NOT APPROVED
NOT IMPLEMENTED

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

August 21, 2000
Work Plan 0014.WP

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

SUBJECT: GROUNDWATER MONITORING WELL INSTALLATION WORK PLAN
XTRA OIL Company
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 installation of three groundwater monitoring wells in the vicinity of the subject site. This work plan is being submitted in response to your July 11, 2000 request. A Site Location Map is attached as Figure 1, and a Site Vicinity Map showing the proposed well locations is attached as Figure 2. Additionally, Site Vicinity Maps showing Total Petroleum Hydrocarbons as Gasoline (TPH-G) Isoconcentration Contours and Total Petroleum Hydrocarbons as Diesel (TPH-D) Isoconcentration Contours are attached as Figure 3 and Figure 4.

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. The location of EW1 is shown on Figure 2.

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.

On August 15, 1997 P&D personnel oversaw the installation of one groundwater monitoring well, designated as MW4 at the subject site. The location of the monitoring well is shown on the attached Site Plan, Figure 2. This work was performed in accordance with P&D's work plan 0014.W4 dated June 27, 1997. The work plan was approved by the Alameda County Department of Environmental Health (ACDEH) in a telephone conversation with Mr. Scott Seery on August 14, 1997. During the conversation, Mr. Seery indicated that he would record his approval of the work plan in the county file for the site.

In February 1994, P&D collected offsite groundwater grab samples designated P1, P2, P3, P4, P5, P6, P7, P8, and P9. Results from those samples are presented in P&D's Report 0014.R8, entitled "Offsite Groundwater Quality Investigation Report," dated April 28, 1994. Between October 1994 and June 1995, P&D collected offsite groundwater grab samples designated P10, P11, P12, P13, P14, P15, P16, P17, P18, and P19. Results from these samples are presented in P&D's Report 0014.R14, entitled "Offsite Groundwater Quality Investigation Report," dated January 5, 1996. Based on the results from these two sets of borings, the ACDEH requested further offsite investigation. To address this request, P&D prepared an Offsite Groundwater Quality Investigation Work Plan (Work Plan 0014.W5, dated December 15, 1997), which was approved by ACDEH on January 22, 1998. In the course of performing the scope of work in 0014.W5, some adjustments in sample location had to be made to accommodate offsite property access issues. These changes are addressed in P&D's Work Plan 0014.W6, "Updated Subsurface Investigation Work Plan" dated October 8, 1999. This updated work plan was approved by ACDEH on October 18, 1999.

Between June 1998 and May 2000, P&D personnel hand augered 11 boreholes at offsite locations in the vicinity of the subject site. Details of this most recent subsurface investigation can be found in P&D's Report 0014.R34, titled "Offsite Groundwater Quality Investigation Report," dated June 28, 2000.

SCOPE OF WORK

To install the three groundwater monitoring wells, the following tasks will be performed:

- Regulatory agency, client, and subcontractor coordination.
- Oversight of the installation of three groundwater monitoring wells.
- Development of the monitoring wells.
- Surveying of the well heads vertically and horizontally with respect to the three existing monitoring wells at the subject site.

- Purging and sampling of the monitoring wells.
- Arrange for soil and groundwater sample analysis for Total Petroleum Hydrocarbons as Diesel (TPH-D), Total Petroleum Hydrocarbons as Gasoline (TPH-G), benzene, toluene, ethylbenzene and xylenes (BTEX), and MTBE.
- Report preparation documenting installation, surveying, development and sampling of the monitoring wells.

Each of these is discussed below in detail.

Coordination

Following work plan approval, bids will be solicited, a project pre-approval request will be submitted to the State Water Resources Control Board (SWRCB) UST Fund, and the contract for performing the work will be awarded following receipt of SWRCB pre-approval. Prior to the beginning of field work, all necessary permits (including off-site access permits) will be obtained, Underground Service Alert will be notified for buried utility location, and a Health and Safety Plan will be prepared. 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.

Oversight of the Installation of Three Groundwater Monitoring Wells

Three off-site groundwater monitoring wells, designated as MW5, MW6, and MW7, will be installed at the proposed locations 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 each borehole. Soil samples will be collected from the boreholes 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. The soil samples will be evaluated with a photoionization detector equipped with a 10.0 eV bulb and calibrated with a 100 ppm isobutylene standard.

