Work Plan for Additional Site Characterization

6601/6603 Bay Street
Emeryville, California

1 June 2009

Prepared By:

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EKI 950074.05

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1 June 2009

Ms. Barbara Jakub
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Work Plan for Additional Site Characterization
6601/6603 Bay Street, Emeryville, California
(EKI 950074.05)

Dear Ms. Jakub:

On behalf of Sybase, Inc. ("Sybase"), Erler & Kalinowski ("EKI"), is pleased to submit the *Work Plan for Additional Site Characterization* for the property located at 6601/6603 Bay Street (currently Shellmound Street), California. This Work Plan is being submitted to you in response to your letter, dated 29 December 2008.

If this Work Plan meets with your approval, Sybase requests that the Alameda County Environmental Health provide a letter approving the Work Plan. We would appreciate it if you would copy the individuals listed below on correspondence regarding this site.

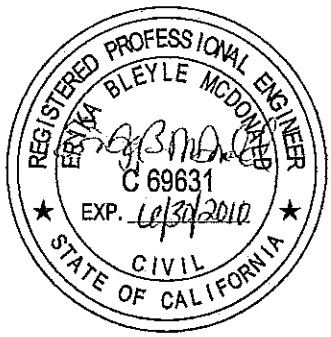
Please do not hesitate to call if you have any questions regarding the Work Plan.

Very truly yours,

ERLER & KALINOWSKI, INC.

Michelle K. King, Ph.D.
Vice President

Erika B. McDonald, P.E.
Project Engineer



cc: Vince Herington, Sybase
Rob Hansen, Sybase
Brad McInroy, Sybase
Paul Mahoney, Sybase
Todd Maiden, Esq., Reed Smith LLP

WORK PLAN FOR ADDITIONAL SITE CHARACTERIZATION

6601/6603 Bay Street, Emeryville, California

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WORK PLAN FOR ADDITIONAL SITE CHARACTERIZATION

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APPENDICES

1 INTRODUCTION

On behalf of Sybase, Inc. ("Sybase"), Erler & Kalinowski, Inc. ("EKI") is pleased to submit this *Work Plan for Additional Site Characterization* ("Work Plan") associated with the underground storage tanks ("USTs") formerly located at 6601 and 6603 Bay Street, Emeryville, California (the "Site") (Figure 1). Sybase sold the Site in 1998 and the Site is currently occupied by the Ex'pression College for Digital Arts. Historically, the Site was part of the former Emeryville municipal landfill.

This Work Plan has been prepared as required by the Alameda County Environmental Health department ("ACEH") in a letter, dated 29 December 2008 ("ACEH 2008 Letter"). The work plan was developed based upon EKI's review of available Site information as summarized below and discussions with ACEH staff by phone on 26 February 2009 and at a meeting on 16 April 2009.

The ACEH 2008 Letter requests the following:

(1) separate phase and dissolved phase contaminant definition,
(2) preferential pathway study,
(3) source area definition (lateral and vertical extent in soil), and
(4) soil gas sampling.

This Work Plan provides background information and a summary of the Site history, and presents the proposed investigation approach based on the four topics identified above.

2 SUMMARY OF BACKGROUND AND SITE HISTORY

Three underground fuel storage tanks were reportedly installed at the Site in 1973.[1] The 6,000-gallon UST was used to store diesel (the easternmost UST) and the 7,500-gallon and 2,000-gallon USTs (central and western USTs, respectively) were used to store gasoline. The USTs were removed from the Site in 1989 (Figure 2) (Dubovsky and Petite, 1990).

Prior to removal of the tanks, all three tanks were inspected and no obvious holes, perforations, or corrosion were noted (Dubovsky and Petite, 1990). During excavation of the tanks, however, black petroleum product reportedly flowed from the south wall into the excavation beside the tank. The product that accumulated in the excavation was

[1] A report prepared by William Dubovsky Environmental and Petite Engineering, dated July 1990 ("Dubovsky and Petite, 1990" or "Dubovsky Report") summarized the history and removal of the USTs and soil and groundwater sampling performed at that time.

removed by a hazardous waste hauler. In total, an estimated 2,000 gallons of petroleum product were removed from the excavations (Dubovsky and Petite, 1990).

The Dubovsky Report indicates that the diesel tank was removed in August 1989 and the two gasoline tanks were removed in October 1989, but some overexcavation may have occurred between August 1989 and February 1990 when the tank excavations were backfilled. The exact sequence of events and the extent of overexcavation are not fully described in the Dubovsky Report, but the presumed excavation extent based on the figure in the Dubovsky Report is shown on Figure 2.

Analytical results for soil and groundwater samples collected from the excavation sidewalls and excavation pit, respectively, indicated the presence of total petroleum hydrocarbons quantified as diesel ("TPHd"; also known as total extractable petroleum hydrocarbons or TEPH), total petroleum hydrocarbons quantified as gasoline ("TPHg"), oil and grease, and benzene, toluene, ethylbenzene, and xylenes ("BTEX") in both soil and groundwater.

2.1 Groundwater Monitoring Data

From 1989 through 1997, groundwater samples were collected from two monitoring wells (MW-5 and MW-7), located off-site and downgradient of the former tanks, and analyzed for TPHg and BTEX (Figure 2). These data were collected as part of investigations for the property at 1650 65th Street, located adjacent to the Site (PES, 1995). EKI collected samples from these wells in 1996 and 1997 on behalf of Sybase and analyzed these samples for TPHd, TPHg, BTEX, and methyl tertiary butyl ether ("MTBE") (EKI, 1997a).

Although MW-5 and MW-7 are located off-site, they are both less than 75 feet downgradient of the former USTs. Appendix A contains the following items from the closure report for the Site (EKI, 1997a): (1) a figure depicting the groundwater potentiometric surface in the vicinity of the Site, (2) historical groundwater monitoring data from wells MW-5 and MW-7, and (3) benzene concentrations in groundwater as a function of time.

Historical groundwater data from MW-5 and MW-7 were statistically evaluated in a closure report for the Site (EKI, 1997a). Results of the Mann-Kendall test for TPHg, benzene, toluene, and xylenes concentrations in groundwater from the wells showed that "no upward trend exists." Moreover, a regression analysis of benzene concentrations in groundwater from wells MW-5 and MW-7 shows a downward slope (Appendix A). Taken together, the groundwater data indicate that conditions are stable or improving downgradient of the former USTs (i.e., the plume is stable or shrinking) (EKI, 1997a).

2.2 1996 Soil and Groundwater Investigation

In 1996, EKI installed 6 soil boreholes at the Site to assess the lateral extent of petroleum hydrocarbons and related constituents in soil and groundwater (EKI, 1996). Results of the groundwater sampling from that investigation are shown on Figure 2 and tables summarizing all soil and groundwater results from the 1996 investigation are provided in Appendix B. Key findings from the investigation were as follows, as updated by the current depiction of the potential tank excavation extent (EKI, 1996):

- Petroleum hydrocarbons and related constituents are present in soil at low concentrations (i.e., up to 360 milligrams per kilogram or mg/kg) in unsaturated zone soil in the vicinity of the former USTs (locations SB-3, SB-4, and SB-5). These results indicate that there are no significant sources of petroleum hydrocarbons remaining in shallow soil.

- The highest concentrations of TPHg and TPHd were detected in soil samples collected from borings SB-1 and SB-6, which are located approximately 75 feet west and 50 feet east of the former USTs, respectively. Additionally, SB-6 is located more than 25 feet from the eastern edge of the UST excavation. The laboratory chromatograms for soil samples collected from borings SB-1 and SB-6 indicate that the hydrocarbons detected at these locations are different from those detected in soil from borings SB-2 through SB-5. Therefore, the petroleum hydrocarbons detected in borings SB-1 and SB-6 do not likely originate from the former USTs.

- Petroleum hydrocarbon concentrations in groundwater samples collected near the former USTs may indicate the presence of separate phase hydrocarbons ("SPH"); however, downgradient concentrations of petroleum hydrocarbons are not indicative of SPH. SPH was observed in the groundwater samples from borings SB-5 and SB-6, located east of the USTs, but not from borings SB-3 and SB-4 which were located nearest to the former USTs.

- The origin of the petroleum hydrocarbons detected at locations SB-1, SB-5, and SB-6 is unclear, but may be related to the fact that the Site was once part of the City of Emeryville municipal waste landfill. Because the waste materials disposed in the landfill probably contained various types of petroleum hydrocarbons, these chemicals may be ubiquitous at the Site.

- MTBE was not detected in any of the soil samples. MTBE was detected in only three groundwater samples and all detections were below the drinking water Maximum Contaminant Level ("MCL") of 13 micrograms per liter ("ug/L").

- Polycyclic aromatic hydrocarbons ("PAHs") were not detected in soil samples collected adjacent to the former USTs (samples SB-3 and SB-4). Therefore, PAHs are not likely associated with the former USTs. PAHs were detected in the groundwater sample collected from location SB-6, but are likely associated with the

SPH observed at that location. Due to their hydrophobic nature, PAHs are not likely to be mobile in groundwater.

- Of the BTEX compounds, only benzene was detected in groundwater samples at concentrations greater than MCLs.

2.3 1997 Closure Request

In 1997, EKI, on behalf of Sybase, submitted a closure report (EKI, 1997a) and an addendum to the closure report (EKI, 1997b) based on the following findings:

- There are no significant sources of petroleum hydrocarbons related to the former USTs remaining in shallow soil. Downgradient concentrations of petroleum hydrocarbons in groundwater at wells MW-5 and MW-7 are not indicative of SPH.

- PAHs and MTBE were not detected in soil samples collected at the former UST site.

- Statistical analysis of historical petroleum hydrocarbon and related constituent concentrations in groundwater indicates that TPHg, benzene, toluene, and xylenes concentrations are stable or decreasing (i.e., a stable or shrinking plume).

- Potential carcinogenic risks to current and future Site occupants and workers due to residual chemicals of concern in soil and groundwater relating to the former USTs are within or less than U.S. EPA's acceptable incremental risk range of 10^{-6} to 10^{-4} (i.e., one in one million to one in ten thousand) and are less than the Proposition 65 notification level of 10^{-5}. Similarly, potential non-carcinogenic risks are below the threshold hazard quotient of one. These conclusions are still appropriate based on comparison of data to current published screening criteria.

- Potential risks to the environment appear to be minimal based on available water quality objectives derived for the protection of aquatic organisms and human health.

In response to the closure report, ACEH issued a letter, dated 23 June 1998, indicating that ACEH was ready to prepare a case closure memorandum for review by ACEH staff and submittal to the Regional Water Quality Control Board, San Francisco Bay Region ("RWQCB"). The letter further indicated that a case closure letter may be issued within 60 to 90 days of the date of the June 1998 letter. However, a case closure letter for the Site was never received by Sybase and ACEH has since then reportedly lost all of the files for the Site.

2.4 ACEH 2008 Letter

In 2006, ACEH requested that Sybase provide ACEH with available documents associated with the Site because they had lost their files. ACEH subsequently reviewed the available information for the Site and requested in the ACEH 2008 Letter that (1) the

extent of separate phase and dissolved phase petroleum hydrocarbons in groundwater be defined, (2) potential preferential pathways, including both utility lines and nearby wells, be assessed, (3) the vertical and lateral extent of petroleum hydrocarbons in soil be defined, and (4) the vapor intrusion pathway be assessed by performing soil gas sampling. The proposed approach to address the issues in the ACEH 2008 Letter is presented below.

