P & D ENVIRONMENTAL
A Division of Paul H. King, Inc.
4020 Panama Court
Oakland, CA 94611
(510) 658-6916

Approved via phone conversation w/ P. King 8/14/97

805

June 27, 1997
Work Plan 0014.W4

Mr. Scott Seery
Alameda County Department of Environmental Health
1131 Harbor Parkway
Alameda, CA 94502

SUBJECT: **GROUNDWATER MONITORING WELL INSTALLATION WORK PLAN**
3495 Castro Valley Boulevard
Castro Valley, CA

Dear Mr. Seery:

P&D Environmental, a division of Paul H. King, Inc. (P&D), is pleased to present this work plan for the installation of one groundwater monitoring well. This work plan is prepared in accordance with your request for a work plan in a letter dated May 13, 1997. A Site Location Map is attached as Figure 1, and a Site Plan showing the proposed monitoring well location, designated as MW4 is attached as Figure 2.

All work will be performed under the direct supervision of an appropriately registered professional. This work plan is prepared in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

BACKGROUND

The site is currently used as a gasoline station. Four 12,000 gallon underground fuel storage tanks are present at the site. Three of the tanks contain gasoline and the fourth tank contains diesel fuel. A 550 gallon waste oil tank was removed from the site in November, 1988. The fuel tanks were replaced during August, 1992.

Three monitoring wells, designated as MW1, MW2 and MW3 were installed at the site on February 14 and 15, 1990 by Western Geo-Engineers. The subsurface materials encountered in the boreholes consisted primarily of silt and clay. The locations of the monitoring wells are shown in Figure 2. Soil samples collected during drilling of the boreholes for the monitoring wells revealed the presence of total petroleum hydrocarbons as gasoline (TPH-G) and total petroleum hydrocarbons as diesel (TPH-D). TPH-G was encountered in borehole MW1 at depths of 5 and 10 feet below grade at concentrations of 40 and 1,400 ppm, respectively; in borehole MW2 at depths of 10 and 15 feet below grade at concentrations of 230 and 95 ppm, respectively; and in borehole MW3 at depths of 5, 10 and 15 feet at concentrations of 140, 250 and 25 ppm, respectively. In addition, 120 ppm TPH-D was detected in borehole MW3 at a depth of 5 feet. Soil samples collected at a depth of 20 feet in borehole MW1 and at a depth of 18 feet in boreholes in MW2 and MW3 did not show any detectable concentrations of TPH-G or TPH-D. Groundwater was encountered in the boreholes at depths of approximately 15 to 16 feet below grade.

On February 15, 1990 Western Geo-Engineers drilled three exploratory boreholes at the site designated as SB1, SB2 and SB3. The subsurface materials encountered in the boreholes consisted primarily of silt and clay. The approximate locations of the boreholes are shown on Figure 2. It is P&D's understanding that soil samples were collected from the exploratory boreholes at depths of 10 and 12 feet and evaluated in the field using a photo ionization detector. In borehole SB1, TPH-G was detected at the depths of 10 and 12 feet at concentrations of 1,700 and 450 ppm, respectively. In boreholes SB2 and SB3, TPH-G was detected at the depths of 10 and 12 feet in both boreholes at concentrations of 800 ppm and greater than 2,000 ppm, respectively. A

groundwater monitoring and sampling program was initiated at the site on February 20, 1990.

It is P&D's understanding that during fuel tank replacement activities in August, 1992 soil surrounding the tank pit was removed and disposed of offsite. An extraction well, designated as EW1, was designed and constructed in one corner of the new tank pit by K&B Environmental at the time of installation of the new tanks.

On February 7, 1996 well MW2 was destroyed for the purpose of widening Redwood Road. The destruction was overseen by ACC Environmental Consultants of Oakland, California.

SCOPE OF WORK

To perform the groundwater monitoring well installation, P&D will perform the following tasks.

- Regulatory agency coordination.
- Installation of one groundwater monitoring well.
- Development of the monitoring well.
- Surveying of the well head vertically and horizontally with respect to the two other onsite wells (MW1 and MW3).
- Purging and sampling of the monitoring well.
- Arrange for soil and groundwater sample analysis for Total Petroleum Hydrocarbons as Diesel (TPH-D), Total Petroleum Hydrocarbons as Gasoline (TPH-G), MTBE, and benzene, toluene, ethylbenzene and xylenes (BTEX).
- Report preparation documenting installation, development and sampling of the monitoring well.

Each of these is discussed below in detail.

Regulatory Agency Coordination

Following approval of this work plan, a permit application will be submitted to the Alameda County Public Works Agency office for the installation of the groundwater monitoring well.

