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

JUN 1 3 2001

June 1, 2001
Work Plan 0047.W3

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

SUBJECT: SUBSURFACE INVESTIGATION WORK PLAN
VIP Service
3889 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 drilling of 12 soil borings designated as P16 through P27 at or in the vicinity of the subject site. This work plan is submitted in response to your April 16, 2001 request. A Site Location Map is attached as Figure 1, and a Site Vicinity Map showing the proposed soil boring locations is attached as Figure 2. Additionally, a Site Plan showing the former UST pit over-excavation boundaries and confirmation sample collection locations is attached as Figure 3. Total Petroleum Hydrocarbons as Gasoline (TPH-G) Isoconcentration Contours are shown on 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

It is P&D's understanding that the subject site was purchased by VIP Service in December, 1984. Prior to purchase of the property by VIP Service, the site was operated as a retail gasoline station for an undetermined period of time. The site was operated as a retail gasoline station from the time of purchase by VIP Service until the tanks were removed by Accutite on April 26, 1993. The site is presently operated as an automotive repair facility.

The subject site is currently paved, with one slab-on-grade structure which is used for automotive repair. The adjacent trailer park is predominantly paved, with the exception of several planters and trailer parking locations. One slab-on-grade structure is located on the adjacent trailer park, immediately adjacent to Castro Valley Boulevard.

The underground tank system at the subject site consisted of three 10,000 gallon capacity gasoline tanks, two dispenser islands, and one 550 gallon waste oil tank. It is P&D's understanding that the fuel tanks contained leaded and unleaded gasoline while in use by VIP Service. In addition, VIP Service reported that diesel fuel was not stored at the site at any time.

It is P&D's understanding that at the time of tank removal, eight soil samples were collected from the sidewalls of the fuel tank pit, and one soil sample was collected from the waste oil tank pit. Groundwater was reported to have been encountered in the fuel tank pit at a depth of approximately 11 feet. One water sample was collected from the water in the fuel tank pit. On April 28, 1993 Accutite returned to the site and collected seven soil samples from beneath the dispenser islands.

All of the samples were analyzed at Sequoia Analytical in Redwood City, California for Total Petroleum Hydrocarbons as Gasoline (TPH-G); Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); and for Total Lead. In addition, the samples from the waste oil tank were analyzed for Total Petroleum Hydrocarbons as Diesel (TPH-D); Total Oil and Grease (TOG); Halogenated Volatile Organic Compounds using EPA Method 8010; Semi-Volatile Organic Compounds using EPA Method 8270; and for the metals cadmium, chromium, lead, nickel and zinc.

The results of the soil samples collected from the fuel tank pit showed TPH-G concentrations ranging from 120 to 6,200 parts per million (ppm), and total lead results ranging from not detected to 13 ppm. The results of the water sample from the fuel tank pit showed 140 ppm TPH-G, and 0.095 ppm total lead.

The results of the soil samples collected from beneath the fuel dispensers showed TPH-G values ranging from not detected to 4.7 ppm, and total lead values ranging from not detected to 7.6 ppm.

The results of the sample collected from the waste oil tank pit showed 670 ppm TPH-G; 410 ppm TPH-D; 1,300 ppm TOG; 0.023 ppm 1,2-Dichloroethane and 0.0094 ppm Tetrachloroethene in the EPA Method 8010 analysis; 2.7 ppm 2-Methylnapthalene and 3.8 ppm Naphthalene in the EPA Method 8270 analysis; and various metals concentrations, none of which exceeded ten times their respective STLC values. The laboratory identified the TPH-D results as being a "non-diesel mix," and indicated that the compounds reported as diesel were diesel-range gasoline and diesel-range oil compounds.

