# P & D ENVIRONMENTAL

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916


December 27, 1995
Report 0047.R11

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

SUBJECT: Offsite Groundwater Quality Investigation Report
VIP Service
3889 Castro Valley Blvd.
Castro Valley, CA

Gentlemen:

P&D Environmental (P&D) is pleased to present this report documenting the collection of five offsite groundwater grab samples, designated as P6 through P10, to evaluate groundwater quality in the vicinity of the subject site. The groundwater grab samples were collected on November 17, 1995. This work was performed in accordance with a letter from Mr. Scott Seery of the Alameda County Department of Environmental Health (ACDEH) dated August 1, 1995 requesting the investigation and P&D's proposal 081095.P1 dated August 10, 1995. A Site Location Map (Figure 1) and a Site Vicinity Map (Figure 2) are attached with this report.

P&D obtained permits for the groundwater grab sample locations from the Alameda County Water Agency, Zone 7; obtained permits from the Alameda County Department of Public Works for the groundwater grab sample locations in the Castro Valley Boulevard median strip; obtained permission for offsite property access from the property owners for the properties located at 3849 Castro Valley Boulevard and 21106 Aspen Avenue; notified Underground Service Alert for buried utility location; notified the ACDEH of the date for field activities; and prepared a health and safety plan.

All work was performed under the direct supervision of an appropriately registered professional. This report 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 underground tank system 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. 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 samples 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; BTEX was detected with benzene 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 at the subject site, 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 was detected in borehole P4. Gasoline and BTEX were detected in boreholes P1, P2, P3 and P5. The sample results are presented in Table 1. 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.

FIELD ACTIVITIES

On November 17, 1995 P&D personnel hand augered boreholes P6 through P10 for the collection of groundwater grab samples. The groundwater grab sample collection locations are shown on Figure 2. In addition, the groundwater levels were monitored in the three groundwater monitoring wells at the subject site. The measured depth to water in wells MW1, MW2 and MW3 on November 17, 1995 was 10.20, 9.86 and 9.55 feet, respectively.

The boreholes were hand augered with a 3.5-inch outside diameter hand auger. All of the boreholes were hand augered to total depths of between approximately 9.0 and 14.5 feet below grade. Boreholes P6, P7, P8, P9 and P10 were hand augered to depths of 14.0, 9.0, 14.5, 11.0 and 11.5 feet below grade, respectively. Groundwater was first encountered at depths of 9.5, 8.0, 6.0, 9.5 and 8.5 feet below grade, respectively.

Soil from all of the boreholes was evaluated using a photoionization detector (PID). The PID was calibrated using a 100 ppm isobutylene standard prior to the beginning of field work on November 17, 1995. Petroleum hydrocarbon odors and detectable PID readings were encountered in the soil and groundwater in boreholes P7 and P9, beginning at depths of 6.5 and 7.0 feet below grade, respectively. PID readings ranged from 111 to 143 ppm in borehole P7 and from 159 to 165 ppm in borehole P9. No petroleum hydrocarbons were encountered in either the soil or groundwater in boreholes P6, P8 and P10.

The groundwater grab samples were collected from the boreholes using a Teflon bailer. In sample P9, a sheen (separate phase petroleum hydrocarbons) was visible at the time of sample collection. The hand auger and Teflon bailer were thoroughly washed with an Alconox solution followed by a clean water rinse prior to each use.

Following collection into the Teflon bailer, the groundwater grab samples were transferred to 40-milliliter Volatile Organic Analysis (VOA) vials and capped with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that no air bubbles were present. The VOA vials were then labeled and stored in a cooler with ice pending delivery to McCampbell Analytical, Inc. in Pacheco, California. McCampbell Analytical, Inc. is a State-accredited hazardous waste testing laboratory.

Following groundwater grab sample collection, the boreholes were filled with neat cement, in accordance with permit requirements. Soil generated during hand augering and water generated during decontamination procedures were stored in 55-gallon DOT-approved drums at the subject site pending appropriate disposal.

