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

May 20, 1998
Report 0047.R21

Mr. L.B. Patel
Mr. P. Gupta
VIP Service
385 Century Circle
Danville, CA 94526

SUBJECT: **POTENTIAL RECEPTOR EVALUATION REPORT**
VIP Service
3889 Castro Valley Blvd.
Castro Valley, CA

Gentlemen:

P&D Environmental, a division of Paul H. King, Inc. (P&D) is pleased to present this report documenting the results of our potential receptor evaluation for the vicinity of the subject site. This work was performed in accordance with a request set forth in a letter from Mr. Scott Seery of the Alameda County Department of Environmental Health (ACDEH) dated February 2, 1998 and P&D's proposal 021098.P2 dated February 10, 1998.

The scope of work consisted of the following tasks.

- **Visually evaluated and recorded building foundation construction** conditions of the permanent structures located downgradient and within the groundwater petroleum hydrocarbon plume boundaries in the study area. These locations were evaluated to determine if conditions are conducive for completion of vapor pathways for petroleum hydrocarbon migration.
- **Evaluated depths of utilities within the study area** which may be conducive for completion of vapor pathways for petroleum hydrocarbon migration.
- **Determined if additional potential receptor populations may be identified** based on the information obtained above.
- **Recommended locations for the collection of soil gas samples** to evaluate all potential vapor receptor populations.

Each of these is discussed below.

BACKGROUND

Following collection of offsite groundwater grab samples and delineation of the extent of petroleum hydrocarbons in groundwater in the vicinity of the subject site, a Tier 2 Risk-Based Corrective Action Evaluation (RBCA) was performed. In addition, **a survey of underground utility locations was performed in an area coincident with the area of impacted groundwater.** Documentation of the RBCA and underground utilities is provided in P&D's Risk-Based Corrective Action Evaluation Tier 2 (Report 0047.RBCA TR2) dated October 16, 1997. Based upon the results of the RBCA, additional evaluation of potential vapor pathways and receptor populations was requested by the ACDEH. The following maps showing the site location, site vicinity and utilities in the study area are attached with this report.

- Figure 1: Site Location Map
- Figure 2: Site Vicinity Map

- Figure 3: Site Vicinity Map Showing Underground Utility Trenches for Sanitary Sewer Lines
- Figure 4: Site Vicinity Map Showing Underground Utility Trenches for Gas Lines
- Figure 5: Site Vicinity Map Showing Underground Utility Trenches for Electrical Lines
- Figure 6: Site Vicinity Map Showing Underground Utility Trenches for Water Lines
- Figure 7: Site Vicinity Map Showing Underground Utility Trenches for Telephone Lines

PERMANENT STRUCTURE FOUNDATION CONSTRUCTION EVALUATION

A total of four permanent structures were identified and evaluated for type of foundation construction downgradient of the subject site and within the boundaries of the petroleum hydrocarbon plume identified in the vicinity of the subject site. The addresses for the structures are as follows.

- 3875 Castro Valley Boulevard (a residence located at the front of the trailer park).
- 3849 Castro Valley Boulevard (a business located at the corner of Aspen Avenue and Castro Valley Boulevard).
- 21100 Aspen Avenue (a residence).
- 21106 Aspen Avenue (a residence).

The foundation construction of the structures was identified as follows.

3875 Castro Valley Boulevard

The property is used as a trailer park, and the structure is used as a residence at the front of the trailer park. Based upon visual observation, the structure foundation consists of a slab-on-grade construction. The absence of ventilation beneath the foundation slab of the structure indicates the potential for completion of vapor pathways for petroleum hydrocarbon migration if petroleum hydrocarbons are present in soil or utility trench backfill materials beneath the structure.

3849 Castro Valley Boulevard

The property is used as an income tax office, and is located at the corner of Aspen Avenue and Castro Valley Boulevard. The portion of the property which is not covered by the structure consists of unpaved, gravel-covered parking lot.

Based upon visual observation, the structure foundation does not consist of a slab-on-grade construction. Rather, the foundation consists of a conventional perimeter footing. The property surface is sloped to the southwest, and a ventilated crawl space is present beneath the structure. The height of the crawl space appears to vary in height from a few inches on the north side of the building (the side closest to Castro Valley Boulevard) to approximately 1.5 feet on the south side of the building (the side farthest from Castro Valley Boulevard). The presence of the crawl space and associated ventilation beneath the raised floor of the structure indicates minimal, if any potential for completion of detectable vapor pathways for petroleum hydrocarbon migration if petroleum hydrocarbons are present in soil or utility trench backfill materials beneath the structure.

21100 Aspen Avenue

The property is used as a residence. Based upon visual observation, the structure foundation consists of a slab-on-grade construction. The absence of ventilation beneath the foundation slab of the structure indicates the potential for completion of vapor pathways for petroleum hydrocarbon migration if petroleum hydrocarbons are present in soil or utility trench backfill materials beneath the structure.

21106 Aspen Avenue

The property is used as a residence. Based upon visual observation, the structure foundation does not consist of a slab-on-grade construction. However, a garage located on the northern side of the property which is attached to the house appears to have a floor which is slab-on-grade construction. The property surface is sloped to the southwest, and a ventilated crawl space is present beneath the residential structure. The height of the crawl space is unknown. The property owner would not identify their name and would not allow access to evaluate the crawl space height. However, the property owner did confirm the presence of the crawl space beneath the structure.

