellets will be placed on top of the sand pack and hydrated with deionized water. This bentonite layer will prevent the cement sanitary seal from infiltrating into the sand pack. Cement will be used to fill the annular space between the bentonite layer and the surface to prevent surface water from infiltrating into the well. The well head will be protected by a locking well plug and an at-grade, traffic-rated well box (See Figure 3 - Typical Monitoring Well).

The well will be screened to monitor the first water-bearing zone encountered. Wells will typically be screened with 5-feet of screen above the water table and 10 to 15-feet of screen below the water table, although the high water table at the site will probably not allow for a full 5-feet of screen above the water table. If a confining layer is encountered below the first water bearing zone, its thickness will be confirmed by sampling with decreasing diameter split barrel samplers. The sampling hole through the underlying confining layer will be sealed with bentonite pellets. ASE will not cross-screen two or more water-bearing zones separated by confining layers.

TASK 5 - DEVELOP THE NEW MONITORING WELL

The new well will be developed after waiting at least 72 hours after well construction. The well will be developed using at least two episodes of surge block agitation and bailer evacuation. At least ten well casing volumes of water will be removed during the development, and development will continue until the water appears to be reasonably clear.

TASK 6 - SAMPLE THE MONITORING WELL

ASE will sample the new well immediately following the well development. Groundwater samples will be collected from the well using a disposable polyethylene bailer. Groundwater will be decanted from the bailer into 40-ml glass volatile organic analysis (VOA) vials and 1-liter amber glass bottles. These samples will be preserved with hydrochloric acid and labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples. The samples will be placed in an ice chest containing wet ice for transport to the analytical laboratory under chain of custody. Purged groundwater will be stored on-site in 55-gallon DOT 17H drums for future disposal by the client.

TASK 7 - ANALYZE THE GROUNDWATER SAMPLES

The groundwater samples will be analyzed for TPH-G and TPH-D by modified EPA Method 8015, O&G by EPA Method 5520, BTEX by EPA Method 8020 and VOCs by EPA Method 8010.

TASK 8 - SURVEY TOP OF CASING ELEVATION

ASE will survey the top of casing elevation of the new well relative to elevations of the existing site wells.

TASK 9 - PREPARE A SUBSURFACE INVESTIGATION REPORT

ASE will submit a subsurface investigation report outlining the methods and findings of this investigation. The report will be submitted under the seal of State Registered Civil Engineer, Mr. David Schultz (#38738). This report will include a summary of the results, the site background and history, the topographic and geologic setting, rational for well placement and design, description of the well construction, development and sampling, tabulated soil and groundwater analytical results, and data

collected during the well development and sampling. Formal boring logs, analytical reports, and chain of custodies will be included as appendices.

SCHEDULE

We will begin work on this project within 30 days of the receipt of a letter from the Alameda County Health Care Services Agency approving this workplan.

Should you have any questions or comments, please feel free to call us at (510) 820-9391.

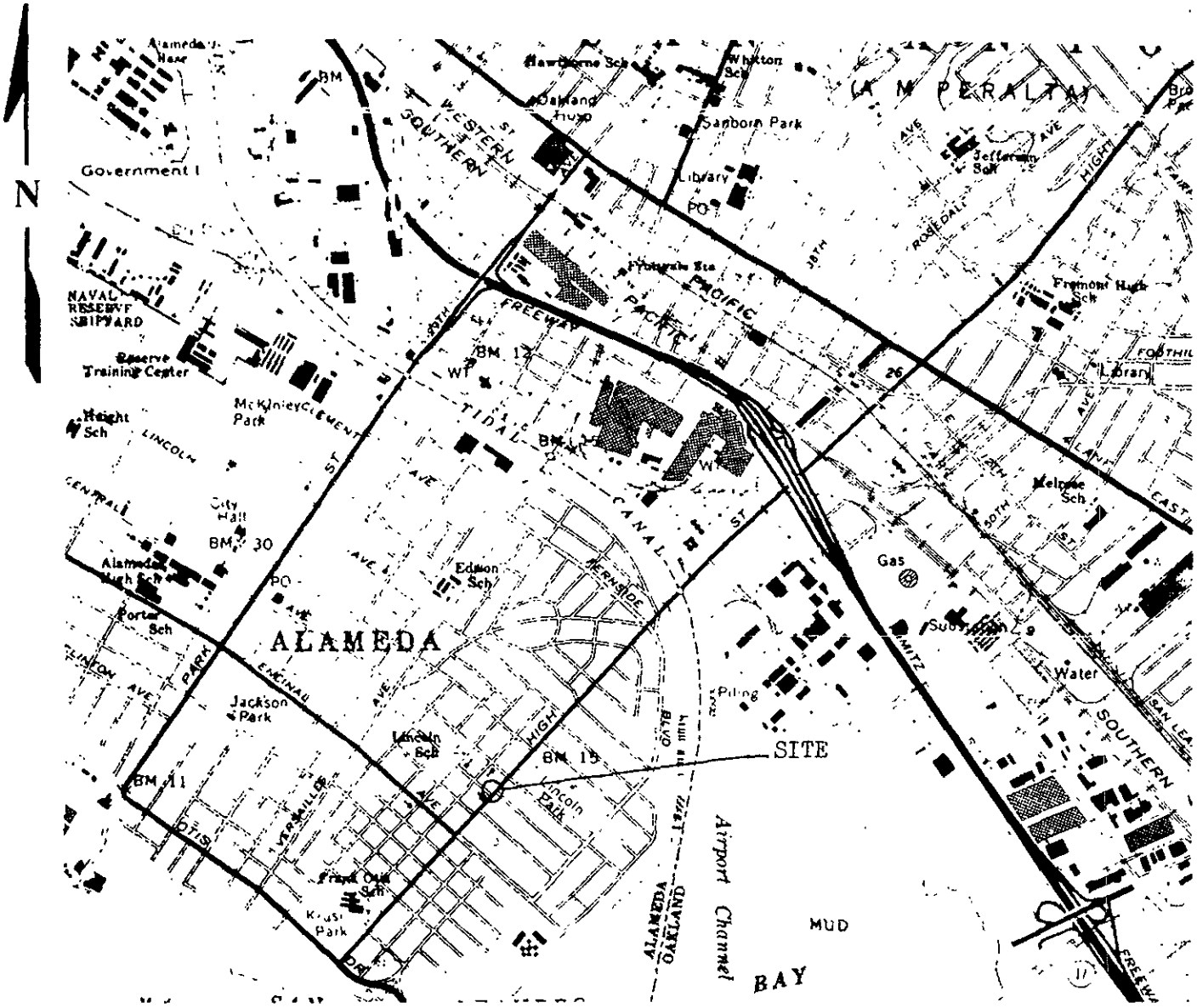
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay, R.E.A.
Project Geologist