Between August 27 and November 1, 1993 P&D personnel collected stockpiled soil samples for stockpiled soil disposal characterization and oversaw the excavation of approximately 680 cubic yards of soil from the vicinity of the fuel tank pit in an effort to remove petroleum hydrocarbon-impacted soil. In addition, during this time the soil which was stockpiled by Accutite during the tank removal activities and during the subsequent soil excavation activities was disposed of at an appropriate disposal facility, and the tank pit backfilled and compacted. A total of eight confirmation soil samples were collected from the sidewalls of the tank pit on November 19, 1993 at a depth of 10 feet after over-excavation and prior to backfilling. The analytical results of the samples ranged from 33 to 3,200 ppm TPH-G. The sample collection locations are shown on the attached Site Plan, Figure 3, and the sample results are summarized in Table 1, attached. Documentation of excavation, stockpiled soil characterization and disposal, and backfilling of the pit are provided in P&D's report 0047.R1 dated January 24, 1994. The sample results associated with the removal of the tanks by Accutite are also summarized in P&D's report 0047.R1.

On November 10, 1993 P&D personnel oversaw the installation of three groundwater monitoring wells, designated as MW1 through MW3, and one exploratory soil boring, designated as B1, at the subject site. The wells were developed on November 12 and sampled on November 16, 1993. The results of the water samples showed that TPH-G was not detected in wells MW1 and MW2, and that BTEX was not detected in MW2. In well MW1, 0.0022 ppm of benzene was detected. In well MW3, TPH-G was detected at 12 ppm; benzene was detected at 3.3 ppm; TRPH was not detected; EPA Method 8010 compounds were not detected except for 0.027 ppm 1,2-Dichloroethane; and EPA Method 8270 compounds were not detected except for 0.009 ppm Phenol, 0.006 ppm Benzyl Alcohol, 0.006 2-Methylphenol, 0.007 ppm 2,4-Dimethylphenol, 0.088 ppm Benzoic Acid, 0.042 ppm Naphthalene, and 0.015 2-Methylnapthalene.

Documentation of the monitoring well and soil boring installation and associated sample results are presented in P&D's report 0047.R2 dated January 24, 1994. The locations of the monitoring wells are shown in Figure 2.

In response to a letter dated March 18, 1994 from Mr. Scott Seery of the ACDEH addressed to VIP Service which commented upon the results of the initial groundwater sampling associated with the installation of the monitoring wells, a quarterly groundwater monitoring and sampling program was initiated.

On June 9, 1995, P&D personnel hand augered 5 offsite exploratory boreholes designated as boreholes P1 through P5 in the downgradient direction from the subject site. The locations of the soil borings are shown in Figure 2. The results of the groundwater grab samples showed that no gasoline or BTEX were detected in borehole P4. Gasoline and BTEX were detected in boreholes P1, P2, P3 and P5. Documentation of the soil boring installation and associated sample results are presented in P&D's report 0047.R8 dated July 14, 1995. Based upon the sample results, Mr. Scott Seery of the ACDEH requested that further investigation be performed.

On November 17, 1995, P&D personnel hand augered 5 offsite exploratory boreholes designated as boreholes P6 through P10 for the collection of groundwater grab samples. The locations of the soil borings are shown in Figure 2. The results of the groundwater grab samples showed that no gasoline or BTEX were detected in boreholes P6, P8, and P10. Gasoline and BTEX were detected in boreholes P7, and P9. Documentation of the soil boring installation and associated sample results are presented in P&D's report 0047.R11 dated December 27, 1995. Based upon the sample results, Mr. Scott Seery of the ACDEH requested in a letter dated January 10, 1996 that further investigation be performed.

On August 8 and 9, 1996, P&D personnel hand augered 5 offsite exploratory boreholes designated as boreholes P11 through P15 for the collection of groundwater grab samples. The locations of the soil borings are shown in Figure 2. The results of the groundwater grab samples showed that no gasoline or BTEX were detected in boreholes P11, P13, P14, and P15. Gasoline was detected in borehole P12. Documentation of the soil boring installation and associated sample results are presented in P&D's report 0047.R15 dated October 9, 1996.