GEOLOGY AND HYDROGEOLOGY

Based on review of regional geologic maps from U.S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E.J. Helley and K.R. Lajoie, 1979 the subject site is underlain by Late Pleistocene alluvium (Qpa). The alluvium is described as typically consisting of weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand and gravel. Based on review of the regional geologic maps provided in U.S. Geological Survey Open File Report 80-540, "Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, California " by Thomas Dibblee, Jr., 1980 the alluvial materials are inferred to be underlain at depth by bedrock materials of the Upper Cretaceous Panoche Formation. Additionally, the site is situated approximately 0.8 miles northeast of the inferred trace of the East Chabot Fault and 1.7 miles northeast of the mapped trace of the active Hayward Fault.

Based upon interpretation of materials encountered in the boreholes for the monitoring wells MW1, MW2 and MW3 and the exploratory boring, B1, the site is underlain by black or brown silty clay which contains trace amounts of sand and fine gravel and extends to the approximate depths of 6 to 7 feet below grade. This black to brown silty clay is in turn underlain by gray silty clay materials which contain extensive macropores measuring approximately one millimeter (mm) in diameter and extends to the approximate depths of 12 to 13 feet below grade. Additionally, based upon observations during drilling operations, this gray silty clay zone exhibits a strong petroleum hydrocarbon odor beginning at a depth of approximately 6 to 7 feet, which extends to approximately 10.5 to 11.5 feet below grade.

In the vicinity of MW1, the gray silty clay zone is underlain by brown silty clay to a depth of 15 feet below grade. The overall silty clay horizon, varying in thickness from approximately 12.5 to 15 feet, is in turn underlain by a saturated fine-grained, poorly graded sand. [redacted] This sand layer is interpreted as the first aquifer underlying the site. The sand layer is further underlain by brown silty clay to at least the maximum depths explored of 20.5 feet below grade.

Geologic cross-sections A-A', B-B', and C-C' show the interpreted distribution of subsurface materials at the site and are presented in Figure 5 of P&D's Monitoring Well Installation Report dated January 24, 1994.

During the current investigation, boreholes P6 and P7 were hand augered in landscaped areas immediately adjacent to the sidewalk. Borehole P8 was hand augered in a gravel-covered landscaped portion of the property adjacent to the sidewalk. Boreholes P9 and P10 were hand augered in the median strip of Castro Valley Boulevard. In boreholes P9 and P10, interlayered asphalt and concrete containing rebar were encountered to a depth of approximately 2.5 feet below grade.

The subsurface materials encountered in all of the boreholes generally consisted of brown silty clay with varying degrees of orange, white, gray or green mottling. In borehole P8, black very soft silty clay was encountered to a depth of approximately 5.0 feet below grade. [redacted] a layer of coarser grained material consisting of silty sand and in some cases gravel was encountered at a depth approximately coincident with the depth at which groundwater was first encountered in the borehole.

In borehole P6, silty fine sand was encountered between the depths of approximately 8.0 and 9.5 feet, which was in turn underlain by gravel ranging up to 1.5 inches in diameter to a depth of approximately 9.7 feet. Beneath this gravel, brown silty clay was encountered to the total depth explored of approximately 14.0 feet. In borehole P7, gravel ranging in size up to one inch in diameter was encountered between the depths of approximately 8.7 and the total depth explored of approximately 9.0 feet. In borehole P8, silty fine sand was encountered between the depths of approximately 5.0 and 6.0 feet. Beneath this silty fine sand, brown silty clay was encountered to the total depth explored of approximately 14.5 feet. In borehole P9 silty fine sand was encountered between the depths of approximately 9.5 and the total depth explored of 11.0 feet. In borehole P10 silty fine sand was encountered between the depths of approximately 10.0 and the total depth explored of 11.5 feet.