cc: Mr. James A. Phillipsen, 3111 Marina Drive, Alameda, CA 94501

Ms. Juliet Shin, Alameda County Health Care Services Agency, 1131 Harbor Bay Parkway, Alameda, CA 94502

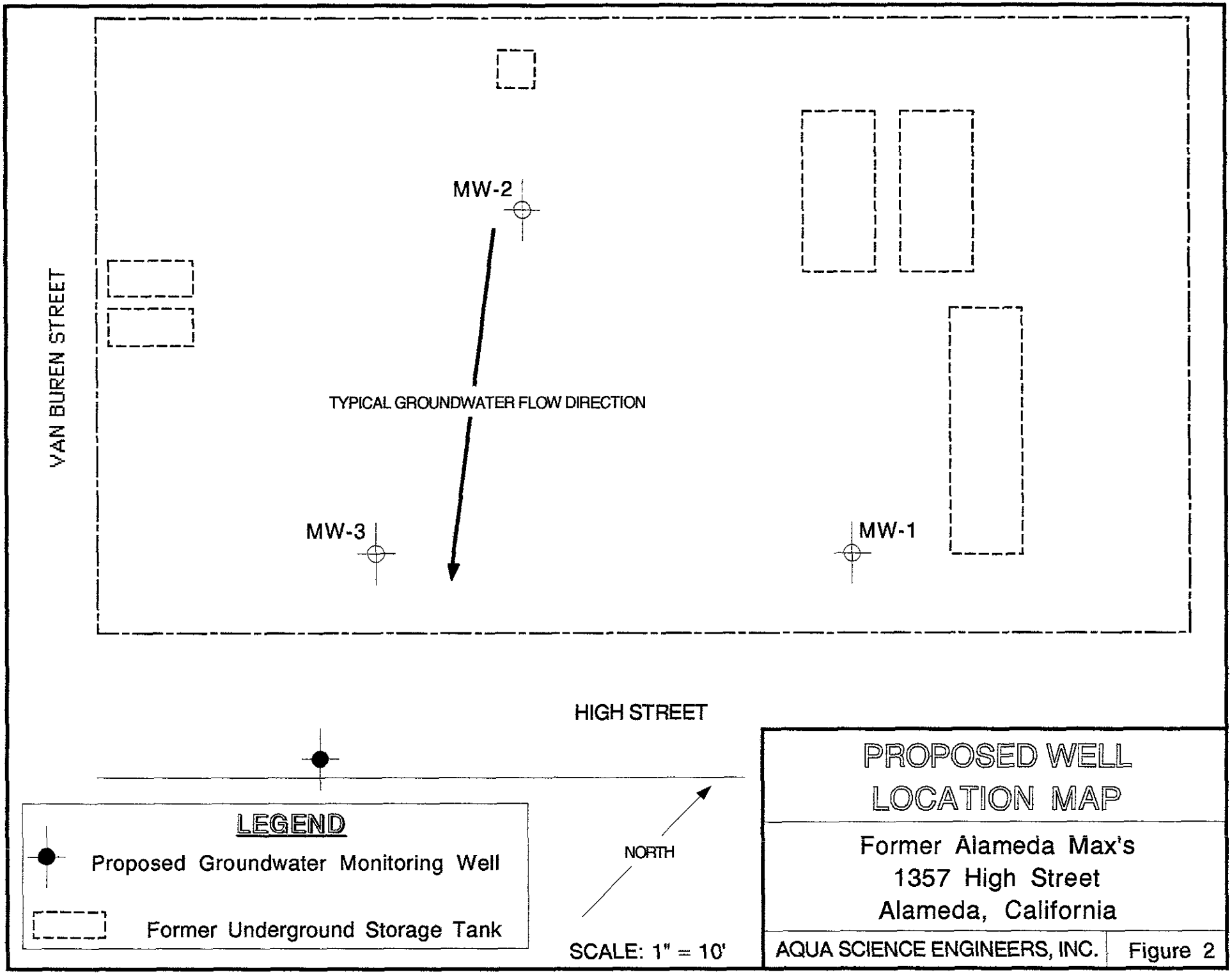


BASE: Oakland East and Oakland West 7.5 minute quadrangle topographic map, dated 1980, scale 1:24,000

SITE LOCATION MAP

Alameda Max's