The soil sample collected from above the water table at a depth of five feet in each boring will be retained in its brass tube for laboratory analytical purposes. The ends of the brass tube for this sample will be successively covered with aluminum foil and plastic endcaps. The brass tube 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 boreholes for monitoring wells MW5, MW6, and MW7 will be advanced to total depths of approximately 15, 15 and 10 feet below the ground surface, respectively. During the course of a recent subsurface investigation in the vicinity of the subject site, groundwater was encountered between 3.0 and 13.0 feet below grade.

The monitoring wells will be constructed using two-inch diameter Schedule 40 PVC pipe. The lowermost 10 feet of each well casing for MW5 and MW6 and the lowermost 7 feet of well casing for MW7 will consist of 0.010-inch width factory slotted pipe. A screw-on cap or slip-cap will be placed on the bottom of each 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 approximately one half foot below the ground surface.

The top of each 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.

Development of the Monitoring Wells

At least 48 hours after the wells have been constructed, they will be developed by surging and overpumping. Prior to development, the wells 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.

Surveying of the Wellhead Elevation for the Monitoring Wells

Following installation of the proposed groundwater monitoring wells, the top of the PVC well pipe for each monitoring well will be surveyed vertically to the nearest 0.01 foot relative to a Mean Sea Level datum. In addition, the three existing monitoring wells at the subject site will also be surveyed vertically to the nearest 0.01 foot.

All locations will also be surveyed horizontally. The surveyed location at the top of each well pipe and piezometer will be marked to identify the surveyed location for use during future monitoring activities.

Purging and Sampling of the Monitoring Wells

At least 24 hours after the wells have been developed, they will be monitored for depth to water and the presence of free product and sheen using methods described above. Each well will then be purged of a minimum of three casing volumes of water, 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 will be 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. Water removed from the well during purging activities will be stored in DOT-approved 55-gallon drums pending appropriate disposal.

Soil and Groundwater Sample Analysis

The soil samples from the boreholes for the monitoring wells and the groundwater samples from the monitoring wells will be analyzed at McCampbell Analytical, Inc. of Pacheco, California for TPH-D using EPA Method 3550 for the

soil sample and EPA Method 3510 for the water sample in conjunction with Modified EPA 8015, TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015, for BTEX using EPA Method 8020 and for MTBE using EPA Method 8260. 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, surveying, development and sampling of the groundwater monitoring wells; boring logs; well construction diagrams; 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 laboratory results; 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	Work Days
Work plan submittal to ACDEH	Day 0
Work plan approval by ACDEH	Day 7
Solicit bids for scope of work	Day 14
SWRCB UST Fund application submittal	Day 28
SWRCB UST Fund application approval	Day 42
Award work	Day 46
Permit application submittal to ACDPW	Day 50
Permit application approval by ACDPW	Day 57
Set drill date with driller	Day 61
Well installation	Day 68
Well development	Day 72
Well sample collection and surveying	Day 76
Receipt of soil and groundwater sample results	Day 83
Submittal of draft report to client for review	Day 97
Submittal of final well installation report to ACDEH	Day 111

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

Sincerely,

P&D Environmental

Greg Brown
Project Scientist

Paul H. King
California Registered Geologist
Registration No. : 5901
Expires: 12/31/01

Attachments:
Site Location Map - Figure 1
Site Vicinity Map - Figure 2
Site Vicinity Map showing TPH-Gasoline Isoconcentration Contours - Figure 3
Site Vicinity Map showing TPH-Diesel Isoconcentration Contours - Figure 4