The sand layers encountered in the lower portions of boreholes P9 and P10 are interpreted to be laterally continuous with the fine-grained sand layer encountered in boreholes MW1, MW2, MW3 and B1 at the subject site and in the groundwater grab sample boreholes P1 through P5.

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 westerly, with little change in the flow direction. The most recent quarterly monitoring and sampling of the groundwater monitoring wells at the site was performed on October 24, 1995. The results of the monitoring and sampling showed a TPH-G concentration of 19 ppm in well MW3. TPH-G and BTEX were not detected in wells MW1 and MW2. Based upon the measured depth to water on October 24, 1995, the calculated groundwater flow direction at the site was to the west-southwest with a gradient of 0.011.

**During the subsurface investigation on November 17, 1995, groundwater was initially encountered in boreholes P6, P7, P8, P9 and P10 at depths of 9.5, 8.0, 6.0, 9.5 and 8.5 feet below grade, respectively.** Static water levels were not evaluated in the boreholes. The measured depth to water in wells MW1, MW2 and MW3 on November 17, 1995 was 10.20, 9.86 and 9.55 feet, respectively. The groundwater flow direction at the site on November 17, 1995 was to the west with a gradient of 0.010.

LABORATORY RESULTS

All of the groundwater grab samples were analyzed for TPH-G using EPA Method 5030 in conjunction with Modified EPA Method 8015 (GCFID), and for BTEX and MTBE using EPA Method 8020.

The laboratory analytical results of the groundwater samples collected from the monitoring wells show that TPH-G and BTEX were not detected in groundwater grab samples P6, P8 and P10. In groundwater grab samples P7 and P9, TPH-G was detected at a concentration of 7.3 and 51 ppm, respectively. Benzene was not detected in the groundwater grab sample from P7, and was detected in the groundwater grab sample from P9 at a concentration of 2.0 ppm.

**Review of the laboratory analytical reports indicates that the results for grab sample P7 appear to be old gasoline and appear to be biologically degraded, and that the results for grab sample P9 appear to be unmodified or weakly modified gasoline.**

The TPH-G concentrations for the groundwater grab samples collected on May 2, 1995 from boreholes P1 through P5 and on November 17, 1995 from boreholes P6 through P9 are shown on Figure 2. In addition, the sample results for the groundwater monitoring wells from the most recent monitoring and sampling episode which occurred on October 26, 1995 are shown on Figure 2. The sample results for the samples collected from P1 through P5 are summarized in Table 1, and the

sample results for the samples collected from P6 through P10 are summarized in Table 2.

## DISCUSSION AND RECOMMENDATIONS

Review of the historical groundwater quality data for the three groundwater monitoring wells at the subject site indicates that TPH-G and BTEX have not been detected in wells MW1 and MW2, with the exception of benzene which was detected in well MW1 on November 16, 1993 and on July 29, 1994 at concentrations of 0.0022 and 0.0012 ppm, respectively.

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 seven of the ten boreholes for the groundwater grab samples (P1 through P5 and P9 and P10). 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.

Review of the groundwater flow direction data for the subject site indicates that groundwater flow has remained consistently in a westerly direction since quarterly monitoring and sampling was initiated in November, 1993. Based on the laboratory analytical results of the water samples collected from the groundwater grab sample collection locations P6 through P10, petroleum hydrocarbons appear to be present to the north of the site, as identified in the sample from borehole P9. **The presence of petroleum hydrocarbons to the north of the site in borehole P9 is interpreted to be the result of preferential movement of the petroleum hydrocarbons in the silty fine sand layer which is interpreted to be continuous beneath the site.** 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 concentrations (ND) contours are shown on Figure 2.

## DISTRIBUTION

Copies of this report should be distributed to Mr. Scott Seery at the Alameda County Department of Environmental Health, and to Mr. Richard Hiett at the San Francisco Bay Regional Water Quality Control Board. Copies of the report should be accompanied by a transmittal letter 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.