3 APPROACH

The following sections present the proposed approach to address the items identified in the ACEH 2008 Letter.

3.1 Extent of Separate Phase and Dissolved Phase Hydrocarbons in Groundwater

The ACEH 2008 Letter indicates that the concentrations of petroleum hydrocarbons detected in groundwater are indicative of the presence of SPH. Based on review of the borehole logs from EKI's 1996 investigation, the petroleum hydrocarbons were generally described as a "sheen." The field notes indicate the presence of "floating product" at some locations, but the thickness of product is not noted, presumably because the groundwater samples were collected from open boreholes, not from monitoring wells (EKI, 1996). No sheen or SPH was observed in the downgradient monitoring wells MW-5 and MW-7 (EKI, 1996, 1997a).[2] As such, data from wells MW-5 and MW-7 are believed to represent dissolved concentrations of petroleum hydrocarbons and related constituents in groundwater.

Based on discussions during our 16 April 2009 meeting, EKI understands that ACEH is interested in characterizing the extent of SPH, if present, to the south and east of the former tank excavation and 1996 sampling locations. ACEH believes that well MW-7 is downgradient of the former tanks, but well MW-5 is not, particularly because the tank excavation may have extended to the east of the tanks as shown on Figure 2.

To characterize the extent of dissolved phase petroleum hydrocarbons and SPH, if present, EKI proposes to collect the following samples:

- Collect 3 grab groundwater samples from temporary wells to be installed to the south, southeast, and east of the former tank excavation (Figure 2). EKI is proposing to use temporary wells to try to reduce the amount of sediment in the sample, which may have biased the 1996 grab groundwater sample results high.

[2] As requested by Donna Drogos of ACEH, EKI determined that the top of the screen in well MW-7 is 6.7 feet below ground surface ("bgs"). If the water table is deeper than 6.7 feet bgs, then the well is suitable to assess the presence of SPH. Depending on the time of year and amount of rainfall, the water table has historically been higher than 6.7 feet bgs. However, based on the available data, SPH was not present in the wells when the water table was deeper than 6.7 feet bgs.

EKI will note whether a sheen or SPH is present in the temporary wells and the thickness of the SPH, if present.

- Collect a groundwater sample from well MW-7.

Groundwater samples will be analyzed for TPHg, TPHd, BTEX, fuel oxygenates, and PAHs (grab groundwater samples only). Groundwater samples will also be analyzed for total dissolved solids ("TDS") to evaluate whether groundwater should be classified as a potential drinking water source.

3.2 Preferential Pathway Study

The ACEH 2008 Letter requests that the Site and vicinity be evaluated for lateral and vertical conduits, such as utilities (including potential backfill in the utility trench) and nearby wells. This section presents the initial findings of the preferential pathway study.

3.2.1 Utility Survey

For the utility survey, EKI reviewed an undated survey map (included as Appendix C) and performed file reviews at the City of Emeryville Building Department and Public Works Department. Figure 3 depicts the locations of the known former and existing utilities at the Site, which include an "unconfirmed storm line" and an existing storm drain line (on the adjacent property) in the vicinity of the former USTs.

The survey map shows an "unconfirmed storm line" located immediately north of the tank area and extending to the west. Construction drawings from 1994 reviewed during the Building Department file review indicate that plans were in place to remove, backfill, and compact this storm drain. Although specific depth information was not available for the "unconfirmed storm line," the invert elevations of other storm drain lines present on the western portion of the property at that time were approximately 2 feet below ground surface ("bgs"). In addition, these other storm drains were 10 inches in diameter. Figure 4 is a cross-section illustrating the subsurface conceptual Site model in the vicinity of the former USTs (see Figure 3 for the location of the cross-section). Assuming the "unconfirmed storm line" is similar to the other on-Site lines existing at that time, the cross-section illustrated on Figure 4 shows that the "unconfirmed storm line" was at a higher elevation than the highest measured water table, even assuming 6 inches of backfill under the pipe. Thus, the "unconfirmed storm line" was not likely to have been a conduit to spread petroleum hydrocarbons from the former USTs.

An existing storm drain line is also located on the adjacent property (i.e., 1650 65th Street), approximately 30 feet south of the former USTs. According to the survey map, the invert is located approximately 2.5 feet below ground surface, which is above the highest measured water table, even assuming 6 inches of backfill under the storm drain pipe. Therefore, the storm drain line on the 1650 65th Street property is also not likely to act as a conduit for the petroleum hydrocarbons at the Site.

The survey map also shows a sanitary easement that is 5 feet wide immediately north of the southern property boundary. However, based on the information reviewed at the Building and Public Works Departments, there is no evidence that a sanitary sewer line is present in that portion of the property; rather, the sanitary sewer line for the 6601 and 6603 Bay Street buildings is located at the northern edge of the Site (Figure 3).

Taken together, the former and existing utilities at the Site are not likely to have caused significant lateral migration of petroleum hydrocarbons and related constituents at the Site. EKI can verify the depth of the existing storm drain south of the former USTs once EKI has access to the Site and the adjacent property to perform the sampling proposed herein.

3.2.2 Well Survey

In response to ACEH's request, EKI submitted a well survey request to the California Department of Water Resources ("DWR"). As discussed with ACEH, the well survey radius was reduced to 500 feet. EKI received the results of the well survey from DWR on 21 May 2009. Due to the large number of wells included in the DWR report, which covers an area 1 mile from the Site and does not include a map with the well locations, it was not possible to include the findings of the well survey in this Work Plan. Therefore, the results of the well survey will be included in the Site investigation report.

3.3 Extent of Petroleum Hydrocarbons in Soil

The ACEH 2008 Letter requests that soil samples be collected to characterize the vertical and lateral extent of petroleum impacts. In 1996, soil samples were collected from the vadose zone on the eastern and western boundaries of the former UST excavation area (EKI, 1996). The sidewall confirmation soil samples from the tank excavation were collected at a depth of 7.5 feet bgs. Based on EKI's review of the Dubovsky Report, it appears that that the samples from October 1989 were collected after rainfall in which the water level in the tank pit had risen to 7.5 feet bgs (Dubovsky and Petite, 1990). As shown on Figure 4, the average depth to groundwater in the nearby wells is 6.7 feet bgs, which would indicate that the sidewall confirmation soil samples were all collected within the groundwater "smear zone." ACEH is requesting that soil samples be collected deeper than 7.5 feet below ground surface at the UST excavation and in the downgradient direction from the UST excavation area.

To characterize the extent of petroleum hydrocarbons in soil, EKI proposes to collect the following samples:

- Install two soil boreholes within the UST excavation footprint (on the western and eastern sides of the former USTs) to characterize the vertical extent of petroleum hydrocarbons in soil (Figure 2). EKI proposes to collect soil samples from approximately 13 and 18 feet bgs, unless staining or other field observations indicate different sampling depths are more appropriate.

- Install one soil borehole approximately 10 to 15 feet south/southeast of the former UST excavation to assess the lateral extent of petroleum hydrocarbons in soil. Collect soil samples from less than 5 feet bgs (above the water table) and from approximately 13 and 18 feet bgs to assess the vertical extent.

Soil samples will be analyzed for TPHg, TPHd, BTEX, PAHs, and fuel oxygenates.

3.4 Vapor Intrusion Assessment

The ACEH 2008 Letter requests that a vapor intrusion assessment be performed including soil gas data. State regulatory guidance (i.e., California Department of Toxic Substances Control, 2005) indicates a preference for soil gas data in performing a vapor intrusion assessment; however, if groundwater is impacted, the guidance recommends that groundwater data also be used in the assessment. As discussed at the 16 April 2009 meeting, ACEH is most concerned about benzene and naphthalene for the vapor intrusion pathway. EKI reviewed the available groundwater data and compared them to the RWQCB Environmental Screening Levels ("ESLs") for vapor intrusion concerns (RWQCB, 2008). The maximum benzene concentration in groundwater (even including the 1989 tank pull data) is 160 ug/L, whereas the commercial/industrial ESL is 1,800 ug/L (RWQCB, 2008). Only one groundwater sample was analyzed for naphthalene. Naphthalene was not detected above the laboratory reporting limit of 10,000 ug/L. The commercial/industrial screening level based on the vapor intrusion pathway is 11,000 ug/L.

ACEH also indicated at our meeting that groundwater data alone may not be sufficient to assess vapor intrusion if significant soil impacts are present. Soil ESLs are not available for the vapor intrusion pathway. EKI evaluated whether the existing benzene concentrations in unsaturated zone soil are present at "source concentrations" by comparing the available data to the direct contact and groundwater protection ESLs. The maximum benzene concentration in the 1996 investigation was 0.019 mg/kg, which is less than both the ESL of 0.27 mg/kg for direct contact under commercial land use and the ESL of 0.044 mg/kg for protection of drinking water resources. Benzene concentrations measured in the confirmation soil samples during the tank removal in 1989 are higher (up to 0.76 mg/kg), but would correspond to a human health risk of 3×10^{-6} based on the direct contact pathway. However, as discussed above, the confirmation samples were collected from the "smear zone," not the unsaturated zone. Naphthalene was not detected in the soil samples analyzed in 1996, although the reporting limits were elevated (Appendix B and EKI, 1996). In EKI's opinion, the available soil data from the unsaturated zone (where soil impacts could be a source for vapor intrusion) do not show significant impacts from volatile organic compounds.

Lastly, soil gas samples are typically collected from a depth of at least 5 feet bgs. Given the shallow depth of groundwater at the Site, it may not be possible to collect soil gas samples at 5 feet bgs due to high moisture present in the capillary fringe. Therefore, using the available groundwater data and comparing those data to ESLs, potential risks to

building occupants from the vapor intrusion pathway is not significant. EKI recommends that the groundwater data collected as part of this investigation (including naphthalene) be used to update the vapor intrusion assessment in the Site Investigation Report.

4 WORK PLAN IMPLEMENTATION

Selected soil and groundwater sampling activities are planned at the locations shown on Figure 2 and summarized in Table 1. The sampling locations were selected on the basis of the issues identified in the ACEH 2008 Letter and the available data. The planned investigation activities are described in more detail below.

4.1 Pre-field Activities

Sybase does not own or have any current contractual relationship with the Site owner or the owner of the adjacent 1650 65th Street property. Prior to the start of fieldwork and field preparation activities, Sybase will attempt to obtain access from the existing Site owner and the owner of the 1650 65th Street property. As discussed during the 16 April 2009 meeting, EKI understands that if Sybase is unable to obtain access from the existing property owners, then ACEH will assist with the process.

Once access is obtained to drill at the Site and on the adjacent property and prior to initiating fieldwork, EKI will perform the following activities for the subject property:

- Secure a drilling permit from Alameda County Public Works Agency.
- Arrange for State of California-licensed drilling contractor to perform subsurface work for soil and grab groundwater sampling.
- Conduct a visit to the Site and the adjacent property (1650 65th Street) with a representative of each of the property owners to mark planned drilling locations, check for access constraints, and to discuss proposed field activity schedule. Sybase will request copies of existing utility maps from the property owners.
- Contact Underground Services Alert ("USA") and retain a private utility locating company to clear proposed drilling locations for buried utilities.
- Identify a State of California-certified laboratory to perform the chemical analyses.
- Prepare a site-specific Health & Safety Plan for EKI field personnel and any necessary subcontracts.