1357 High Street
Alameda, California

Aqua Science Engineers | Figure 1



PROPOSED WELL LOCATION MAP

Former Alameda Max's
1357 High Street
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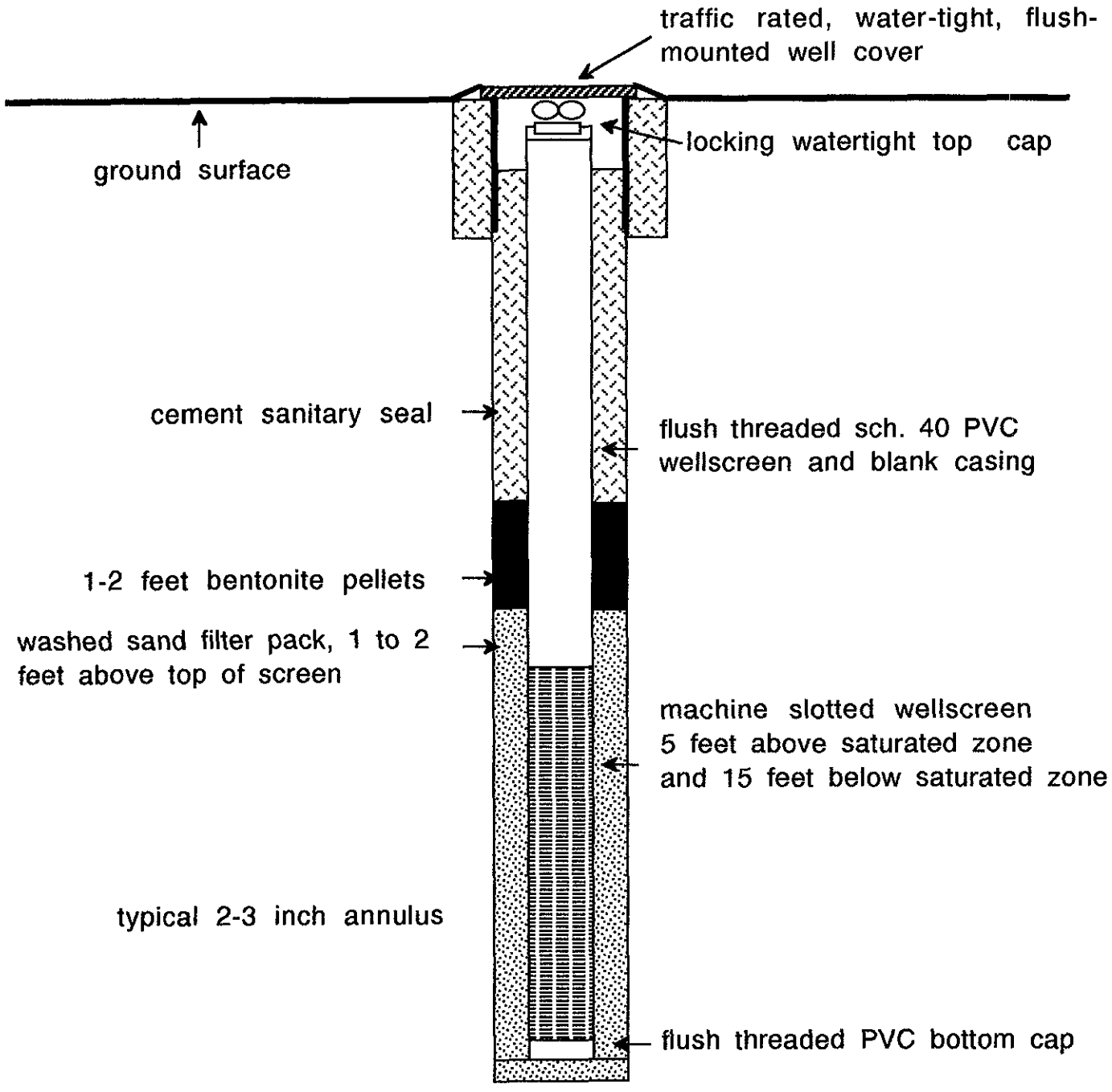
AQUA SCIENCE ENGINEERS, INC. | Figure 2



TYPICAL
MONITORING WELL CONSTRUCTION
IN CROSS SECTION

Aqua Science Engineers | Figure 3