After the permit has been approved, Underground Service Alert will be notified for underground utility location and a drilling date will be scheduled with an appropriately licensed drilling contractor. The drilling date will be set for the earliest possible date available, and the ACDEH will be notified of the drilling date by telephone as soon as it has been set. Prior to the beginning of field work, a health and safety plan will be prepared.

Installation of One Groundwater Monitoring Well

One groundwater monitoring well, designated as MW4, will be installed at the proposed location shown on Figure 2.

A ten-inch diameter borehole will be drilled using truck-mounted hollow stem augers. The hollow stem augers will be steam cleaned prior to use in the borehole. Soil samples will be collected from the borehole into brass tubes at a maximum of five foot intervals, at changes in lithology and at any areas of

obvious contamination using a Modified California split-spoon sampler lined with brass tubes. Blow counts will be recorded every six inches. The soil samples will be logged in the field in accordance with standard geologic field techniques and the Unified Soil Classification System and with a photoionization detected.

Soil samples collected from above the water table at depths of five and ten feet will be retained their brass tubes for laboratory analytical purposes. The ends of the brass tubes for these samples will be successively covered with aluminum foil and plastic endcaps. The brass tubes will then be labeled, placed into a ziplock baggie, and stored in a cooler with ice pending delivery to a State-accredited hazardous waste testing laboratory. Chain of custody procedures will be observed for all sample handling.

The borehole for the monitoring well will be advanced to a depth of approximately eight feet below first encountered groundwater. Based on previous subsurface investigations near the site, first encountered groundwater is anticipated at a depth of approximately 12 feet. The total anticipated depth of exploration of approximately 20 feet. The static water level in the existing wells is approximately 7 to 8 feet below the ground surface. The monitoring well will be constructed using two-inch diameter Schedule 40 PVC pipe. The lowermost 10 feet of the pipe will be 0.010-inch width factory slotted. A screw-on cap or slip-cap will be placed on the bottom of the well. The annular space surrounding the screen will be filled with a Lonestar 2/16 sack sand to a height of one foot above the top of the screen. A one-foot thick layer of bentonite pellets will be placed above the sand and hydrated. The remaining annular space will be filled with a neat cement grout (sanitary seal) to one foot below the ground surface.

The top of the well pipe will be secured with a locking expandable plug and enclosed in a water-tight, traffic-rated locking vault. The top of the vault will be set slightly above grade to inhibit the collection of water in the vault.

Soil and water generated during drilling will be stored in DOT-approved 55-gallon drums pending appropriate disposal.

Surveying of the Wellhead Elevations for the Monitoring Wells

Following installation of the proposed groundwater monitoring well, the top of the PVC well pipe for the monitoring well will be surveyed vertically to the nearest 0.01 foot relative to a Mean Sea Level datum, and horizontally with respect to the existing onsite wells onsite (MW1 and MW3) by a State-licensed surveyor. The top of the well pipes will be marked at the locations that the well pipes are surveyed.

Development of the Monitoring Well

At least 48 hours after the well has been constructed, the well will be developed by surging and overpumping. Prior to development, the well will be monitored for depth to water and the presence of free product or sheen. The depth to water will be measured using an electric water level indicator and will be measured to the nearest 0.01 feet from a location marked at the top of the monitoring well. The presence of free product and sheen will be evaluated using a transparent bailer. Water removed from the well during development activities will be stored in DOT-approved 55-gallon drums pending appropriate disposal.

Purging and Sampling of the Monitoring Well

At least 24 hours after the well has been developed, the well will be monitored for depth to water and the presence of free product and sheen using methods described above. The well will then be purged of a minimum of three casing volumes, or until the well is purged dry. During purging operations, the

field parameters of pH, electrical conductivity and temperature will be monitored. Once the field parameters have been observed to stabilize and a minimum of three casing volumes has been purged or the well purged dry, a groundwater sample will be collected from the monitoring well using a Teflon bailer. The bailer will be cleaned using an Alconox solution and clean water rinse prior to use.

The sample will be transferred from the bailer to 40-milliliter glass Volatile Organic Analysis (VOA) vials and 1-liter amber glass bottles which were sealed with Teflon-lined screw caps. The VOA vials will be overturned and tapped to assure that no air bubbles are present. The sample bottles will then be labeled and placed into a cooler with ice pending delivery to the State-certified hazardous waste testing laboratory. Chain of custody procedures will be observed for all sample handling.

Soil and Groundwater Sample Analysis

The soil sample from the borehole for the monitoring well and the groundwater sample from the monitoring well will be analyzed at McCampbell Analytical Inc. of Pacheco, California for TPH-D using EPA Method 3550 in conjunction with Modified EPA 8015, TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015, MTBE, and for BTEX using EPA Method 8020 on a normal turn around basis. McCampbell Analytical, Inc. is a State-accredited laboratory.