Based upon the sample results, Mr. Scott Seery of the ACDEH met with Mr. Patel of VIP Service and Paul king of P&D Environmental on November 8, 1996 to discuss corrective actions. In a letter dated November 8, 1996 Mr. Seery requested that a risk-based corrective action evaluation to be performed and that an underground utility survey be performed to identify utility trenches which could be potential conduits for petroleum hydrocarbon vapors.

On February 7, 2001 Mr. Scott Seery of the ACDEH, Mr. Chuck Headlee of the Regional Water Quality Control Board, San Francisco Bay Region, and Mr. Paul King of P&D met at the ACDEH offices. During the meeting, it was agreed that additional soil and groundwater grab samples would be collected to increase the density of information available for delineation of petroleum hydrocarbons in soil and groundwater in the immediate vicinity of the site. In a letter dated April 16, 2001 Mr. Seery requested a work plan for additional subsurface investigation.

GEOLOGY AND HYDROGEOLOGY

Based upon review of the historical quarterly groundwater monitoring data for the subject site, the groundwater flow direction at the subject site has historically been predominantly westerly, with little change in the flow direction. Sample results from wells MW1 and MW2 have historically not shown detectable concentrations of petroleum hydrocarbons. In well MW3, TPH-G concentrations have historically ranged from 5.5 to 24 ppm.

During the offsite groundwater grab sample subsurface investigation groundwater was initially encountered in the boreholes at depths of approximately 8 to 9 feet below grade. Borehole static water levels were not evaluated.

Review of the subsurface conditions for the subject site and adjacent downgradient sites indicates that these sites are underlain by silty clay to a depth of approximately 10 to 15 feet below grade. Beneath the silty clay layer, a sand layer was encountered in the boreholes for all three of the groundwater monitoring wells (MW1 through MW3) and in ten of the fifteen boreholes for the groundwater grab samples (P1 through P5 and P9 through P13). The depth at which the sand layer is encountered generally appears to become shallower in the westward direction. This sand layer is interpreted to be continuous beneath the subject site and the area of the offsite groundwater quality investigation.

The comparatively low concentration of petroleum hydrocarbons in sample P2 is interpreted to be associated with the finer grained materials which were encountered in boreholes P2 and P6, resulting in impeded contaminant migration in the vicinity of these two boreholes and a divergent groundwater flow towards locations P3 and P9. Groundwater isoconcentration contours showing the estimated locations of 100, 10 and 1 ppm and not detected (ND) TPH-G contours are shown on Figure 2. BTEX contours were similar to and fully encompassed by the TPH-G contours.

SCOPE OF WORK

In order to further define the nature and extent of petroleum hydrocarbons in the vicinity of the subject site, P&D will perform the following tasks:

- Regulatory agency coordination, including permitting for drilling of 12 soil borings.
- Health and safety plan preparation.
- Client and contractor (driller and laboratory) coordination.
- Soil boring oversight.
- Collection of one soil sample and one groundwater sample from each borehole.
- Arrange for sample analysis.
- Report preparation documenting collection of soil and groundwater samples and the laboratory analytical results.

Each of these is discussed below in detail.

Permitting and Regulatory Coordination

Offsite access will be obtained from the offsite property owner, a permit will be obtained for the installation of the soil borings from the Alameda County Department of Public Works, and Underground Service Alert will be notified for underground utility location. In addition, notification will be provided to the ACDEH of the scheduled drilling dates.

Health and Safety Plan Preparation

A health and safety plan will be prepared for the scope of work identified in this work plan.

Client and Contractor Coordination

Following ACDEH approval of this work plan, UST Fund pre-approval will be obtained. Following UST Fund approval, permits will be obtained and field activities will be scheduled with the ACDEH, client, drillers, and the laboratory.