The presence of the crawl space and associated ventilation beneath the foundation slab of the structure indicates minimal, if any potential for completion of detectable vapor pathways for petroleum hydrocarbon migration directly into the building if petroleum hydrocarbons are present in soil or utility trench backfill materials beneath the structure. However, the slab-on-grade construction of the attached garage indicates the potential for completion of vapor pathways for petroleum hydrocarbon migration into the garage if petroleum hydrocarbons are present in soil or utility trench backfill materials beneath the garage.

UTILITY DEPTH EVALUATION

The depths of utilities within the study area were evaluated to determine which utilities may be conducive for completion of vapor pathways for petroleum hydrocarbon migration. Based upon a study area reconnaissance and a telephone call with Underground Service Alert, the following utilities were identified and evaluated in the study area.

- Sanitary sewer.
- PG&E gas.
- PG&E electrical.
- Water (EBMUD).
- Telephone.

Each is discussed below.

Sanitary Sewer

Maps provided by the Castro Valley Sanitary District were reviewed for the locations of sanitary sewer trenches and manhole locations and depths. A sanitary sewer trench was identified parallel to Castro Valley Boulevard and approximately 15 feet from the subject property boundary. A manhole with a depth of 5.1 feet was identified 75 feet east of the subject property, and a second manhole with a depth of 13.4 feet was identified at the intersection of Castro Valley Boulevard and Aspen Avenue. The calculated depth of the sanitary sewer trench in Castro Valley Boulevard in front of the permanent structure at 3875 Castro Valley Boulevard is 10.5 feet, assuming a uniform grade of the trench.

Similarly, two sanitary sewer trenches were identified parallel to Aspen Avenue. One trench is approximately 20 feet from the east side of Aspen Avenue,

and the other trench is approximately 35 feet from the east side of Aspen Avenue. The easternmost trench contains a manhole approximately 360 feet south of the intersection of Castro Valley Boulevard and Aspen Avenue with a depth of 9.00 feet, and a second manhole with a depth of 13.40 feet at the intersection of Castro Valley Boulevard and Aspen Avenue. **The calculated depth of the sanitary sewer trench in Aspen Avenue in front of the permanent structures at 21106 and 21100 Aspen Avenue are approximately 11.3 and 13.6 feet, respectively,** assuming a uniform grade of the trench.

The depths of the sanitary sewer trenches for the properties at 3875 Castro Valley Boulevard and 21100 and 21106 Aspen Avenue indicate that the sanitary sewer trenches may be below the water table at these locations. For this reason, the sanitary sewer lateral trenches for these properties may be considered as having the potential to be complete vapor pathways. - and conduits for GW transport beyond the area of the known plume

PG&E Gas

PG&E gas utilities were identified as below ground for all of the structures. However, the utility pipes enter above ground meter boxes exterior to the structures of concern. The gas pipes enter the structures from the meter boxes at a location which is above ground. For this reason, the potential for completion of vapor pathways for buried PG&E gas utilities at all of the structures is negligible.

PG&E Electrical

PG&E electrical utilities were identified as above ground for the two structures on Aspen Avenue (21100 and 21106 Aspen Avenue) and for 3849 Castro Valley Boulevard. The depth of burial was not known by the utility company for the location where these utilities are buried along Castro Valley Boulevard (3875 Castro Valley Boulevard). The above ground utilities are not conducive for completion of subsurface vapor pathways for petroleum hydrocarbon migration into permanent structures.

Although the trench of any buried utility may be a potential conduit for petroleum hydrocarbon vapor migration, it is not possible to evaluate the degree of the potential for completion of vapor pathways without knowing the depth of utility burial. The depth of utility burial allows comparison of the trench depth with the depth of suspected or known petroleum hydrocarbons in soil or groundwater. For this reason, the potential for completion of vapor pathways for buried PG&E electrical utilities at **3875 Castro Valley Boulevard** is unknown. **Because of the shallow depth of petroleum hydrocarbon vapors at this property, it will be conservatively assumed that the PG&E electrical utility trench for this property may be considered as having the potential to be a complete vapor pathway.**

Water (EBMUD)

Water supply pipes maintained by East Bay Municipal Utilities District (EBMUD) were reported by EBMUD to be buried at total depths ranging from 54 to 62 inches below the ground surface. Based upon conversations with Mr. David Dimpster of EBMUD, the trench backfill material is unknown because the utilities were installed a long time ago. The burial depths (bottom of the trench) for the EBMUD utility for each permanent structure in the study area are as follows.

Site Address	Utility Depth in Inches
3875 Castro Valley Boulevard	62
3849 Castro Valley Boulevard	54
21100 Aspen Avenue	52
21106 Aspen Avenue	48

~ 4 - 5.2'

Groundwater was encountered at a depth of approximately 10 feet in boreholes for offsite groundwater grab samples in the vicinity of the subject site. With the exception of 3875 Castro Valley Boulevard, petroleum hydrocarbon vapors in soil in the boreholes were detected at a depth of approximately one foot above the water table. **At 3875 Castro Valley Boulevard, petroleum hydrocarbons were detected in soil in the boreholes at shallower depths adjacent to the subject site.** For the sites other than at 3875 Castro Valley Boulevard, the depth of burial of the EBMUD utilities is shallower than depth at which petroleum hydrocarbons were detected in soil. For this reason, **the EBMUD utility trenches at sites other than 3875 Castro Valley Boulevard are considered to have a low potential for completion of vapor pathways.**

However, because of the shallow depth of petroleum hydrocarbon vapors in soil at 3875 Castro Valley Boulevard adjacent to the subject site, in conjunction with the depth of EBMUD utility burial, the EBMUD utility trench for this property may be considered as having the potential to be a complete vapor pathway.