Report Preparation

Upon receipt of the laboratory analytical results, a report will be prepared. The report will contain documentation of field activities associated with the collection of the soil samples and installation, development and sampling of the groundwater monitoring well; a boring log; a well construction diagram; a copy of the well head survey data; copies of the laboratory analytical reports and chain of custody documentation; a tabulated summary of the laboratory analytical results; a discussion of the local geology and hydrogeology; a discussion of the results and recommendations based upon the laboratory analytical results; and the signature and stamp of an appropriately registered professional.

SCHEDULE

The following schedule addresses elements identified in this work plan.

Activity	Calendar Days
Work plan submittal	Day 0
Work plan approval	Day 7
Permit application submittal	Day 10
Permit application approval	Day 17
Set drill date with driller	Day 20
Well installation	Day 34
Well development	Day 36
Well sample collection and surveying	Day 38
Receipt of soil and groundwater sample results	Day 48
Submittal of draft report to XTRA OIL Company for review	Day 62
Submittal of final well installation report to ACDEH	Day 76

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental

Paul H. King

Paul H. King
Hydrogeologist

REGISTERED GEOLOGIST
DON R. BRAUN
No. 1310
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Don R. Braun
Certified Engineering Geologist
Registration No.: 1310
Expiration Date: 6/30/98

Attachments: Site Location Map - Figure 1
Site Plan - Figure 2

cc: Mr. Keith Simas, XTRA OIL Company

PHK
0014.W4

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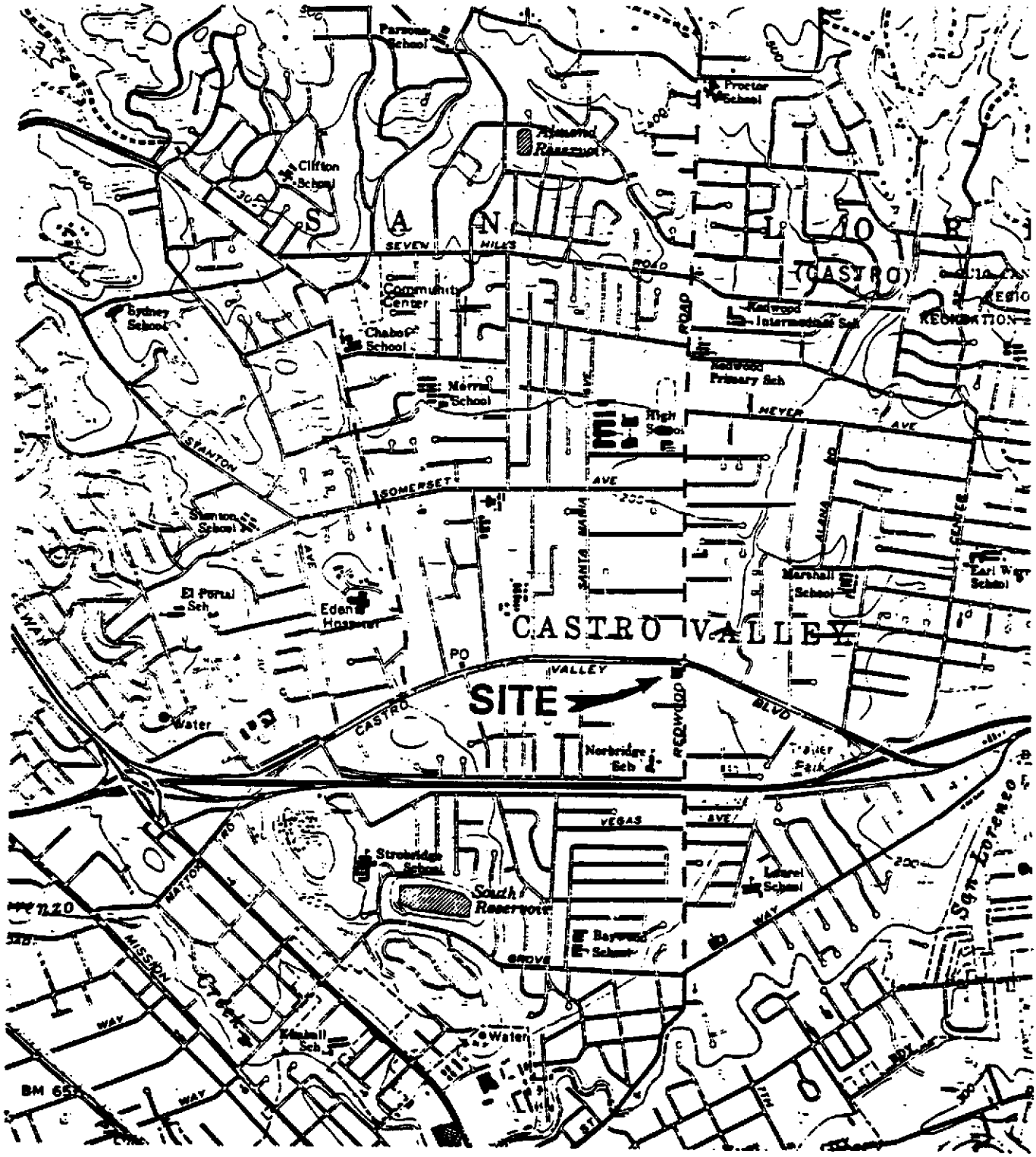