cc: Mr. Keith Simas, XTRA OIL Company

PHK/gmb
0014.W7

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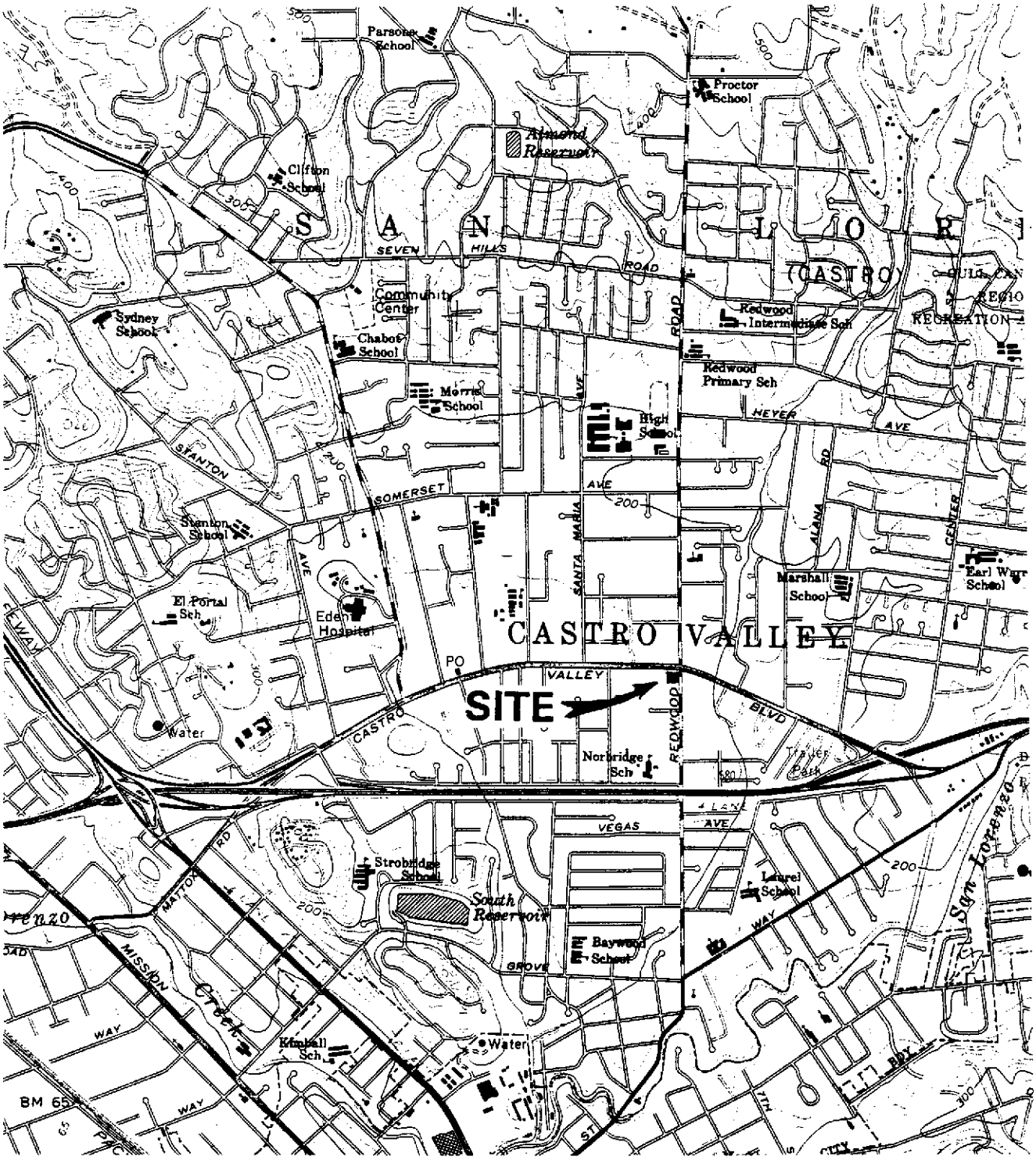

Base Map from:
U.S. Geological Survey
Hayward, Calif.
7.5 Minute Quadrangle
Photorevised 1980