Telephone

Telephone utilities were identified as above ground for the two structures on Aspen Avenue (21100 and 21106 Aspen Avenue) and for 3849 Castro Valley Boulevard. The depth of burial was not known by the utility company for the location where these utilities are buried along Castro Valley Boulevard (3875 Castro Valley Boulevard). The above ground utilities are not conducive for completion of subsurface vapor pathways for petroleum hydrocarbon migration into permanent structures. Although the trench of any buried utility may be a potential conduit for petroleum hydrocarbon vapor migration, it is not possible to evaluate the potential for completion of vapor pathways without knowing the depth of utility burial. For this reason, the potential for completion of vapor pathways for buried telephone utilities at 3875 Castro Valley Boulevard is unknown. However, because of the shallow depth of petroleum hydrocarbon vapors at this property, it will be conservatively assumed that the telephone utility trench for this property may be considered as having the potential to be a complete vapor pathway.

IDENTIFICATION OF ADDITIONAL POTENTIAL RECEPTOR POPULATIONS

Based upon review of utility trenches which may potentially permit the completion of vapor pathways for petroleum hydrocarbons into permanent structures, **it appears that the sanitary sewer trenches may cause petroleum hydrocarbons to extend beyond the area of known groundwater contamination.** The reason for this is that the sanitary sewer trenches appear to be at depths which are below the water table in areas where groundwater is impacted by petroleum hydrocarbons, and that these trenches extend beyond the known area of groundwater impacted by petroleum hydrocarbons.

SOIL GAS SAMPLE COLLECTION RECOMMENDATIONS

Based upon review of utility trenches which may potentially permit the completion of vapor pathways for petroleum hydrocarbons into permanent structures, **P&D recommends that the sanitary sewer trenches be sampled at locations where the sanitary sewer trenches are at depths below the water table and extend beyond the identified extent of petroleum hydrocarbons in groundwater.** P&D recommends that one soil gas sample be collected from each end of each trench which meets these criteria. **A total of two samples would be collected in Aspen Avenue, and a total of three samples would be collected in Castro Valley Boulevard from the utility trench backfill material.**

P&D also recommends that the sanitary sewer trenches be evaluated where they enter the permanent structures at 3875 Castro Valley Boulevard and 2110 and

21106 Aspen Avenue. Similarly, the utility trenches for [illegible] electrical, water (EBMUD), and telephone be evaluated where they enter the permanent structure at 3875 Castro Valley Boulevard.

DISTRIBUTION

Copies of this report should be distributed to Mr. Scott Seery at the Alameda County Department of Environmental Health, and to the San Francisco Bay Regional Water Quality Control Board. Copies of the report should be accompanied by a transmittal report signed by the principal executive officer of VIP Service.

LIMITATIONS

This report was prepared solely for the use of VIP Service. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgement based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly-revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

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

Sincerely,

P&D Environmental

Paul H. King

Paul H. King
Hydrogeologist

Don R. Braun

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

Attachments: Figures 1 through 7

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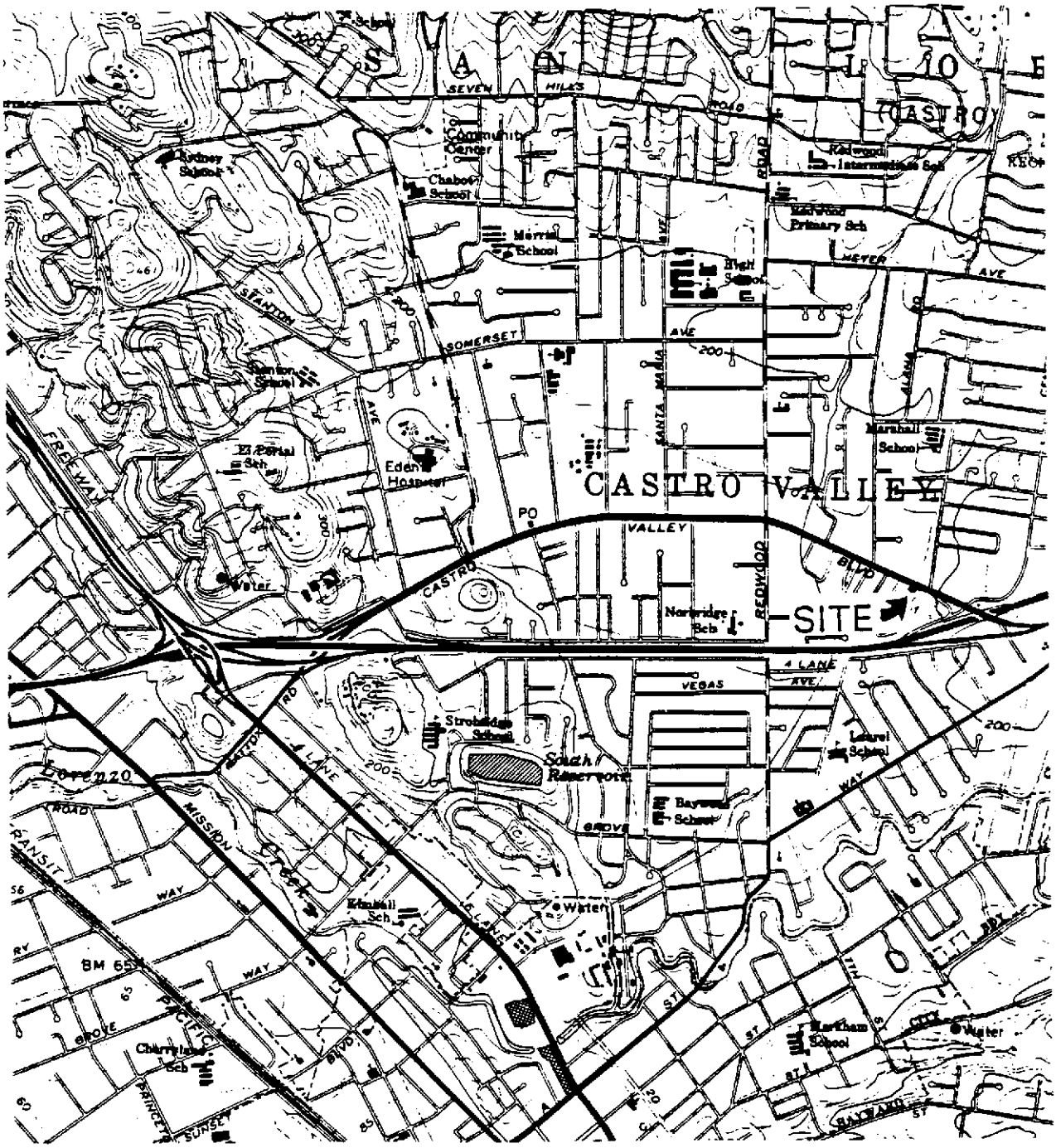