Soil Boring Oversight and Sample Collection

A total of 12 soil borings, designated as borings P16 through P27, will be drilled to characterize subsurface conditions in the vicinity of the subject

site. The boreholes will be drilled to total depths of approximately 10 to 12 feet, or two feet below first encountered groundwater, whichever is greater. Two soil and one groundwater grab sample will be collected from each borehole for laboratory analysis. The soil samples collected for laboratory analysis will be from the depths of four and nine feet. The groundwater grab sample will be collected using a Teflon or stainless steel bailer. The proposed locations of the soil borings are shown on the attached Site Vicinity Map, Figure 2.

why 4 and 9?

All of the borings will be continuously cored using GeoProbe technology. The soil from all of the borings will be logged in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. All soil samples from the boreholes will be evaluated with a 10.3 eV Photoionization Detector (PID) calibrated using a 100 ppm isobutylene standard. Chain of custody procedures will be observed for all sample handling.

All drilling and sampling equipment will be cleaned with an Alconox solution followed by a clean water rinse prior to use in each borehole. Following completion of sample collection activities, the boreholes will be filled with neat cement grout. Any soil or water generated during drilling will be stored in drums at the subject site pending characterization and disposal.

Arrange for Sample Analysis

All of the soil and groundwater samples will be analyzed on a normal (five working day) turn around basis at McCampbell Analytical, Inc. McCampbell Analytical, Inc. is a State-approved hazardous waste testing laboratory. Soil and groundwater sample analysis will be performed for all of the samples for TPH-Gasoline, BTEX and MTBE by EPA Method 8020. In all groundwater samples where MTBE is detected, MTBE confirmation analysis will be performed using EPA Method 8260.

Report Preparation

Upon receipt of the laboratory analytical results, a report will be prepared. The report will document soil and groundwater sample collection and sample results. The report will include a site plan showing the drilling locations, tables summarizing the sample results, recommendations for offsite groundwater monitoring well locations, recommendations for Corrective Action Plan (CAP) preparation, and the 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 pre-approval 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
Drill boreholes	Day 68
Receipt of soil and groundwater sample results	Day 75
Submittal of draft report to client for review	Day 85
Submittal of final report to ACDEH	Day 95

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

Attachments: Site Location Map - Figure 1
Site Vicinity Map - Figure 2
Site Plan Showing Former UST Pit - Figure 3

cc: Mr. Lalji Patel & Mr. Pawan Gupta, VIP Service

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TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS
FUEL TANK PIT SOIL SAMPLES FOLLOWING OVER-EXCAVATION
(Samples Collected on October 19, 1993)

Sample No.	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes
TP1-10.0	120	4.6	3.0	1.6	8.9
TP2-10.0	210	1.8	1.7	27	15
TP3-10.0	1,800	23	68	27	160
TP4-10.0	750	13	46	15	87
TP5-10.0	1,300	13	63	17	110
TP6-10.0	980	6.7	22	18	109
TP7-10.0	3,200	24	220	80	430
TP8-10.0	33	0.064	0.090	0.13	0.24

NOTE:

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
Results are in parts per million (ppm), unless otherwise indicated.