December 27, 1995
Report 0047.R11

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 us at (510) 658-6916.

Sincerely,

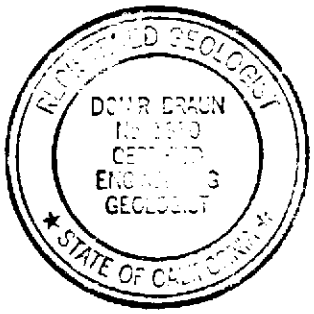
P&D Environmental

Paul H. King

Paul H. King
Hydrogeologist

Don R. Braun

Don R. Braun
Certified Engineering Geologist
Registration No.: 1310
Expiration Date: 6/30/96

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Attachments: Tables 1 & 2
Site Location Map (Figure 1)
Site Vicinity Map (Figure 2)
Laboratory Analytical Results
Chain of Custody Documentation

TABLE 1
GROUNDWATER GRAB SAMPLE
SUMMARY OF LABORATORY ANALYTICAL RESULTS

| Location No. | TPH-D | TPH-G | MTBE | Benzene | Toluene | Ethyl-benzene | Total Xylenes |
|---|---|---|---|---|---|---|---|
| | | | | Samples Collected on June 9, 1995 | | | |
| P1 | NA | 160 | NA | 27 | 27 | 3.5 | 18 |
| P2 | NA | 3.9 | NA | 0.026 | 0.0054 | 0.034 | 0.029 |
| P3 | NA | 44 | NA | 2.6 | 2.9 | 2.2 | 7.5 |
| P4 | NA | ND | NA | ND | ND | ND | ND |
| P5 | NA | 0.43 | NA | 0.040 | 0.0012 | 0.0081 | 0.0028 |

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
TPH-D = Total Petroleum Hydrocarbons as Diesel.
ND = Not Detected.
NA = Not Analyzed.
Results in parts per million (ppm), unless otherwise indicated.

TABLE 2
GROUNDWATER GRAB SAMPLE
SUMMARY OF LABORATORY ANALYTICAL RESULTS

| Location No. | TPH-D | TPH-G | MTBE | Benzene | Toluene | Ethyl-benzene | Total Xylenes |
|---|---|---|---|---|---|---|---|
| | | | Samples Collected on November 17, 1995 | | | | |
| P6 | NA | ND | 0.017 | ND | ND | ND | ND |
| P7 | NA | 7.3 | 0.067 | ND | 0.0077 | 0.010 | 0.0069 |
| P8 | NA | ND | ND | ND | ND | ND | ND |
| P9 | NA | 51 | 0.25 | 2.0 | 1.5 | 1.9 | 8.8 |
| P10 | NA | ND | ND | ND | ND | ND | ND |

TPH-G = Total Petroleum Hydrocarbons as Gasoline.
TPH-D = Total Petroleum Hydrocarbons as Diesel.
ND = Not Detected.
NA = Not Analyzed.
Results in parts per million (ppm), unless otherwise indicated.