Base Map From
U.S. Geological Survey
Hayward, Calif.
7.5 Minute Quadrangle
Photorevised 1980

N

Scale in Feet
0 1000 2000 3000

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

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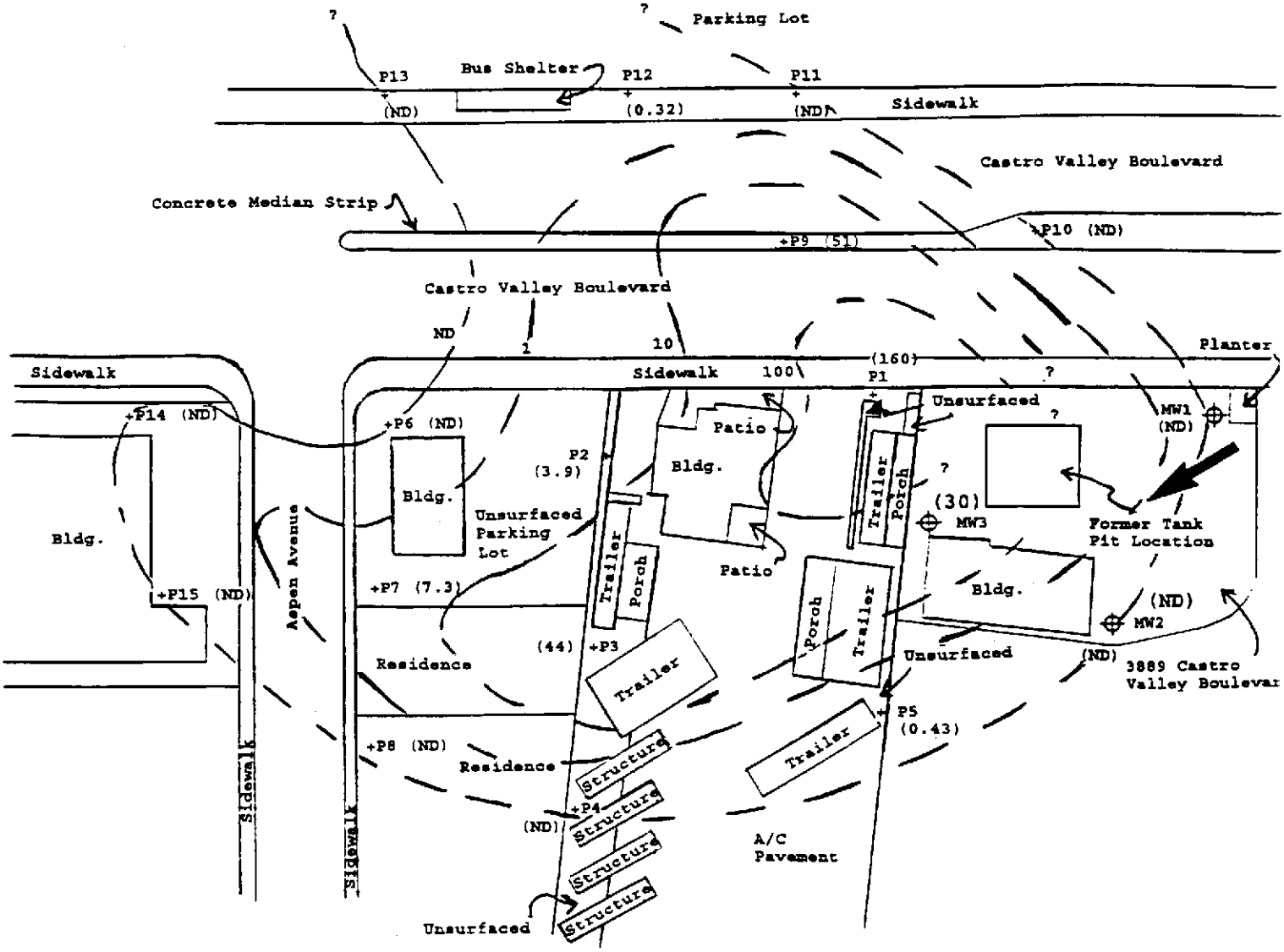

LEGEND

(30) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.