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

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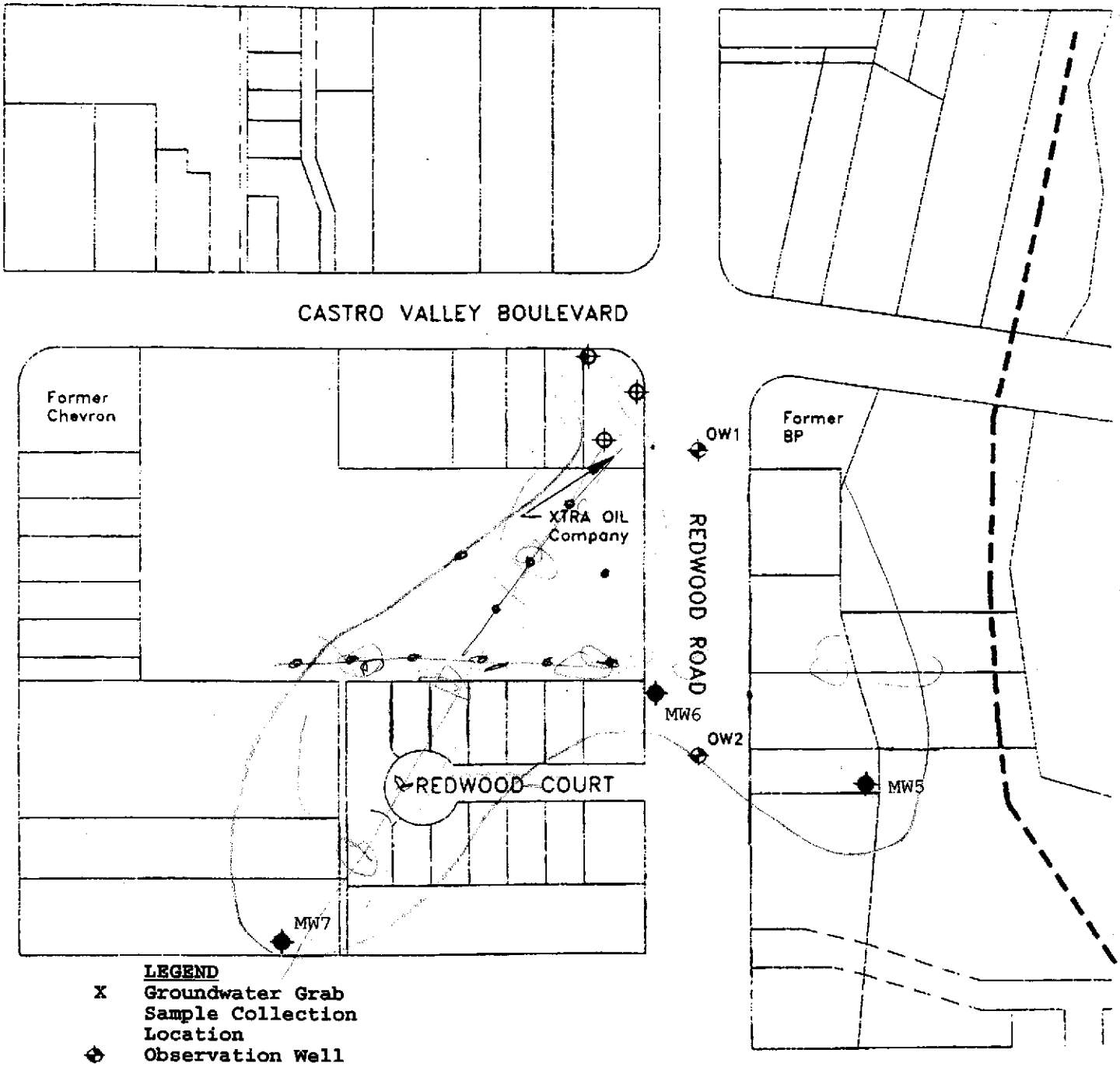

LEGEND

- X — Groundwater Grab Sample Collection Location
- Observation Well Location
- Approximate Creek Location
- Existing Monitoring Well
- Proposed Monitoring Well

Base Map From:
Castro Valley Sanitation District
Undated

0 100 200
SCALE IN FEET

North

Figure 2
SITE VICINITY MAP
XTRA OIL Company
3495 Castro Valley Blvd.
Castro Valley, CA