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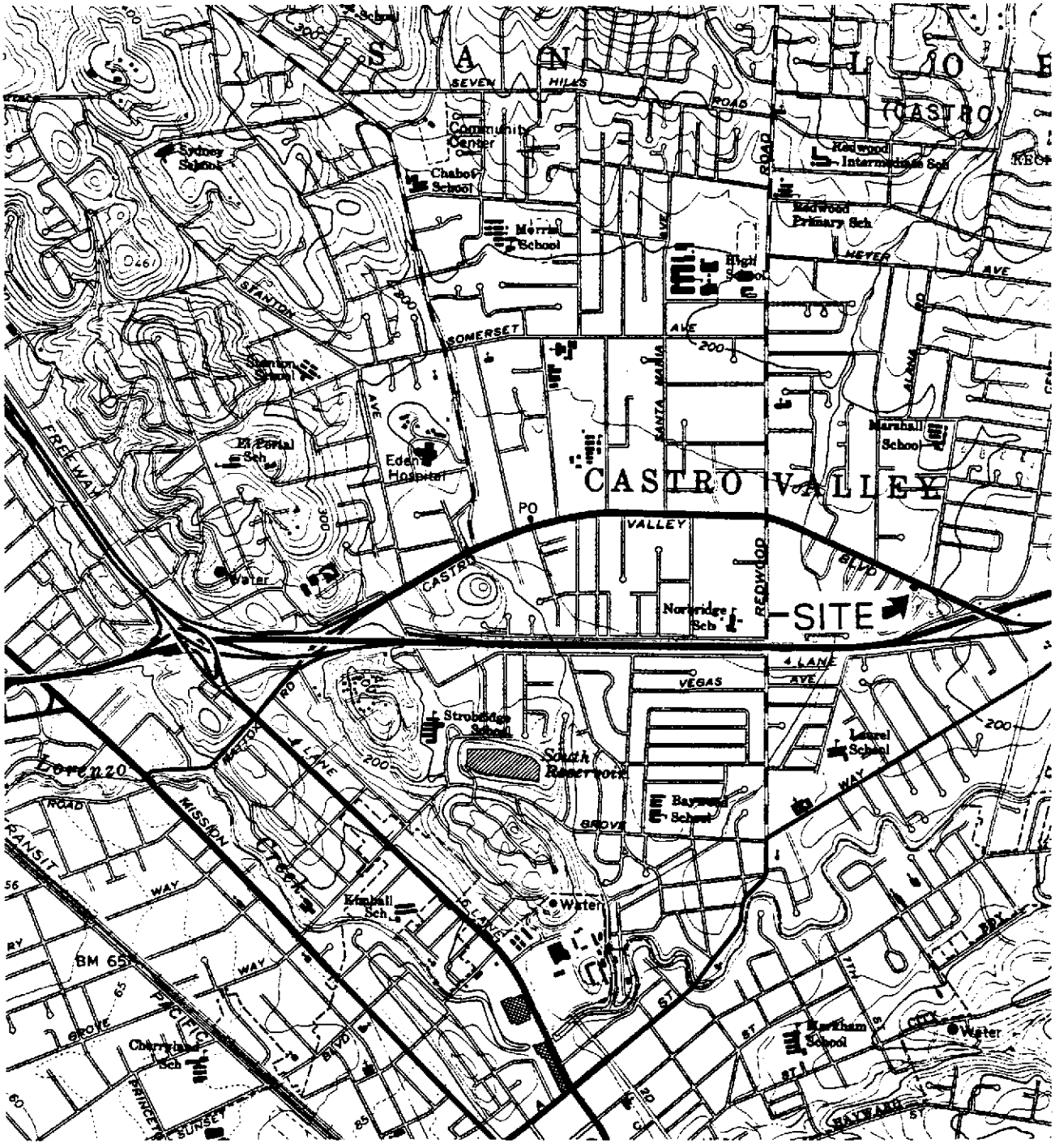
4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916