(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 25, 1997

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

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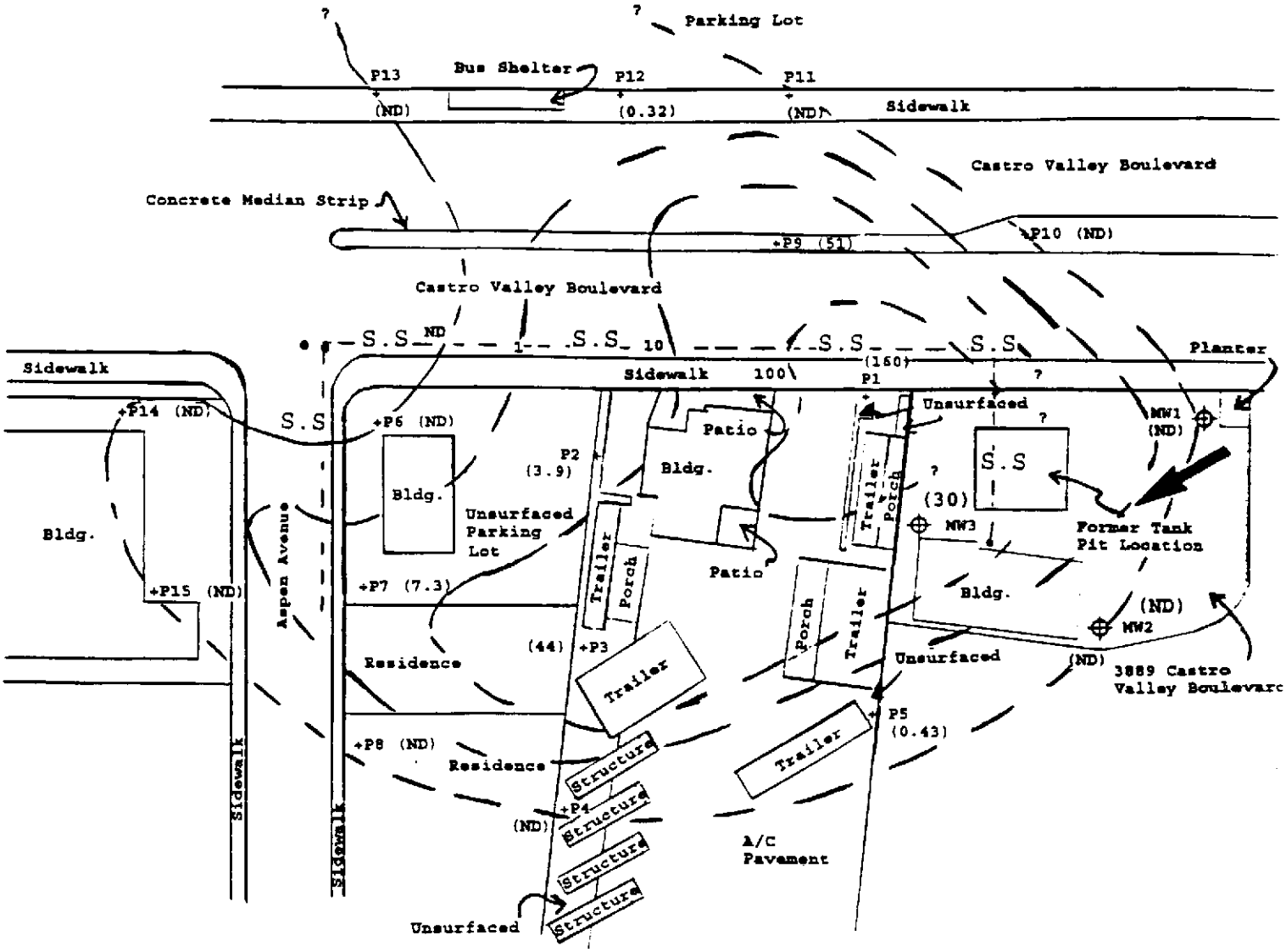

LEGEND

--S.S--	Sanitary Sewer Lines
(30) ⊕	Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.
(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 25, 1997

North

0 30 60

Scale in Feet

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

Figure 3
SITE VICINITY MAP
Showing Underground Utility Trenches for Sanitary Sewer Line
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