4.2 Implementation of Field Sampling

Detailed descriptions of the field methods and procedures (e.g., protocols for soil and groundwater sampling) are described in Appendix D. A summary of sampling activities is as follows:

- Three boreholes will be installed for soil sampling (Figure 2). Two soil samples will be collected from boreholes SB-7 and SB-8, which are believed to be located within the former UST excavation footprint. Three soil samples will be collected from borehole SB-9, located approximately 10 to 15 south/southeast of the former UST area on the adjacent 1650 65th Street property. The soil samples will be analyzed for the following:
    - TPHg and TPHd using U.S. EPA Method 8015m, with silica gel cleanup;
    - PAHs using U.S. EPA Method 8270;
    - BTEX and fuel oxygenates using U.S. EPA Method 8260; and
    - Percent moisture (for calculation of chemical concentration in "dry weight" to provide for direct comparison of sample result with ESLs).

- Three grab groundwater samples will be collected from temporary wells constructed at the approximate locations shown on Figure 2. The boreholes for the temporary wells will be installed using hollow-stem auger drilling techniques. Pre-packed wells will be placed in the boreholes to serve as temporary wells to collect the groundwater samples (see Appendix D). EKI will check for the presence of SPH or a sheen using a free product interface probe. Groundwater samples will be collected using low-flow sampling techniques. If a sheen or SPH is present in the temporary wells, the groundwater samples will be collected through a stilling tube. The groundwater samples from the temporary wells will be analyzed for the following:
    - TPHg and TPHd using U.S. EPA Method 8015m, with silica gel cleanup;
    - PAHs using U.S. EPA Method 8270;
    - BTEX and fuel oxygenates using U.S. EPA Method 8260; and
    - TDS.

  After completion of the groundwater sampling, the temporary wells will be abandoned in accordance with Alameda County requirements.

- One groundwater sample will be collected from existing groundwater monitoring well MW-7, located on the adjacent 1650 65th Street property. At least 48 hours prior to sampling well MW-7, the well will be redeveloped because it has not been sampled in more than 10 years. The thickness of SPH, if any, will be measured in this well. The groundwater samples from the temporary wells will be analyzed for the following:
    - TPHg and TPHd using U.S. EPA Method 8015m, with silica gel cleanup;
    - BTEX and fuel oxygenates using U.S. EPA Method 8260; and
    - TDS.

- Excess soil, purge water, and other investigation-derived wastes will be placed in DOT-approved 55-gallon drums, labeled, and temporarily stored at a location identified by the Site owner. Sybase will dispose of the investigation-derived waste at an appropriately permitted disposal facility.

4.3 Report Preparation

The results of the field program and subsequent laboratory analyses will be presented in a summary report prepared for Sybase's submittal to ACEH. The report will summarize field protocols and observations and will include a Site map depicting the sampling locations. Significant sampling results will be discussed and summary data tables, borehole logs, and copies of laboratory analytical reports will be provided. The report will also include (1) updated maps and cross-section to present the findings of the conduit study and the Site characterization and (2) a screening-level risk assessment for vapor intrusion based on the results of the groundwater investigation. If appropriate, the report will also include recommendations for Site closure.

5 SCHEDULE

As indicated above, preparation for the field work can commence upon approval of the Work Plan by ACEH and once Sybase obtains written access agreements to collect planned environmental samples at the Site and 1650 65th Street. The work will also have to be performed at a mutually agreeable time for the property owners. The following schedule is assumed to start once access has been granted by the property owners:

- Preparation for field sampling, e.g., obtain drilling permit, mark and clear sampling locations, prepare subcontracts, schedule equipment, and develop well MW-7 — 2 weeks
- Implementation of field sampling — 1 to 2 days
- Laboratory analysis of soil and groundwater samples — 2 weeks
- Review data and meeting with ACEH to discuss — 2 weeks
- Prepare written report to ACEH — 4 weeks

Thus, approximately 10 to 11 weeks will be required to implement the additional investigations described in this Work Plan.

6 REFERENCES

ACEH, 1998. *Case Closure for the Three Underground Storage Tanks at 6601 and 6603 Bay Street, Emeryville, California 94608 (STID #3696 and 3710),* Alameda County Environmental Health, 23 June 1998.

ACEH, 2008. *Fuel Leak Case No. RO0000042/RO0000043 and Geotracker Global ID T0600100825/T06001100470, Vacant Facility, 6601 and 6603 Bay Street, Emeryville, CA 94608,* Alameda County Environmental Health, 29 December 2008.

DTSC, 2005. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, Interim Final, Department of Toxic Substances Control, 7 February 2005.

Dubovsky and Petite, 1990. *Environmental Report 6601 and 6603 Bay Street, Emeryville, California*, William Dubovsky Environmental and Petite Engineering, July 1990.

EKI, 1996. *Results of Soil and Groundwater Investigations at 6601 and 6603 Bay Street, Emeryville, California*, Erler & Kalinowski, Inc., 23 August 1996.

EKI, 1997a. *Closure Report, Three Former Underground Storage Tanks at 6601 and 6603 Bay Street, Emeryville, California,* Erler & Kalinowski, Inc., 18 August 1997.

EKI, 1997b. *Addendum to Closure Report – Site Management Plan, Three Former Underground Storage Tanks at 6601 and 6603 Bay Street, Emeryville, California,* Erler & Kalinowski, Inc., 24 October 1997.

PES, 1995. *Year End Summary Report Bioremediation Pilot Study and Quarterly Groundwater Monitoring, November 1995 Sampling Event, Emery Bay Plaza, 1650 65th Street, Emeryville, California,* PES Environmental, Inc., 29 December 1995.

RWQCB, 2008. *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Regional Water Quality Control Board, San Francisco Bay Region, May 2008.

Table 1

Summary of Planned Sampling and Analysis

6601 and 6603 Bay Street, Emeryville, California

Sample Location Description	Borehole ID	Approx. Sample Depth (feet bgs) (a)	Borehole Location	Purpose of Analysis	Planned Analyses and Number of Samples			
					BTEX and Fuel Oxygenates [b] (EPA Method 8260B)	**Polycyclic Aromatic Hydrocarbons** (EPA Method 8270)	**Total Petroleum Hydrocarbons as Gasoline and Diesel** (EPA Method 8015M)	**Total Dissolved Solids**
Soil Boring	SB-7	13, 18	Within UST excavation, western side	Vertical extent in soil below excavation	2	2	2	
	SB-8	13, 18	Within UST excavation, eastern side	Vertical extent in soil below excavation	2	2	2	
	SB-9	5, 13, 18	10 to 15 feet south/southeast of USTs	Lateral and vertical extent in soil	3	3	3	
Temporary Monitoring Well	GGW-1	6 to 16	south of USTs	Dowgradient extent of plume	1	1	1	1
	GGW-2	6 to 16	southeast of USTs and excavation	Lateral extent of plume	1	1	1	1
	GGW-3	6 to 16	east of SB-6	Lateral extent of plume	1	1	1	1
	dup	6 to 16	one of the GGW locations	QA/QC	1	1	1	1
Groundwater Monitoring Well	MW-7	6.7 to 18.7	south/southwest of USTs	Dowgradient extent of plume	1		1	1
				TOTAL	12	11	12	5

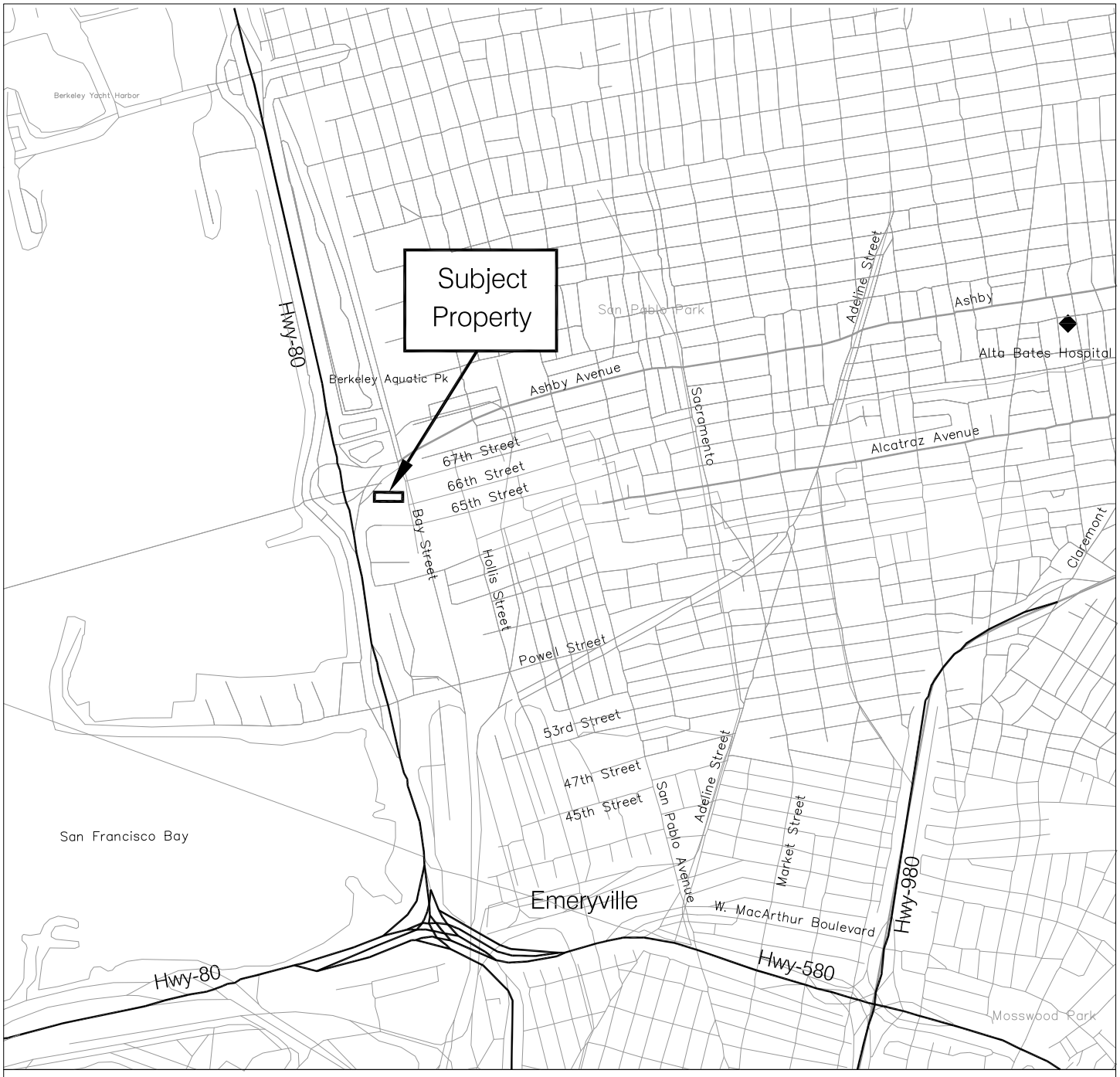
Abbreviations:

feet bgs	feet below ground surface
UST	underground storage tank

Notes:

(a) Actual soil sample depths and screen intervals for temporary wells will depend on observed field conditions.