P & D Environmental
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4020 Panama Court
Oakland, CA 94611
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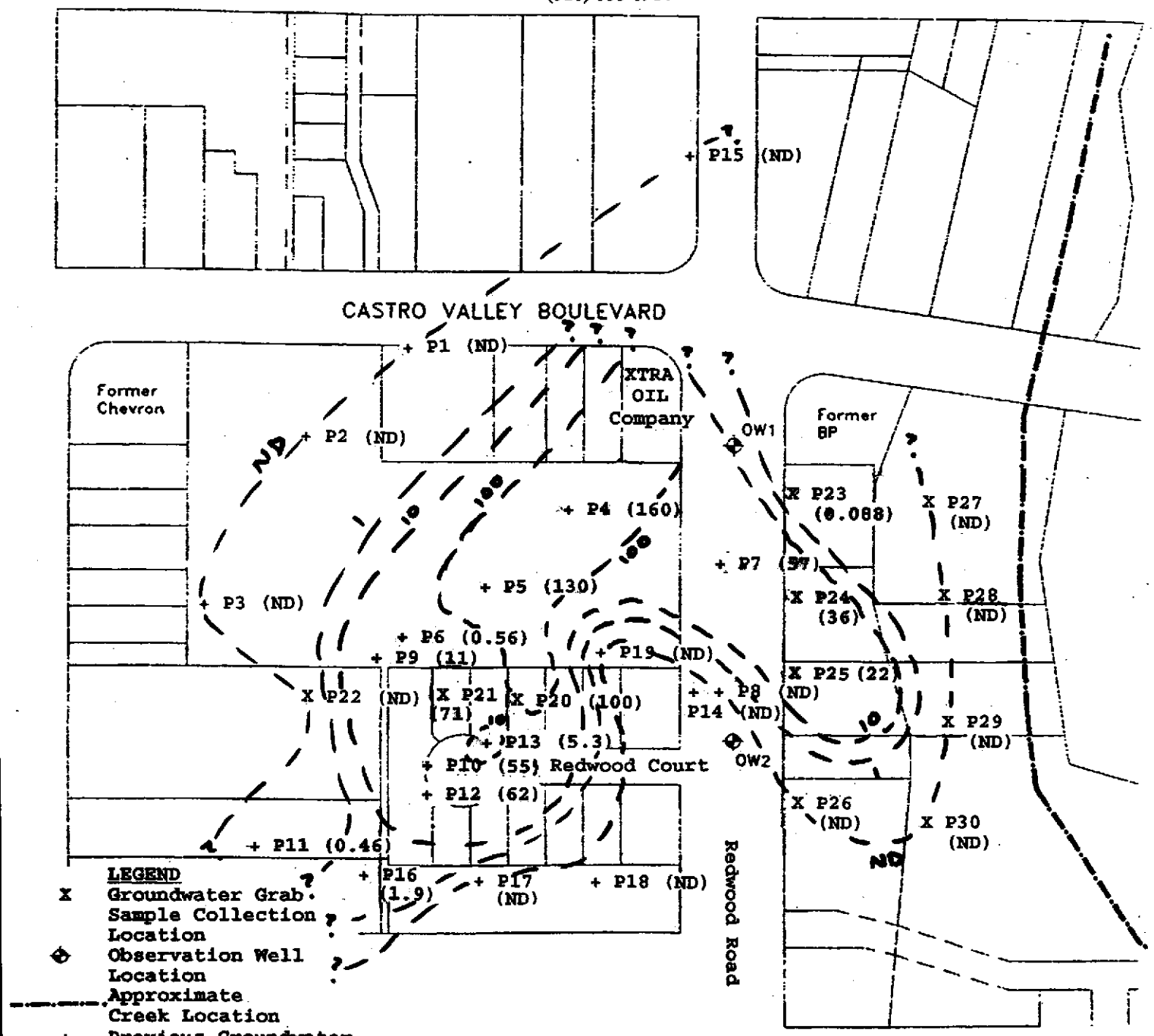

Base Map From:
Castro Valley Sanitation District
Undated

0 100 200
SCALE IN FEET

North

Figure 3
SITE VICINITY MAP SHOWING TPH-GASOLINE ISO-CONCENTRATION CONTOURS
XTRA OIL Company
3495 Castro Valley Blvd.
Castro Valley, CA