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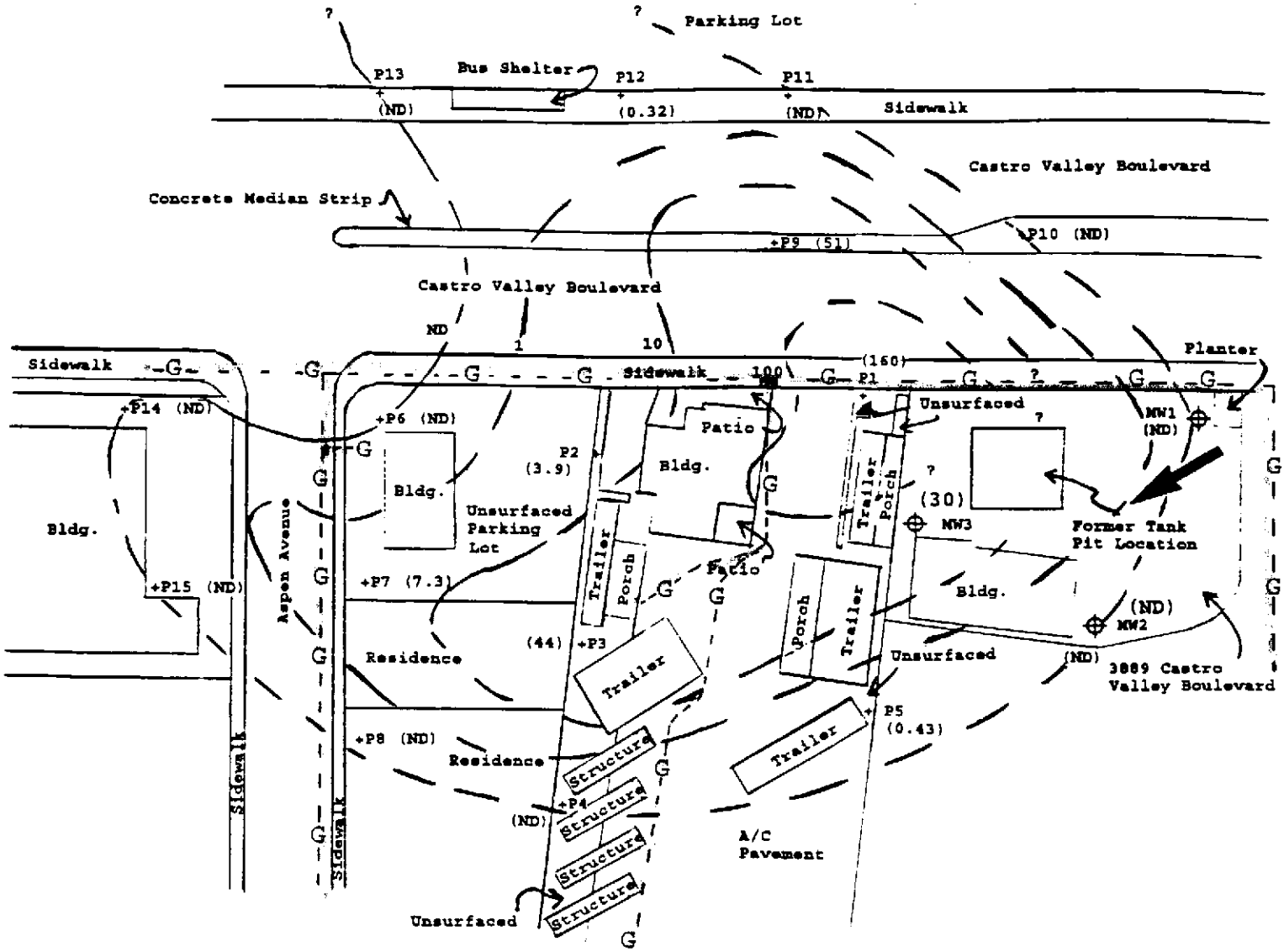

LEGEND

--G-- Gas Lines

(30) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.

(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 25, 1997

North

0 30 60

Scale in Feet

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

Figure 4
SITE VICINITY MAP
Showing Underground Utility Trenches for Gas Lines
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