(b) BTEX includes benzene, toluene, ethylbenzene, and xylenes. Fuel Oxygenates include Methyl-Tertiary Butyl Ether ("MTBE"), Ethyl Tertiary Butyl Ether ("ETBE"), Di-isopropylether ("DIPE"), Tertiary Amyl Methyl Ether ("TAME"), Tertiary Butyl Alcohol ("TBA"), and ethanol.



Notes:

1. All locations are approximate.

0 2500 5000

(Approximate Scale in Feet)

N

Erler & Kalinowski, Inc.

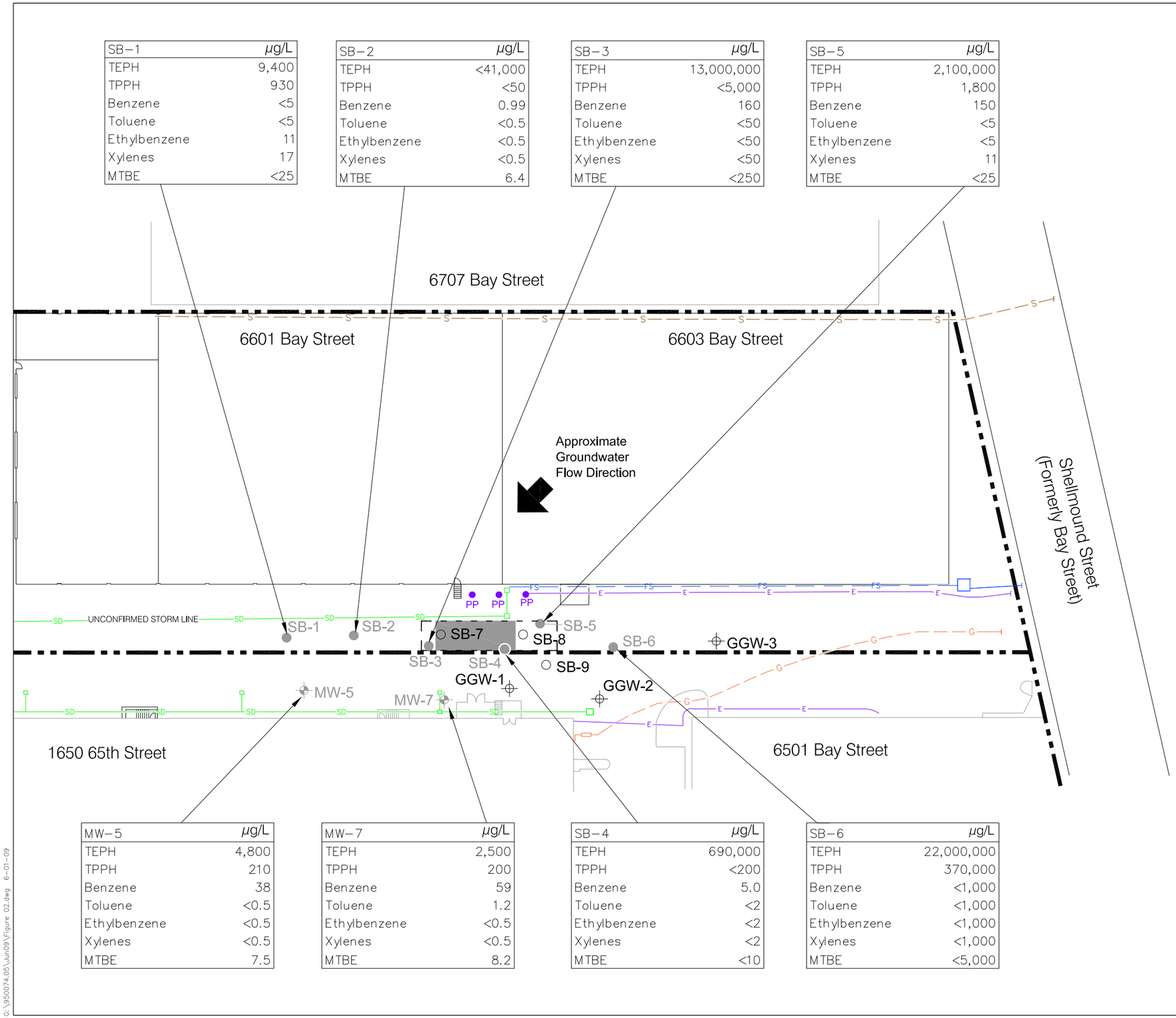
Site Location

6601/6603 Bay Street
Emeryville, CA

June 2009
EKI 950074.05

Figure 1

G:\950074.05\Jun09\Figure 01.dwg 6-01-09



N

0 50 100

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Approximate Tank Area
- Approximate Excavation Area (as depicted in Dubovsky and Petite, 1990)
- Off-Site Monitoring Well Location
- Soil Boring Location (1996)
- Proposed Soil Boring Location
- Proposed Grab Groundwater Sampling Location
- Power Pole (PP)
- Storm Drain Line
- Fire Service Line
- Sanitary Sewer Line
- Electrical Line
- Gas Line

Abbreviations:

TEPH = Total Extractable Petroleum Hydrocarbons
TPPH = Total Purgeable Petroleum Hydrocarbons
MTBE = Methyl Tertiary Butyl Ether

Notes:

1. All locations are approximate.
2. Basemap source: Digitized from Alta Land Survey Title Map (undated).
3. Posted groundwater data are from 1996 for the SB locations and from 1997 for the wells.

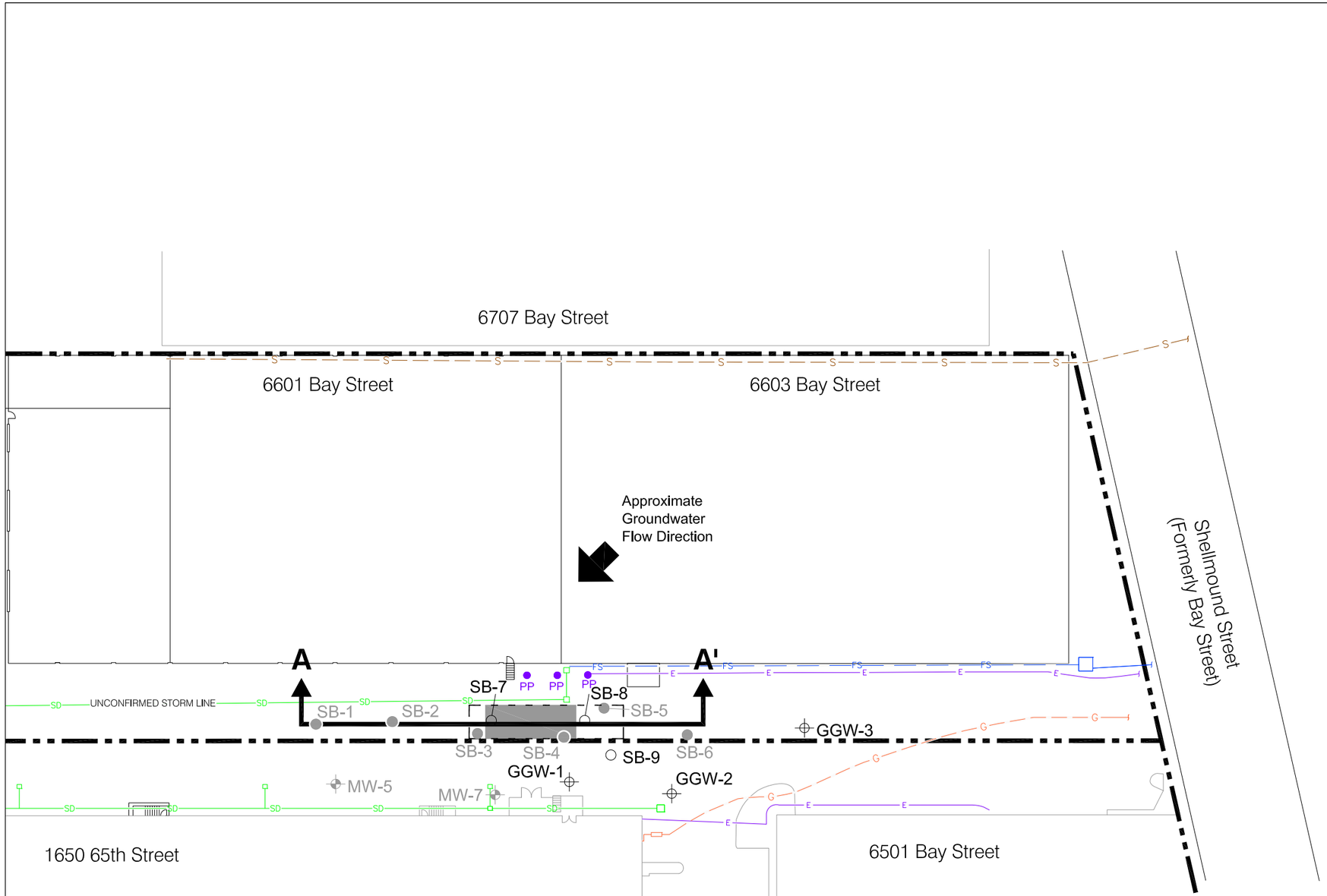
Erler & Kalinowski, Inc.

Proposed Soil and Groundwater Sampling Locations

6601/6603 Bay Street
Emeryville, CA
June 2009
EKI 950074.05

Figure 2

G:\950074.05\Jun09\Figure 02.dwg 6-01-09



N

0 50 100

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Approximate Tank Area
- Approximate Excavation Area (as depicted in Dubovsky and Petite, 1990)
- Off-Site Monitoring Well Location
- Soil Boring Location (1996)
- Proposed Soil Boring Location
- Proposed Grab Groundwater Sampling Location
- Power Pole (PP)
- Storm Drain Line
- Fire Service Line
- Sanitary Sewer Line
- Electrical Line
- Gas Line
- A A' Cross-Section Location (See Figure 4)

Notes:

1. All locations are approximate.
2. Basemap source: Digitized from Alta Land Survey Title Map (undated).

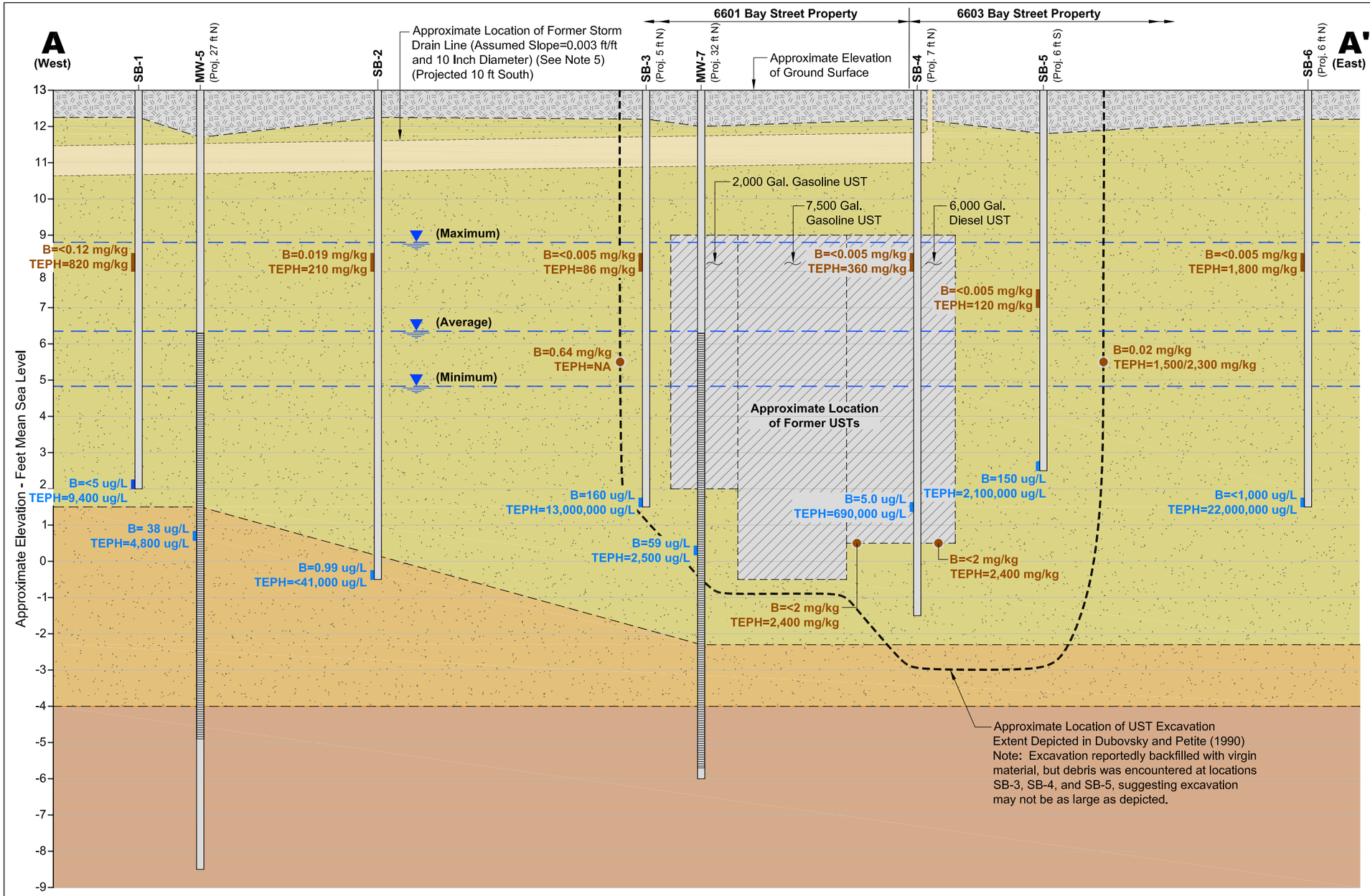
Erler & Kalinowski, Inc.

Location of Utilities and Cross-Section

6601/6603 Bay Street
Emeryville, CA
June 2009
EKI 950074.05

Figure 3

G:\950074.05\Jun09\Figure 03.dwg 6-01-09



Legend:

- Well/Boring Identification with Section Projection in Feet
- Approximate Elevation of Groundwater in Wells MW-5 and MW-7
- Concentration in Soil
- Well Screen Interval
- Concentration in Groundwater
- Asphalt/Concrete/Coarse gravel
- Fill Material: Silt, Gravel, and Clay Mixtures with Debris (brick, asphalt, concrete, cement, wood, and glass)
- Native Material: Fine Sand/Clay/ Silty Clay
- Low-Permeability Brown Silty Clay
- Approximate Location of Soil Confirmation sample

Abbreviations:

<	= not detected above stated reporting limit
B	= benzene
ft	= feet
Gal.	= gallon
MSL	= mean sea level
mg/kg	= milligrams per kilogram
ug/L	= micrograms per liter
NA	= not analyzed
TEPH	= total extractable petroleum hydrocarbons
USTs	= underground storage tanks

(Vertical Scale: 1" = 3')
(5X Vertical Exaggeration)
(Horizontal Scale: 1" = 15')

Notes:

1. All locations are approximate.
2. The data displayed at each location is projected up to approximately 32 feet from either side of the cross-section.
3. Data presented on this figure for soil and groundwater are from Dubovsky and Petite, 1990, EKI, 1996 and EKI, 1997.
4. Geologic information presented on this figure is from Engineering-Science, Inc., 1989 and 1990, and EKI, 1996.
5. According to construction drawings from 1994, plans were in place to remove, backfill, and compact this storm drain line during improvements and seismic upgrades at the site.

References:

a) Dubovsky and Petite, 1990. *Environmental Report, 6601 and 6603 Bay Street, Emeryville, California,* William Dubovsky Environmental and D. Larry Petite, July 1990.

b) Engineering-Science, Inc., 1989. *Groundwater Contamination Investigation, 1650 65th Street Property, Emeryville, California,* Engineering-Science, Inc., November 1989.

c) Engineering-Science, Inc., 1990. *Evaluation of Groundwater Alternatives and Remedial Action Plan, 65th Street Property, Emeryville, California,* Engineering-Science, Inc., November 1990.

d) EKI, 1996. *Results of Soil and Groundwater Investigation at 6601 and 6603 Bay Street, Emeryville, California,* Erler & Kalinowski, Inc., 23 August 1996.

e) EKI, 1997. *Closure Report, Three Former Underground Storage Tanks at 6601 and 6603 Bay Street, Emeryville, California,* Erler & Kalinowski, Inc., 18 August 1997.

Erler & Kalinowski, Inc.

Subsurface Conceptual Site Model
in the Vicinity of Former USTs
Cross-Section A - A'

6601/6603 Bay Street
Emeryville, CA

June 2009
EKI 950074.05

Figure 4

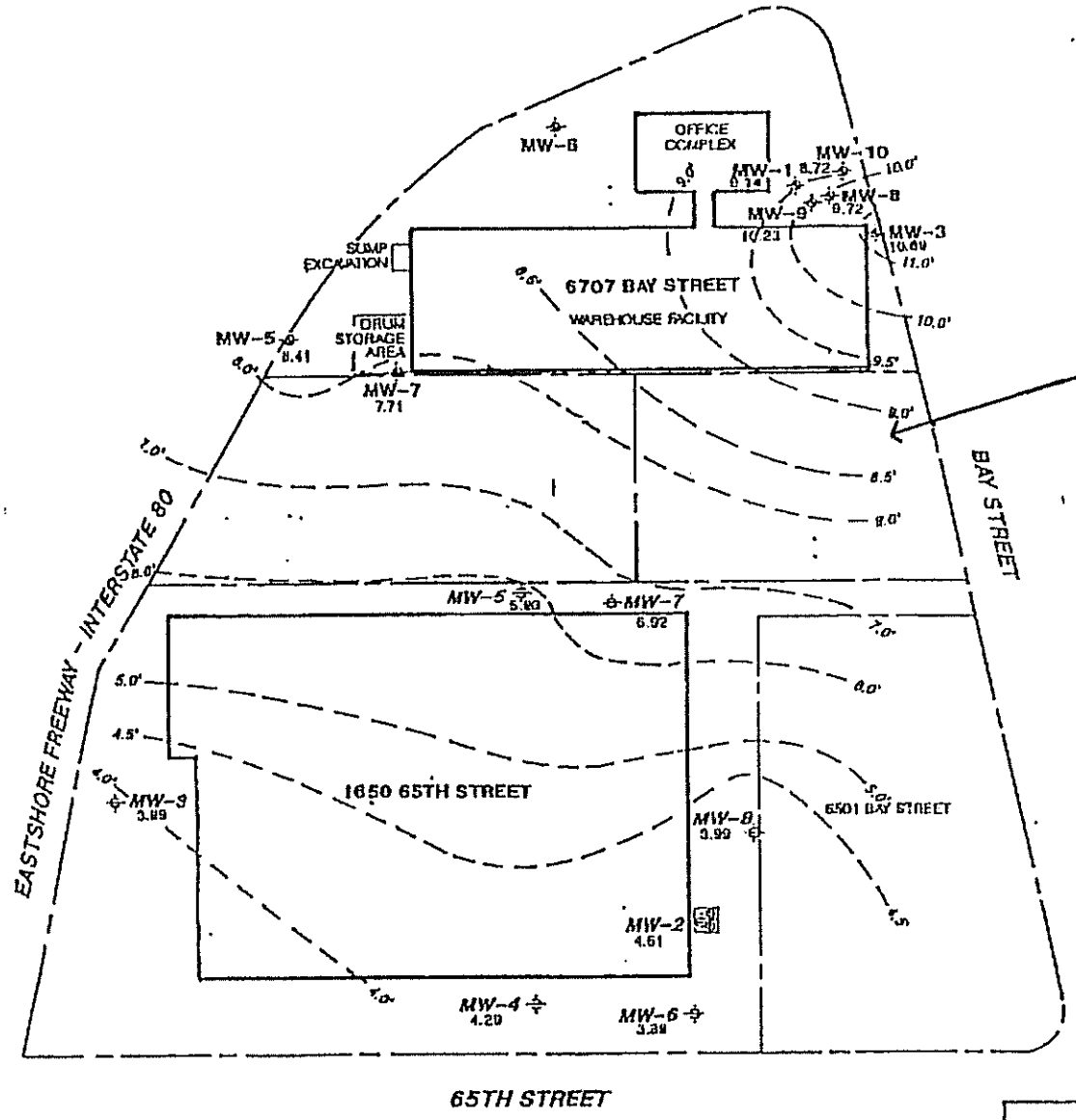
G:\950074.05\Jun09\Figure 04.dwg 6-01-09

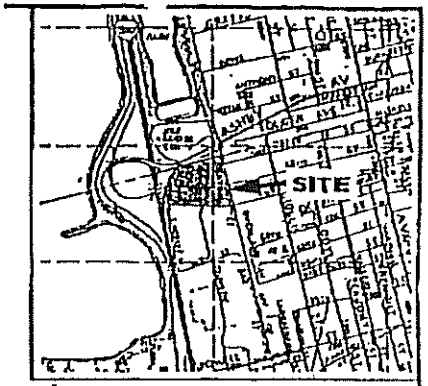
APPENDIX A
Potentiometric Surface Map, Historical Groundwater Monitoring Data, and Benzene Trend Plot

Groundwater Potentiometric Surface in the Vicinity of 6601/6603 Bay Street
(Obtained from Subsurface Consultants, Inc.,
Groundwater Monitoring, November 1995 Event, 15 December 1995)

Table 1 – Analytical Results for Groundwater Samples Collected Downgradient of the Former Underground Storage Tanks (Obtained from EKI, 1997)

Figure 3 – Benzene Concentrations in Groundwater Samples Collected Downgradient of Former USTs (Obtained from EKI, 1997)





VICINITY MAP

- MONITORING WELL BY SCI
- MONITORING WELL BY OTHERS
- GROUNDWATER EXTRACTION WELL BY OTHERS
- PROPERTY LINE
- EXISTING STRUCTURE
- GROUNDWATER ELEVATION CONTOUR (FEET) MSL - NOVEMBER 13, 1995