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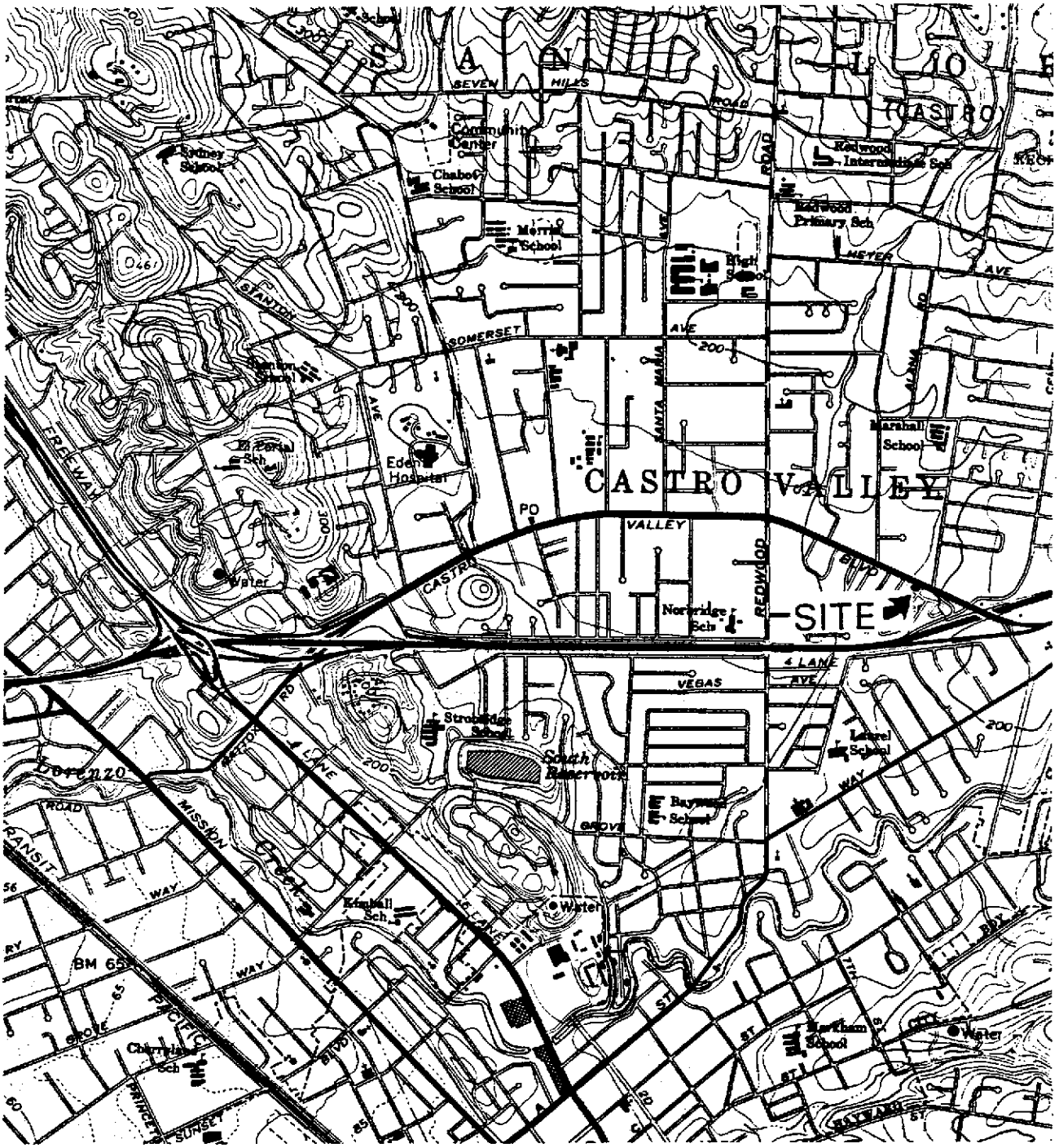

Base Map From
U.S. Geological Survey
Hayward, Calif.
7.5 Minute Quadrangle
Photorevised 1980