P & D Environmental
A Division of Paul H. King, Inc.
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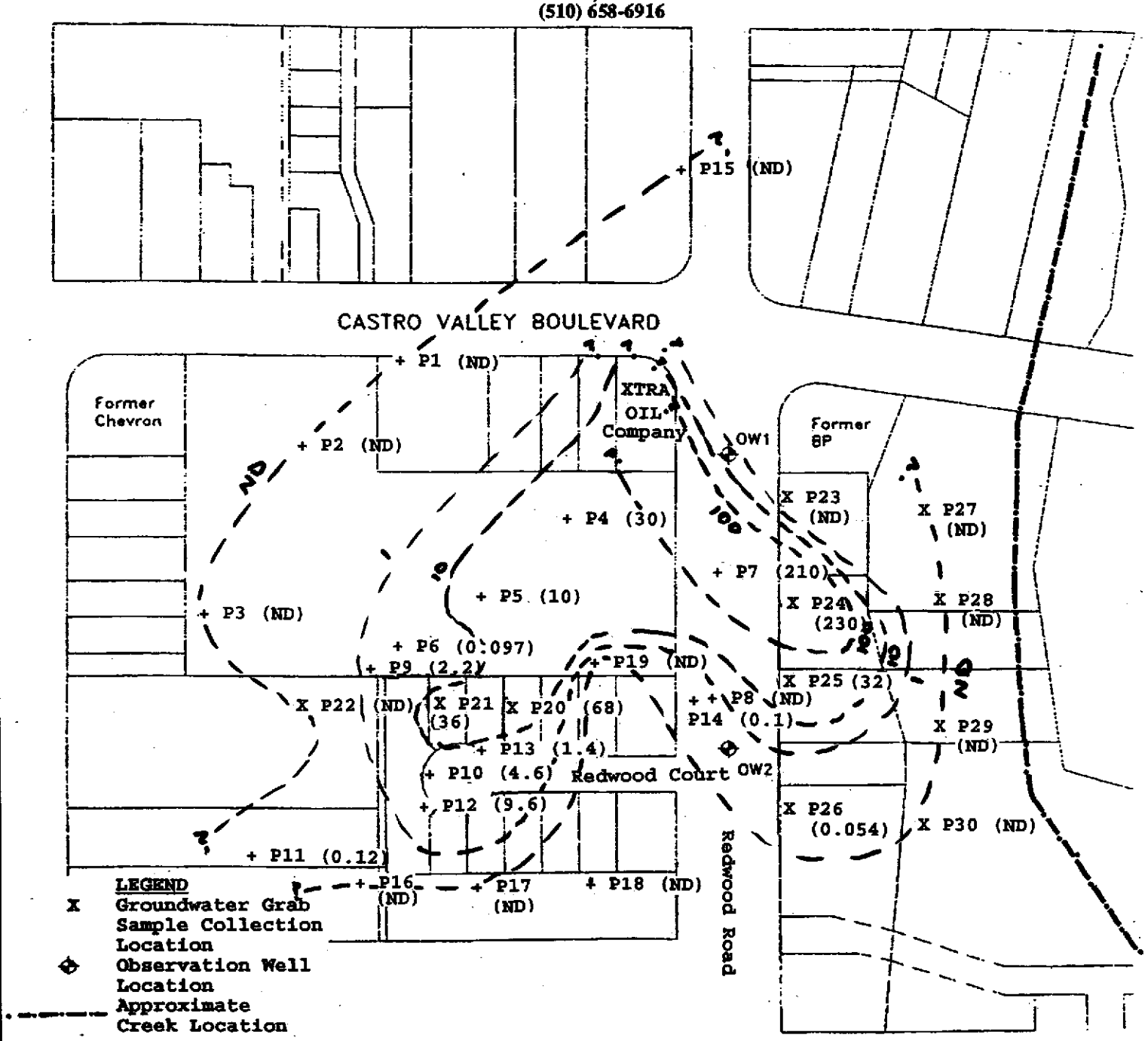

LEGEND

- X — Groundwater Grab Sample Collection Location
- ⊕ — Observation Well Location
- Approximate Creek Location
- \+ — Previous Groundwater Quality Investigation Sample Collection Location
- (5) — TPH-Diesel Concentration in Groundwater in ppm
- TPH-Diesel Groundwater Isoconcentration Contour

Base Map From:
Castro Valley Sanitation District
Undated

0 100 200
SCALE IN FEET

North

Figure 4
SITE VICINITY MAP SHOWING TPH-DIESEL ISO-CONCENTRATION CONTOURS
XTRA OIL Company
3495 Castro Valley Blvd.
Castro Valley, CA