N

APPROXIMATE SCALE (feet)

0 100 200

SITE PLAN

Subsurface Consultants

6707 BAY STREET – EMERYVILLE, CA

JOB NUMBER	DATE	APPROVED
820.001	12/6/95	

PLATE 1

Table 1
Analytical Results for Groundwater Samples Collected Downgradient of the
Former Underground Storage Tanks (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.00)

Well Number	Sample Date	Chemical Concentration (ug/L) (b)						
		TPPH	TEPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-5	Nov 89	ND (c)	NA (d)	74	ND	ND	4.2	NA
	Feb 90	ND	NA	200	ND	ND	ND	NA
	May 90	ND	ND	110	ND	ND	ND	NA
	Aug 90	ND	700	66	2.2	ND	3.8	NA
	Nov 90	600	900	69	ND	ND	ND	NA
	Mar 91	ND	1,100	66	2.3	ND	ND	NA
	May 91	ND	ND	110	ND	ND	ND	NA
	Aug 91	ND	ND	78	2.1	ND	ND	NA
	29 Jan 92	190	NA	90	0.5	<0.3 (e)	0.6	NA
	28 Feb 92	230	NA	110	0.9	<0.3	0.5	NA
	28 May 92	130	NA	100	<0.5	<0.5	<0.5	NA
	27 Aug 92	520	NA	83	2.0	<0.5	<0.5	NA
	10 Nov 92	240	<100	74	1.0	<0.3	<0.6	NA
	18 Feb 93	190	NA	56	0.6	<0.5	<0.5	NA
	20 May 93	<200	NA	56	<2	<2	<2	NA
	19 Aug 93	170	NA	50	0.7	<0.5	<0.5	NA
	15 Nov 93	220	NA	49	1.0	<1	<1	NA
	14 Feb 94	140	NA	62	<0.5	<0.5	<0.5	NA
	16 May 94	310	NA	140	3.0	<3	<3	NA
	12 Aug 94	500	NA	95	34	4.0	14	NA
	3 Nov 94	400	NA	79	0.6	<0.5	<2	NA
	9 Feb 95	300	NA	74	0.8	<0.5	<.2	NA
	9 May 95	200	NA	47	0.5	<0.5	<2	NA
	10 Aug 95	200	NA	46	0.5	<0.5	<2	NA
	13 Nov 95	300	NA	48	0.7	<0.5	<2	NA
	15 Jun 96	180	<40,000	39	<0.5	<0.5	<0.5	8.1
	27 Dec 96	**220**	**4,500**	**54**	**0.5**	**<0.5**	**<0.5**	**15**

Table 1
Analytical Results for Groundwater Samples Collected Downgradient of the Former Underground Storage Tanks (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.00)

Well Number	Sample Date	Chemical Concentration (ug/L) (b)						
		TPPH	TEPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-7	May 90	NA	600	240	ND	ND	ND	NA
	Aug 90	ND	ND	81	1.8	ND	ND	NA
	Nov 90	ND	800	54	ND	ND	ND	NA
	Mar 91	ND	ND	100	3.6	ND	ND	NA
	May 91	ND	ND	120	2.7	ND	ND	NA
	Aug 91	ND	ND	74	3.3	ND	ND	NA
	29 Jan 92	270	NA	25	0.5	<0.3	0.8	NA
	28 Feb 92	100	NA	33	0.7	<0.3	0.7	NA
	28 May 92	150	NA	21	<0.5	<0.5	<0.5	NA
	27 Aug 92	440	NA	11	1.0	<0.5	<0.5	NA
	10 Nov 92	370	<100	31	1.2	<0.3	1.2	NA
	18 Feb 93	270	NA	77	1.3	<0.5	1.4	NA
	20 May 93	300	NA	150	3.0	<2	3.0	NA
	19 Aug 93	110	NA	40	1.0	<0.5	1.1	NA
	15 Nov 93	120	NA	15	0.6	<0.5	2.3	NA
	14 Feb 94	120	NA	38	<0.5	<0.5	<0.5	NA
	17 May 94	<300	NA	61	<3	<3	<3	NA
	10 Aug 94	100	NA	9.0	<0.5	<0.5	<2	NA
	3 Nov 94	100	NA	3.0	<0.5	<0.5	<2	NA
	9 Feb 95	200	NA	50	0.6	<0.5	<2	NA
	9 May 95	300	NA	120	1.0	<0.5	<2	NA
	10 Aug 95	<50	NA	7.0	<0.5	<0.5	<2	NA
	13 Nov 95	90	NA	3.0	<0.5	<0.5	<2	NA
	16 Jun 96	<50	1,000	47	0.87	<0.5	0.8	6.5
	27 Dec 96	**110**	**2,300**	**35**	**0.88**	**<0.5**	**0.79**	**5.0**

Notes:

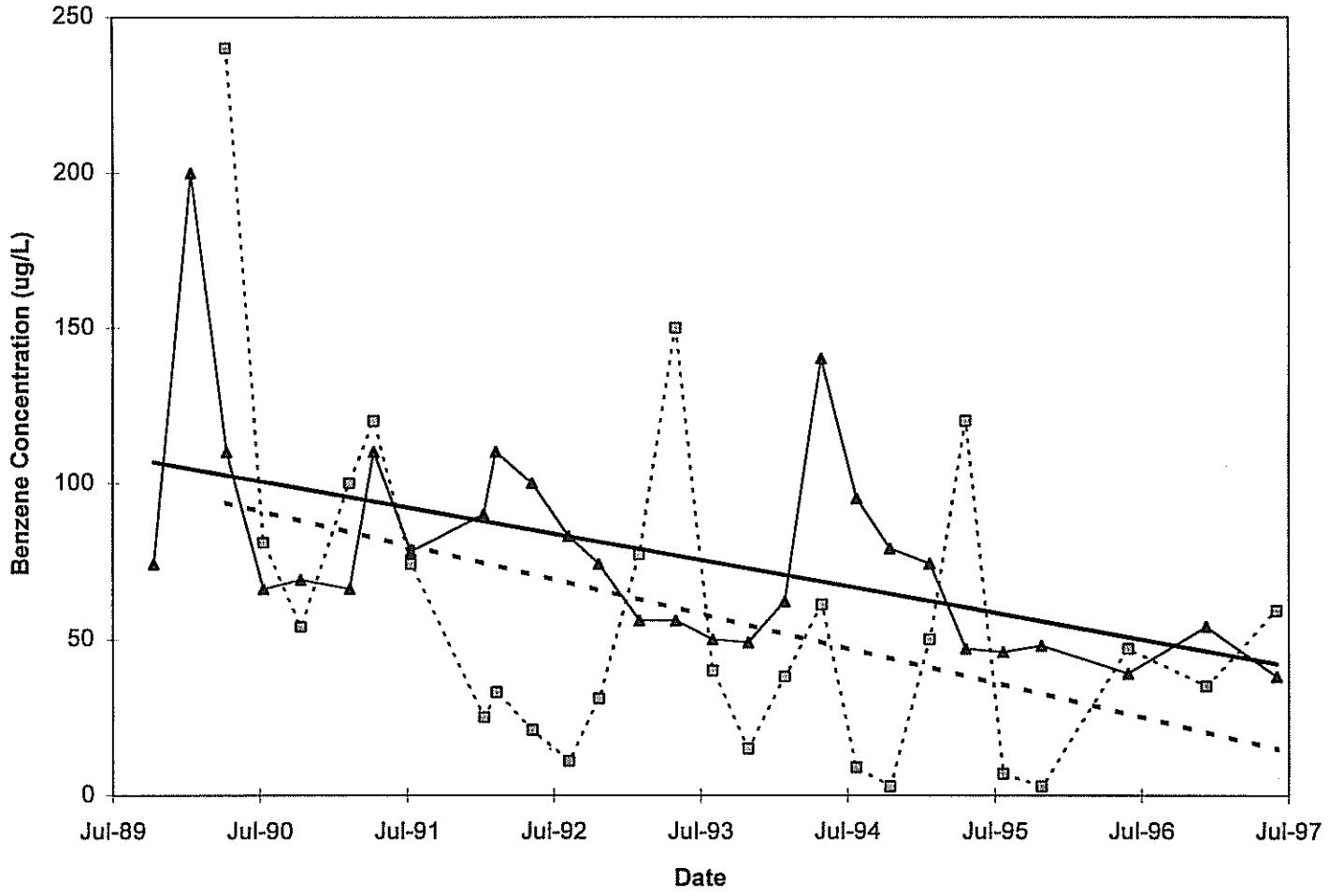
(a) Samples in 1996 were collected by Erler & Kalinowski, Inc. Samples prior to 1992 were collected by Engineering Science. All other data from PES Environmental, Inc. (December 1995).

(b) TPPH = Total Purgeable Petroleum Hydrocarbons quantified as Gasoline
TEPH = Total Extractable Petroleum Hydrocarbons quantified as Diesel
MTBE = Methyl Tertiary Butyl Ether

(c) ND = Not Detected
Note that detection limits were not available in the summary tables in PES, December 1995.

(d) NA = Not Analyzed

(e) Less than symbol ("<") indicated that the compound was not present above the detection limit indicated.



LEGEND

- MW-5
- MW-7
- MW-5 Regression
- MW-7 Regression

Notes:

1. Samples in 1996 and 1997 were collected by EKI. Samples from 1992 to 1995 were collected by PES Environmental Inc. Samples prior to 1992 were collected by Engineering Science.

Erler & Kalinowski, Inc.

Benzene Concentrations in Groundwater Samples Collected Downgradient of Former USTs

6601/6603 Bay Street
Emeryville, California
August 1997
EKI 950074.03
Figure 3

APPENDIX B
Tables Containing Soil and Groundwater Data from 1996 Investigation

(Tables 2 through 7 from EKI, 1996)

Table 2
Summary of Soil and Groundwater Sampling Depths and Analyses (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

Sample ID (b)	Sample Location	Sample Depth (feet bgs) (c)	TPPH as gasoline / BTEX & MTBE (EPA 8015 and 8020)	TEPH as diesel (EPA 8015)	TEPH and Fuel Fingerprint (d)	PAHs (EPA Method 8100)
Soil						
SB-1-5	SB-1	4.5-5	x	x		
SB-2-5	SB-2	4.5-5	x	x		
SB-3-5	SB-3	4.5-5	x	x		x
SB-4-5	SB-4	4.5-5	x	x		x
SB-5-6	SB-5	5.5-6	x	x		
SB-6-5	SB-6	4.5-5	x	x		
Groundwater						
Travel Blank	-	-	x			
SB-1	SB-1	11.0	x	x		
SB-2	SB-2	13.5	x	x		
SB-3	SB-3	11.5	x		x	
SB-4	SB-4	11.5	x	x		
SB-5	SB-5	10.5	x		x	
SB-6	SB-6	11.5	x		x	x
MW-5	MW-5	18.0 (e)	x	x		
MW-7	MW-7	6.7-18.7 (e)	x	x		

Notes:

(a) Soil and grab groundwater samples collected by Erler & Kalinowski, Inc. on 15 June 1996 and 16 June 1996.

(b) See Figure 2 for sampling locations corresponding to Sample ID.