N

Scale in Feet
0 1000 2000 3000

Figure 1
SITE LOCATION MAP
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

P & D ENVIRONMENTAL
A Division of Paul H. King, Inc.
4020 Panama Court
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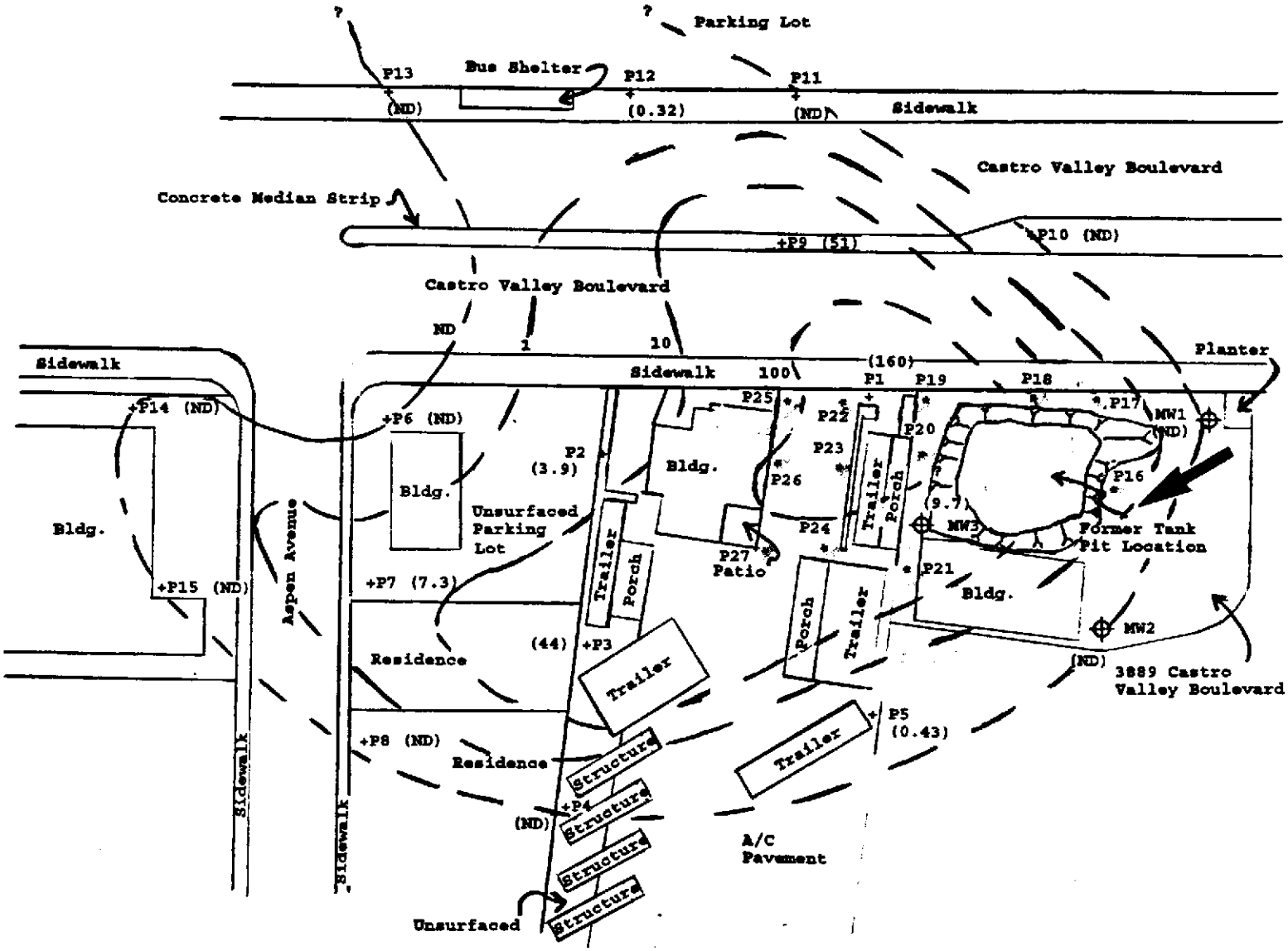


(9.7) ⊕ LEGEND
Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 23, 1996.

(160) + Groundwater Grab Sample Collection Location and TPH-Gasoline Concentration on June 9, 1995 (P1-P5), November 17, 1995 (P6-P10), and August 8 and 9, 1996 (P11-P15)