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

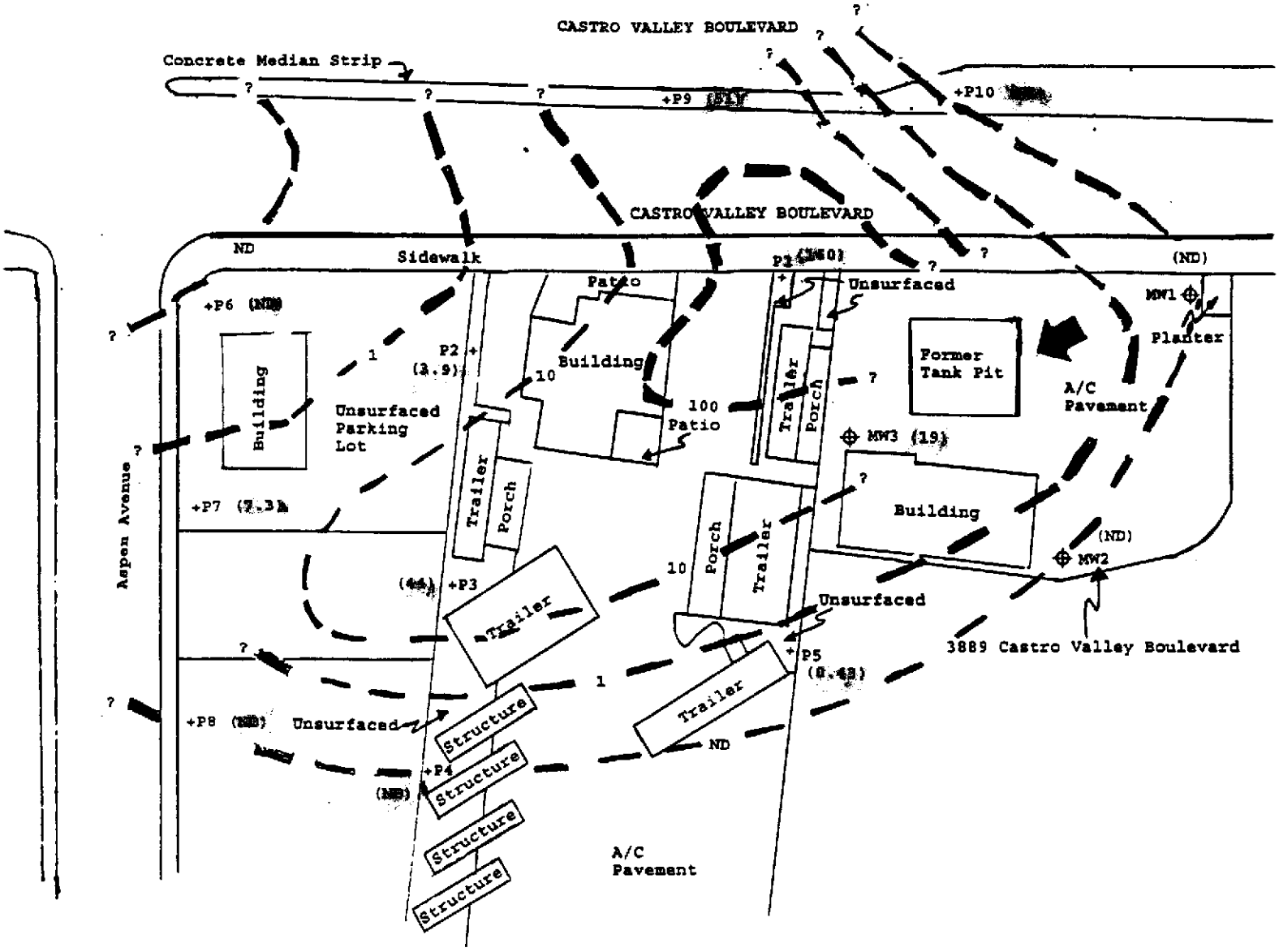
N

Scale in Feet
0 1000 2000 3000

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

# P & D ENVIRONMENTAL

4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916


**LEGEND**

(18) ⊕ Existing Groundwater Monitoring Well and TPH-Gasoline Concentration in ppm on October 26, 1995

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

Groundwater Isoconcentration Contour for TPH-Gasoline in ppm

Groundwater Flow Direction on November 17, 1995

North

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

0 25 50
Scale in Feet

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

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

| | | |
|---|---|---|
| P & D Environmental<br>4020 Panama Court<br>Oakland, CA 94611 | Client Project ID: # 0047; VIP Service-Castro Valley | Date Sampled: 11/17/95 |
| | | Date Received: 11/17/95 |
| | Client Contact: Paul King | Date Extracted: 11/19-11/20/95 |
| | Client P.O: | Date Analyzed: 11/19-11/20/95 |