(c) "feet bgs" denotes feet below ground surface. Grab groundwater samples were collected through the hollow stem augers in borings drilled to the depth indicated.

(d) For a fuel fingerprint analysis, the laboratory attempts to match the sample chromatogram with that of various hydrocarbon standards. The analysis includes the entire extractable range, i.e. from carbon chain lengths C9 to C40.

(e) Sample depth for the monitoring wells are indicated by the screened interval of the well. For well MW-5, only the bottom depth of the screened interval is known.

Abbreviations:

TPPH = Total Purgeable Petroleum Hydrocarbons
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
MTBE = Methyl tertiary butyl ether
TEPH = Total Extractable Petroleum Hydrocarbons
PAHs = Polycyclic Aromatic Hydrocarbons

Table 3
Total Petroleum Hydrocarbon Concentrations in Soil Samples (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

	Total Purgeable Petroleum Hydrocarbons			Total Extractable Petroleum Hydrocarbons		
Sample ID (b)	Conc. as gas (c) (mg/kg)	Laboratory Description of Chromatogram Pattern	Additional Comments (d)	Conc. as diesel (e) (mg/kg)	Laboratory Description of Chromatogram Pattern	Additional Comments (c)
SB-1-5	200	Unidentifiable pattern of hydrocarbons in C8-C12 range.	Mound centered at 17 min. (not observed in other soil samples).	820	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Mound in less than C12 range (not observed in other soil samples). Mound centered at C28.
SB-2-5	1.1	Pattern characteristic of weathered gasoline in C8-C12 range.	Mound centered at 23 min.	210	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Mound centered at C30.
SB-3-5	<1.0	Not detected.	Mound centered at 23 min.	86	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Mound centered at C30.
SB-4-5	4.2	Unidentifiable pattern of hydrocarbons greater than C9.	Mound centered at 23 min.	360	Unidentifiable pattern of hydrocarbons in C10-C24 range.	Mound centered at C30.
SB-5-6	7.3	Unidentifiable pattern of hydrocarbons greater than C8.	Mound centered at 23 min.	120	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Some small peaks in less than C12 range. Mound centered at C30.
SB-6-5	2.5	Unidentifiable pattern of hydrocarbons in C8-C12 range.	Mound centered at 23 min. Also several peaks centered at 17 min.	1,800	Unidentifiable pattern of hydrocarbons in C9-C40 range.	Very different pattern from other soil samples. Discrete peaks at C14, C17, C20, C24, and C28.

Notes:

(a) Soil samples collected by Erler & Kalinowski, Inc. on 15 June 1996.

(b) Sampling locations corresponding to Sample ID are shown in Figure 3.

(c) Concentration quantified as gasoline (includes C6 to C12 compounds).

(d) Appendix G contains chromatograms from laboratory analysis of soil samples and, for comparison, petroleum hydrocarbon and n-alkane standards.

(e) Concentration quantified as diesel (includes C9 to C24 compounds).

Table 4
Concentrations of Petroleum Hydrocarbon-Related Compounds in Soil Samples (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

Sample ID (b)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	PAHs (mg/kg)
SB-1-5	<0.12	<0.12	0.29	2.8	<0.62	NA
SB-2-5	0.019	<0.005	<0.005	0.0092	<0.025	NA
SB-3-5	<0.005	<0.005	<0.005	<0.005	<0.025	ND
SB-4-5	<0.005	0.0094	<0.005	0.015	<0.025	ND
SB-5-6	<0.005	0.0062	<0.005	0.021	<0.025	NA
SB-6-5	<0.005	<0.005	<0.005	0.026	<0.025	NA
PRG (c)	3.2	2,800	690	990	3,400	

Notes:

(a) Soil samples collected by Erler & Kalinowski, Inc. on 15 June 1996.

(b) Sampling locations corresponding to Sample ID are shown in Figure 2.

(c) U.S. EPA Preliminary Remediation Goals ("PRGs") for industrial soils (U.S. EPA, 1 September 1995).

Abbreviations:

MTBE = Methyl tertiary butyl ether

PAHs = Polycyclic Aromatic Hydrocarbons

NA = Not analyzed

ND = No compounds detected above laboratory method detection limits (See Appendix E for laboratory data sheets

Table 5
Total Petroleum Hydrocarbon Concentrations in Groundwater Samples (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

	Total Purgeable Petroleum Hydrocarbons			Total Extractable Petroleum Hydrocarbons		
Sample ID (b)	Conc. as gas (c) (ug/L)	Laboratory Description of Chromatogram Pattern	Additional Comments (c)	Conc. (d) (ug/L)	Laboratory Description of Chromatogram Pattern	Additional Comments (c)
SB-1	930	Unidentifiable pattern of hydrocarbons greater than C8.	Discrete peaks in 12-20 min. range.	9,400 (as diesel)	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Mound in less than C12 range.
SB-2	<50	Not detected.	Small mound centered at 24 min.	<41,000 (as diesel)	Not detected.	No peaks visible.
SB-3	<5000	Not detected.	Mound centered at 24 min.	13,000,000 (total extract.)	Pattern characteristic of diesel and unidentifiable pattern of hydrocarbons in C25-C36 range.	Mound centered at C17 with some discrete peaks.
SB-4	<200	Not detected.	Small mound centered at 24 min.	690,000 (as diesel)	Pattern characteristic of weathered diesel.	Mound centered at C17 with some discrete peaks.
SB-5	1,800	Unidentifiable pattern of hydrocarbons greater than C11 and discrete peak in C6-C7 range.	Mound centered at 24 min.	2,100,000 (total extract.)	Pattern characteristic of diesel.	Mound centered at C17.
SB-6	370,000	Unidentifiable pattern of hydrocarbons greater than C11.	Mound centered at 24 min.	22,000,000 (total extract.)	Pattern characteristic of diesel.	Mound centered at C17.
MW-5	180	Pattern characteristic of weathered gasoline in C6-C12 range.	Discrete peaks in 16-23 min. range.	<40,000 (as diesel)	Not detected.	No peaks visible.
MW-7	<50	Not detected.	No peaks or mounds.	1,000 (as diesel)	Unidentifiable pattern of hydrocarbons in C9-C24 range.	Mound centered at C24 (not observed in other groundwater samples).

Notes:

(a) Groundwater samples collected by Erler & Kalinowski, Inc. on 15 and 16 June 1996.

(b) Sampling locations corresponding to Sample ID are shown in Figure 2.

(c) Concentration quantified as gasoline (includes C6 to C12 compounds).

(d) Appendix G contains chromatograms from laboratory analysis of samples and, for comparison, petroleum hydrocarbon and n-alkane standards.

(e) Concentration quantified either as diesel (includes C9 to C24 compounds) or as total extractable petroleum hydrocarbons (includes C9 to C40 compounds).

Table 6
Concentrations of Petroleum Hydrocarbon-Related Compounds
in Groundwater Samples (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

Sample ID (b)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)	PAHs	
						Acenaph-thene (ug/L)	Fluorene (ug/L)
SB-1	<5	<5	11	17	<25	NA	NA
SB-2	0.99	<0.5	<0.5	<0.5	6.4	NA	NA
SB-3	160	<50	<50	<50	<250	NA	NA
SB-4	5.0	<2	<2	<2	<10	NA	NA
SB-5	150	<5	<5	11	<25	NA	NA
SB-6	<1,000	<1,000	<1,000	<1,000	<5,000	12,000-42,000 (c)	25,000-96,000 (c)
MW-5	39	<0.5	<0.5	<0.5	8.1	NA	NA
MW-7	47	0.87	<0.5	0.8	6.5	NA	NA
PRG (d)	0.39	720	1,300	1,400	180	370	240
MCL (e)	1	150	700	1,750	- (f)	-	-

Notes:

(a) Groundwater samples collected by Erler & Kalinowski, Inc. on 15 and 16 June 1996.

(b) Sampling locations corresponding to Sample ID are shown in Figure 2.

(c) Laboratory indicated that results may be artificially high due to presence of unknown, interfering hydrocarbon. PAHs are most likely associated with free product present in groundwater sample. Therefore, the reported concentrations are likely to be greater than actual aqueous concentrations. Sample analyzed after hold time.

(d) U.S. EPA Preliminary Remediation Goals ("PRGs") for drinking water (U.S. EPA, 1 September 1995).

(e) Maximum Contaminant Levels ("MCLs") for drinking water.

(f) Hyphen indicates that an MCL is not availabe for this compound.

Abbreviations:

MTBE = Methyl tertiary butyl ether
PAHs = Polycyclic Aromatic Hydrocarbons
NA = Not analyzed

Table 7
Results of Trend Analysis for Groundwater Data from Wells MW-5 and MW-7 (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California
(EKI 950074.03)

Statistical Parameters	Well MW-5				Well MW-7			
	TPPH	Benzene	Toluene	Total Xylenes	TPPH	Benzene	Toluene	Total Xylenes
n (b)	18	26	18	18	18	26	18	18
S (c)	14	-135	-18	21	-61	-96	-22	2
Mann-Kendall Probability (d)	0.313	NA (e)	NA (e)	0.227	NA (e)	NA (e)	NA (e)	0.485
Significance Level (f)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Result (g)	No upward trend	No upward trend	No upward trend	No upward trend	No upward trend	No upward trend	No upward trend	No upward trend

Notes:

(a) The data from Table 1 were evaluated using the Mann-Kendall test. A value equal to half the detection limit was used for concentrations reported to be less than laboratory method detection limits. Because detection limit values were not available for data prior to 1992, only the data from 29 January 1992 to 16 June 1996 were used in the analyses for all compounds except benzene. All historical data for benzene were used because the benzene concentrations were above detection limits. A statistical evaluation of ethylbenzene concentrations was not performed because ethylbenzene concentrations were less than detection limits in all but one sample.

(b) "n" is the number of sampling events.

(c) "S" is the Mann-Kendall statistic calculated using the methodology described in Gilbert (1987).

(d) Mann-Kendall probability is related to the values of S and n, and is obtained from Table A21 in Hollaender and Wolfe (1973).

(e) A negative S value indicates that the data are clearly not increasing and a Mann-Kendall probability is not applicable ("NA").

(f) A significance level of 0.05 is recommended by U.S. EPA (1994).

(g) A negative S value or a Mann-Kendall probability greater than the significance level indicates that there is no upward trend in the data (Gilbert, 1987).