Groundwater Isoconcentration Contour for TPH-Gasoline in ppm

Groundwater Flow Direction on April 23, 1996

Existing Soil Boring

* Proposed Borehole Location

North

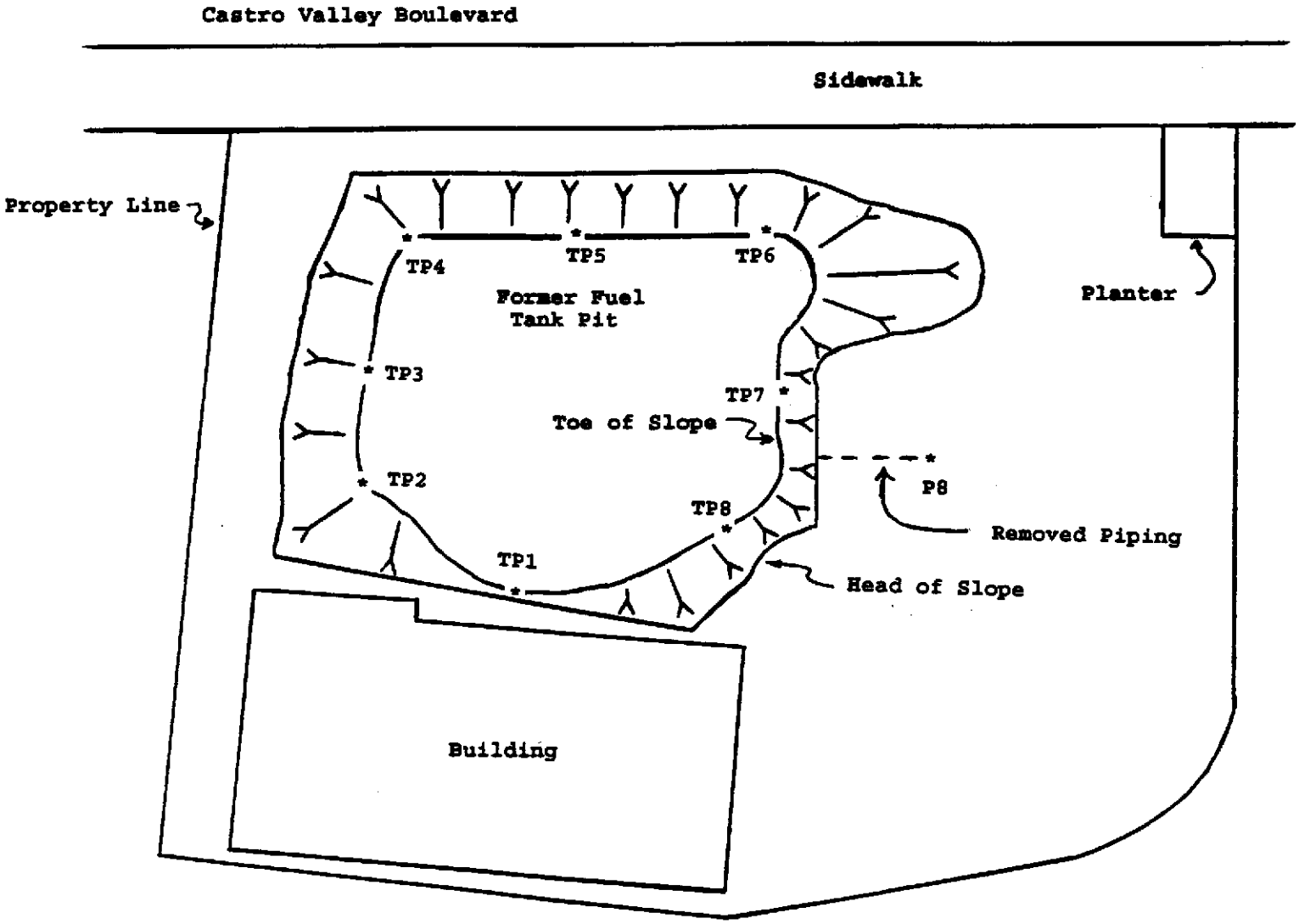
0 30 60

Scale in Feet

Base Map From
P&D Environmental
October, 1993
January, 1995
June, 1995
Prepared Using a
Rolatape

Figure 2
SITE VICINITY MAP
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

P & D ENVIRONMENTAL
300 Monte Vista, #101
Oakland, CA 94611
Telephone (510) 658-6916



Base Map From
P&D Environmental
October, 1993

Figure 3
SITE PLAN
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California