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with MTBE & BTEX***

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

| Lab ID | Client ID | Matrix | TPH(g)+ | MTBE | Benzene | Toluene | Ethylben-zene | Xylenes | % Rec. Surrogate |
|---|---|---|---|---|---|---|---|---|---|
| 58826 | P6 | W | ND | 17 | ND | ND | ND | ND | 104 |
| 58827 | P7 | W | 7300,b,c | 67 | ND | 7.7 | 10 | 6.9 | 112# |
| 58828 | P8 | W | ND | ND | ND | ND | ND | ND | 104 |
| 58829 | P9 | W | 51,000,a | 250 | 2000 | 1500 | 1900 | 8800 | 93 |
| 58830 | P10 | W | ND | ND | ND | ND | ND | ND | 100 |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| Reporting Limit unless otherwise stated; ND means not detected above the reporting limit | | W | 50 ug/L | 5.0 | 0.5 | 0.5 | 0.5 | 0.5 | |
| | | S | 1.0 mg/kg | 0.05 | 0.005 | 0.005 | 0.005 | 0.005 | |

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

# cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

# QC REPORT FOR HYDROCARBON ANALYSES

Date: 11/19/95 Matrix: Water

| Analyte | Concentration (ug/L) | | | Amount Spiked | % Recovery | | RPD |
|---|---|---|---|---|---|---|---|
| | Sample | MS | MSD | | MS | MSD | |
| TPH (gas) | 0.0 | 101.8 | 99.7 | 100 | 102 | 100 | 2.1 |
| Benzene | 0 | 9 | 9 | 10 | 92 | 91 | 1.1 |
| Toluene | 0 | 10 | 10 | 10 | 96 | 95 | 1.0 |
| Ethyl Benzene | 0 | 10 | 10 | 10 | 98 | 96 | 2.1 |
| Xylenes | 0 | 29 | 29 | 30 | 98 | 96 | 1.7 |
| TPH (diesel) | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| TRPH (oil & grease) | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

**P & D ENVIRONMENTAL**
4020 Panama Court
Oakland, CA 94611
Telephone (510) 658-6916

* 5306APdx150

# CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

| PROJECT NUMBER: | PROJECT NAME: |
|---|---|
| 0047 | VIP Service - Castro Valley |

SAMPLED BY: (PRINTED AND SIGNATURE) Paul H. King Paul H. King

| SAMPLE NUMBER | DATE | TIME | TYPE | SAMPLE LOCATION | NUMBER OF CONTAINERS | ANALYSIS(ES): TPH-Gas (BTEX, MTBE) | PRESERVATIVE | REMARKS |
|---|---|---|---|---|---|---|---|---|
| P6 | 11/17/95 | | W | Borehole P6 | 2 | X | ICE | Normal TAT |
| P7 | 11/17/95 | | " | " P7 | 2 | X | " | " |
| ~~P8~~ P8 | 11/17/95 | | " | " P8 | 2 | X | " | " |
| P9 | 11/17/95 | 1155a | " | " P9 | 2 | X | " | " |
| P10 | 11/17/95 | 900a | " | " P10 | 2 | X | " | " |

58826
58827
58828
58829
58830

PRESERVATIVE APPROPRIATE CONTAINERS

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) |
|---|---|---|---|
| Paul H. King | 11/17/95 | 1680 | Desirae King |
| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) |
| Desirae King | 11/17/95 | 1712 | |
| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RECEIVED FOR LABORATORY BY: (SIGNATURE) |

| | |
|---|---|
| TOTAL NO. OF SAMPLES (THIS SHIPMENT) | 5 |
| TOTAL NO. OF CONTAINERS (THIS SHIPMENT) | 10 |
| LABORATORY: | McCampbell Analytical |
| LABORATORY CONTACT: | Ed Hamilton |
| LABORATORY PHONE NUMBER: | (510) 798-1620 |
| SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (X)NO | |

REMARKS: VOAs preserved w/ HCl.