Abbreviations:

TPPH = Total Purgeable Petroleum Hydrocarbons quantified as gasoline

APPENDIX C
Undated Survey Map

52.72
240.30
220.00
513.02

3.62'
52.72
240.30
220.00'
3/4" WATER RUNNING ALONG NORTH FACE OF BUILDING TOWARDS THE EAST
0.66'
FD. HUB AND TAG RCE 4021
R=640.00'
L=2.75'
TANG BRG S30°34'39" W
N 88°51'33" W
296.64'
S 88°51'33" E
220.00'
VALLEY GUTTER
FD. NAIL AND TAG RCE 12104
SSCO
SSCO
SSCO
EX. SANITARY SEWER APPROX. 18" DEEP
4'Hx6.5'W WINDOW (TYP. ALL 6) HEADER ELEV=18.84'
4'Hx6.5'W WINDOW HEADER ELEV=27.12
4'Hx6.5'W WINDOW HEADER ELEV=27.12
BATHROOM AREA
BATHROOM
1.0'
1.0'
PARCEL THREE POLICY OF TITLE INSURANCE NO. 105361
10Wx12'-6"H DOOR
1' PARTY WALL EASEMENT
3/4" WATER RUNNING ALONG NORTH FACE OF BUILDING TOWARD THE WEST
SSCO RIM=15.55
INV=9.75
SEWER SERVICE OF GOOD INTEGRITY
CATV
CONCRETE RAMP
14' OVERHEAD DOOR
LOADING BAY
14'-2" OVERHEAL DOOR
20'-2" HIGH OPENING
12' HIGH OPENING
PARCEL ONE POLICY OF TITLE INSURANCE NO. 106361
F.F. TO BOTTOM OF RAFTERS +20'-2"
FF TO TOP OF WEB +29'-0"
135.42'
N 01°08'27" E
170.00'
135.00'
10'-6" OVERHEAD DOOR
14'-2" OVERHEAL DOOR
LOADING BAY
10'-6" OVERHEAD DOOR
RIM=12.12
10" INV OUT=10.1
CONCRETE
EXISTING PIPELINE OF MARGINAL INTEGRITY
14'-2" OVERHEAD DOOR
LOADING BAY
RIM=12.40
10" INV OUT=10.4
10' OVERHEAD DOOR
1" FIRE DRAINS
10' OVERHEAD DOOR
1-1/2" FIRE DRAIN
ELEC. ROOM
ACTUAL POINT OF COMMENCEMENT FOR PARCEL THREE (3)
D.S.
1-1/2" FIRE DRAIN
D.S.
6" VENT
AIR LINE
ELEC. RISER
UNMAINTAINED SLOT DRAIN AROUND SUMP
N 88°51'33" W
250.39'
FIRE SERVICE
8" FS
CB
INV=8.49
WATER METERS
CATV
STREET LIGHT BOX
BEGIN LEGAL
ASPHALT
UNCONFIRMED STORM LINE
CONC PAD
EXISTING PIPELINE OF MARGINAL INTEGRITY
5' SANITARY SEWER EASEMENT
S 88°51'33" E 391.62'
UNCONFIRMED STORM LINE
CONCRETE
PARCEL TWO POLICY OF TITLE INSURANCE NO. 105361
RIM=12.84
UNKNOWN SIZE AND INVERT
ACTUAL POINT OF COMMENCEMENT FOR PARCEL ONE
N 88°51'33" W
257.50'
GAS
RIM=12.44
8" INV OUT=10.36
RIM=12.47
8" INV OUT=10.47
12" RCP
RIM=12.64
8" INV OUT=10.64
M.W.
RIM=12.86
8" INV OUT=11.0
M.W.
RIM=12.98
8" INV OUT=11.3
1-1/2" FIRE DRAIN
ELEC. CONDUIT
GAS CONNECTION
GAS REGULATOR
RIM=12.23
12" INV IN(E)=9.73
12" INV IN(N)=9.65
1" FIRE DRAIN
1-1/2" FIRE DRAIN
1-1/2" FIRE DRAIN
ROOF SCUPPER
RIM=13.05

N

0 20 40
(Approximate Scale in Feet)

APPENDIX D
Field Methods and Procedures for Soil and Groundwater Sampling

APPENDIX D

FIELD METHODS AND PROCEDURES FOR SOIL AND GROUNDWATER SAMPLING

6601/6603 Bay Street, Emeryville, California

These field methods and procedures describe environmental sampling protocols that will be employed during drilling and sampling at 6601/6603 Bay Street in Emeryville, California ("Site"). The methods described below are for environmental characterization only and are not intended for geotechnical purposes.

Prior to field work, written site access will be obtained from the current property owners. Once access is obtained and the work has been scheduled, Underground Services Alert ("USA") will be notified and a private utility locating company will be retained to investigate the presence of underground utilities at proposed borehole locations. Applicable permits for exploratory borings with grab groundwater sampling will be obtained from Alameda County Public Works Agency ("ACPWA") prior to starting work.

D-1.0 Collection of Soil Samples

A licensed driller will be retained to use a hollow-stem auger rig to advance the borings for soil sampling to depths of up to 18 feet bgs. Soil samples will be collected for purposes of lithologic logging and laboratory analysis. Samples collected for lithologic logging will be screened with an organic vapor meter to note the possible presence of volatile organic compounds ("VOCs") in the soil samples. Lithologic logging will be performed by an EKI geologist under the supervision of a Professional Geologist.

A split spoon sampler will be used to obtain undisturbed samples in precleaned stainless steel sample tubes. When the sampler is removed from a borehole and opened, the stainless steel liner planned for laboratory analysis will be sealed by covering both ends of the stainless steel tube with Teflon® sheets and plastic end caps. For samples to be analyzed for VOCs and total petroleum hydrocarbons as gasoline, the samples will be collected from the end of the liners into Encore® samplers.

A sample label will be attached to each stainless steel liner. The label will include a unique sample identification number, the sample depth, the time, and the date when the sample was collected. Sealed liners will be placed in zip-closure plastic bags, then securely packaged and shipped to the laboratory analysis, as described in Table 1 of the Work Plan. Chain-of-custody records will document sampling handling and delivery to the laboratory.

APPENDIX D

FIELD METHODS AND PROCEDURES

D-2.0 Collection of Grab Groundwater Samples from Temporary Wells

The hollow-stem auger drill rig will be used to install temporary wells in boreholes for purposes of collecting grab groundwater samples. The boreholes will be logged by geologist under the supervision of a Professional Geologist. After reaching the total depth in each borehole, which is estimated to be 16 feet bgs, the driller will place a PrePak™ temporary well into each boring. The PrePak™ temporary wells will consist of 10 feet of 0.010" factory-slotted Schedule 40 PVC with a pre-constructed sand pack. A fine mesh will hold the sand pack in place around the screened PVC. Blank Schedule 40 PVC riser will be screwed onto the top of the screened section that will extend to the ground surface for sampling.

Following placement of the temporary well, water will be allowed to accumulate in the well. Prior to purging and sampling, separate phase hydrocarbon ("SPH") thickness, if any, will be measured in each temporary well using a product interface probe. If SPH or a sheen is present, groundwater purging and sampling will be performed through a stilling tube so the groundwater underlying the SPH is sampled. The stilling tube will consist of blank Schedule 40 PVC pipe of a smaller diameter than the PrePak™ well. The stilling tube will be advanced to a depth approximately six inches to one foot below the bottom of the SPH, if present. The groundwater sampling tubing will then be lowered until the intake extends a few inches beyond the bottom of the stilling tube. Groundwater samples will be collected from the temporary wells using "low-flow sampling techniques" (i.e., generally accordance with EPA recommended procedures *(Low Flow (Minimal Drawdown) Groundwater Sampling Procedures*, EPA/540/S-95/504, April 1996, and *Use of Low-Flow Methods for Groundwater Purging and Sampling: An Overview*, US EPA Region 9, Quick Reference Advisory, December 1995). In accordance with low-flow sampling techniques, groundwater will be purged until at least three of four parameters (temperature, specific conductance, pH, and turbidity) have stabilized. If low-flow sampling cannot be accomplished due to limited groundwater availability (e.g. at a purge rate of 0.2 liters per minute the water level in the temporary well produces drawdown greater than 0.33 feet), the final parameter readings will be recorded and the sample will be collected.

Following purging, groundwater samples will be collected into pre-cleaned, laboratory supplied sample containers using the peristaltic pump. New Teflon™ tubing will be inserted into each well, and new Viton™ tubing inserted into the head of the pump. Water samples will be collected into clean containers supplied by the analytical laboratory as appropriate for the method of analysis. Each sample will be labeled with a unique sample number and the date and time of collection, placed in a zip-closure plastic bag, logged onto a chain-of-custody form, and placed in a chilled ice chest for transport to the laboratory. Shallow grab groundwater samples will be analyzed for the parameters listed in Table 1 of the Work Plan. As indicated in Table 1 of the Work Plan, a duplicate sample will be collected from one of the grab groundwater sampling locations.

After the completion of the groundwater sampling, the temporary wells will be removed the boreholes and the boreholes will be filled with cement grout, as described below.

D-3.0 Monitoring Well Development and Sampling

Well MW-7 will be developed at least 48 hours prior to performing the groundwater sampling. Well development will occur by repeatedly surging the well with a surge block and pumping the water. Sediment-containing groundwater will be removed with the pump. Field measurements including pH, temperature, specific conductance, and turbidity will be taken throughout the development process. Development of the monitoring well will continue until the extracted water is sand-free and the overall turbidity remains constant.

Prior to sampling, well MW-7 will be assessed for the presence of SPH or a sheen using a product interface probe. The water level in the well will also be gauged. Groundwater samples will be collected from well MW-7 using "low-flow sampling techniques" (i.e., generally accordance with EPA recommended procedures *(Low Flow (Minimal Drawdown) Groundwater Sampling Procedures*, EPA/540/S-95/504, April 1996, and *Use of Low-Flow Methods for Groundwater Purging and Sampling: An Overview*, US EPA Region 9, Quick Reference Advisory, December 1995). Prior to purging and sampling, free product thickness, if any, will be measured in each monitoring well. In accordance with low-flow sampling techniques, groundwater will be purged until at least three of four parameters (temperature, specific conductance, pH, and turbidity) have stabilized.

Groundwater samples from the well will be collected using a peristaltic pump. The well inlet will be positioned at the midpoint of the submerged well screen interval.

Groundwater samples will be labeled, logged on a chain-of-custody document, and packed on ice in a chilled ice chest for transport to the laboratory. The groundwater samples will be analyzed for the list of parameters in Table 1 of the Work Plan.

Rinsate from equipment cleaning and purged groundwater from the monitoring wells will be contained and disposed in accordance with applicable laws and regulations as described in Section 6.

D-4.0 Backfilling Boreholes

All boreholes completed at the Site will be backfilled with cement grout to the total depth of the borehole or as otherwise required by the ACPWA permit. Backfilling will be accomplished by mixing cement grout at the surface and filling the open borehole with

ground in accordance with ACPWA requirements. Boreholes will be completed at the surface and matched, as closely as practicable, to the surrounding paving surface.

D-5.0 Decontamination

Drilling, soil sampling, and groundwater sampling equipment items used during the investigation will be cleaned prior to and during their use. Augers and down hole equipment used to advance soil borings and collect soil samples will be brought to the Site pre-cleaned. In addition, the subcontractor's down-hole drilling equipment will be inspected by the supervising engineer or geologist for cleanliness prior to drilling.

Between boreholes, drilling and reusable groundwater sampling equipment will be steam-cleaned at a designated on-Site location. Rinse water generated during the steam-cleaning operations will be collected and contained in DOT-approved 55-gallon drums by the driller.

D-6.0 Disposal of Investigation-Derived Wastes

Wastes generated during the investigations at the Site will include any excess soil generated during borehole drilling and water from both grab groundwater sampling, well development and purging, and the decontamination of field testing equipment. Soil and water generated from drilling activities will be placed in DOT-approved 55-gallon drums that will be properly labeled as to the contents and dates of generation. The investigation-derived waste will be characterized for disposal purposes and Sybase will coordinate with a disposal contractor to dispose of the waste off-Site in accordance with applicable state and federal laws.