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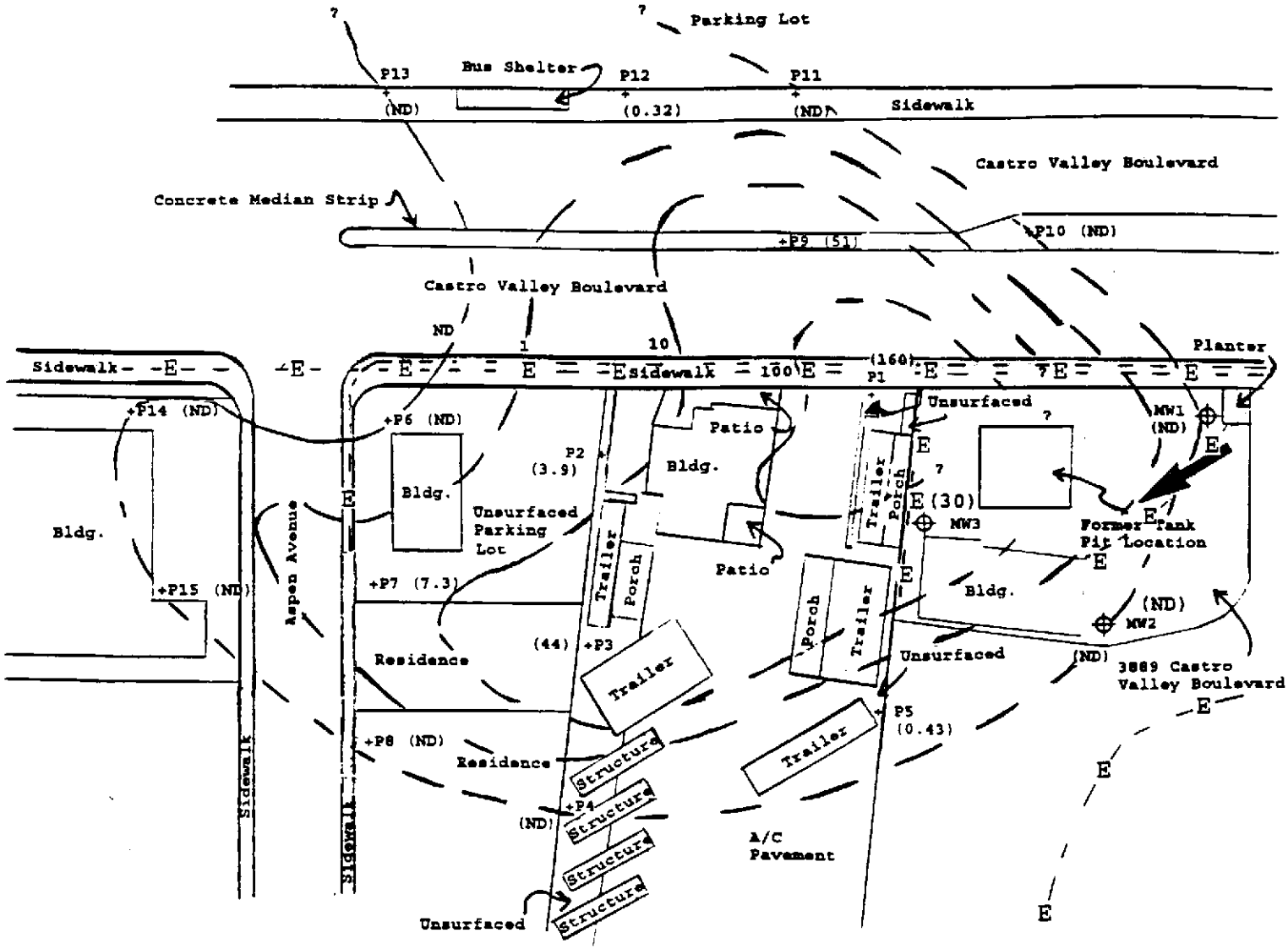

LEGEND

--E-- Electrical Lines

(30) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.

(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 25, 1997

North

0 30 60

Scale in Feet

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

Figure 5
SITE VICINITY MAP
Showing Underground Utility Trenches for Electrical Lines
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

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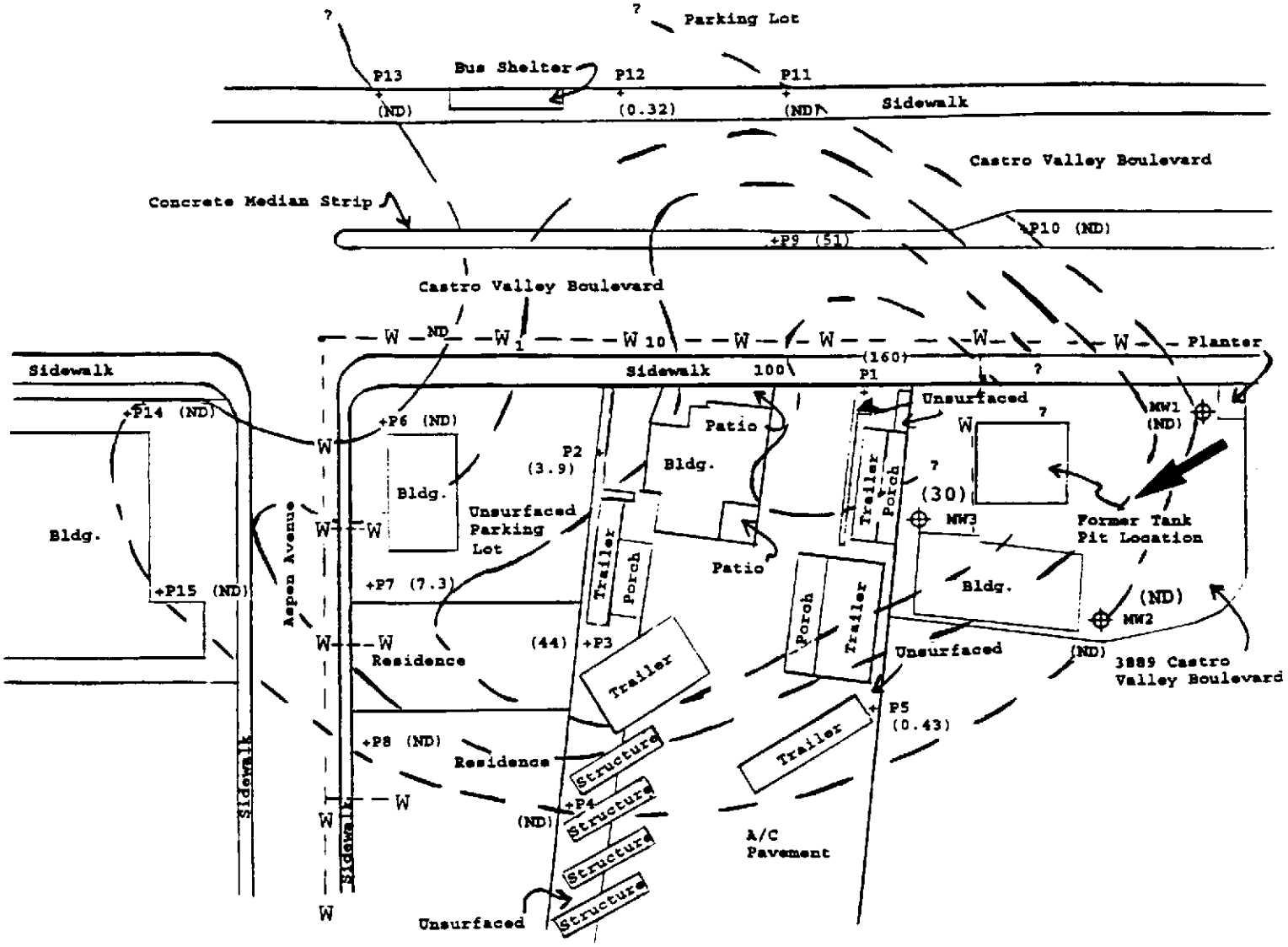