Base Map from:
U.S. Geological Survey
Hayward, Calif.
7.5 Minute Quadrangle
Photorevised 1980

Figure 1
SITE LOCATION MAP
XTRA OIL Company
3495 Castro Valley Blvd.
Alameda, California

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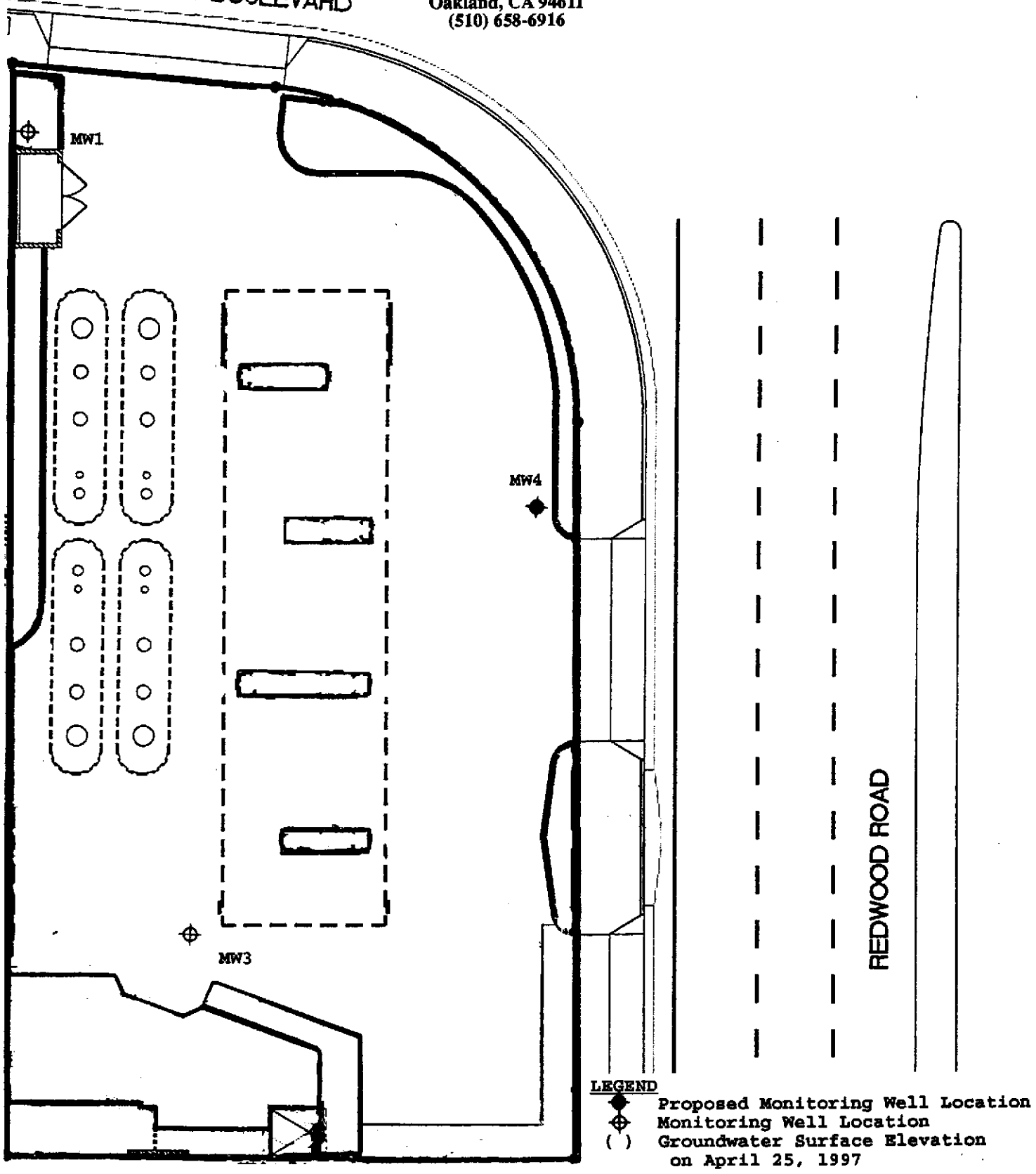

Base Map From
RHL Design Group, Inc.
June, 1997

Figure 2
SITE PLAN
XTRA OIL Company
3459 Castro Valley Blvd.
Castro Valley, CA