LEGEND

--W-- Water Lines

(30) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.

(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 25, 1997

North

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

0 30 60
Scale in Feet

Figure 6
SITE VICINITY MAP
Showing Underground Utility
Trenches for Water Lines
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California

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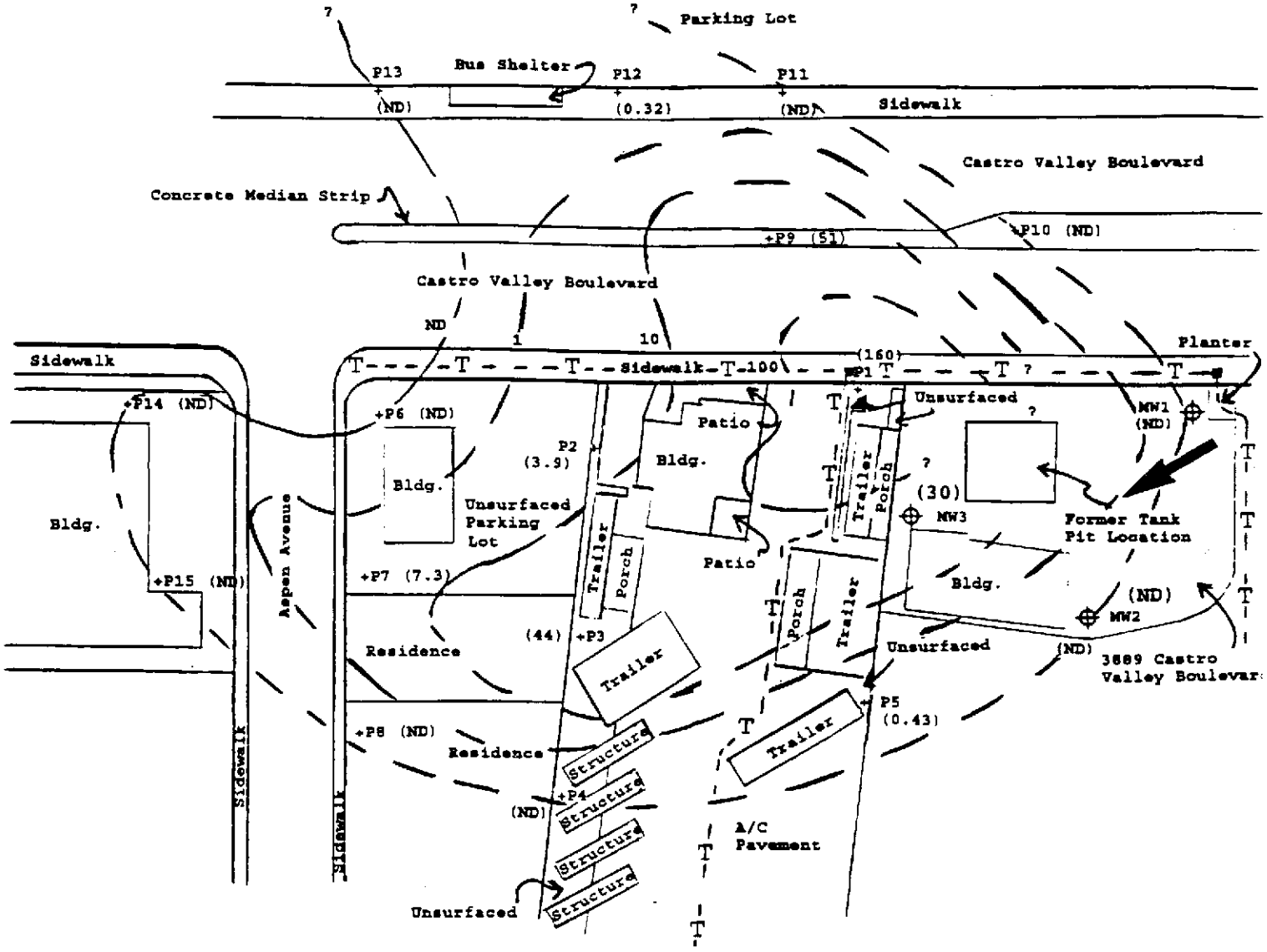

LEGEND

--T-- Telephone Lines

(30) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on April 25, 1997.

(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 25, 1997

North

0 30 60

Scale in Feet

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

Figure 7
SITE VICINITY MAP
Showing Underground Utility
Trenches for Telephone Lines
VIP Service
3889 Castro Valley Blvd.
Castro Valley, California