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DATE: 28 August 95 FROM: Michelle King

TO: Susan Hugo PROJECT: Sybase, Inc.

FIRM NAME: ACDEH PROJECT#: 940018.08

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☒ REPORT DRAFT - see below ☐ AS REQUESTED

☐ LETTER/MEMORANDUM ☐ FOR APPROVAL

☐ SPECIFICATIONS: ☐ FOR REVIEW & COMMENTS

☐ OTHER: ☐ FOR INFORMATION & COORDINATION

DESCRIPTION: Portions of Draft Final Site Investigation Report for the 64th and 65th St. Properties

REMARKS:

Includes: Cover Letter
Executive Summary (pp 1-2)
Lowenberg & Ryerson Tanks (backgrd.; pp. 9-10)
Results - Petroleum Hydrocarbons in groundwater - Lowenberg & Ryerson Tanks (pp. 20-21)
Conclusions & Recommendations (pp. 25-29)

My apologies for the mixed up addresses!

Michelle

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21 August 1995

Mr. Sumadhu Arigala
California Regional Water Quality Control Board,
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Ms. Susan Hugo and
Dr. Ravi Arulanantham
Alameda County Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: Draft Final Site Investigation Report for the
64th and 65th Street Properties,
Emeryville, California
Sybase, Inc., Emeryville, California
(EKI 940018.08)

Dear Mr. Arigala, Ms. Hugo, and Dr. Arulanantham:

On behalf of Sybase, Inc., Erler & Kalinowski, Inc. ("EKI") is pleased to submit the enclosed draft report entitled *Final Site Investigation Report for the 64th and 65th Street Properties, Emeryville, California,* dated 21 August 1995 ("the draft Final Report") for your review and comments. We would like to discuss any comments that you may have on the draft Final Report at our meeting scheduled for 29 August 1995 at 9 AM.

EKI will submit a revised Final Report to the Regional Water Quality Control Board ("RWQCB") and the Alameda Department of Environmental Health ("ACDEH") within two weeks of receipt of your comments. On the basis of our prior discussions, it is our understanding that upon review of the Final Report, the RWQCB and the ACDEH will send letters to Sybase, Inc. concluding that

(1) the characterization of the 64th and 65th Street properties ("the Site") is adequate and complete with respect to Sybase, Inc.'s planned use of the Site and

(2) the outlined approach of the risk management plan is appropriate to manage residual chemical occurrence on the Site.

Sybase, Inc. and EKI will work with you to develop the details of the risk management plan for the Site.

We look forward to continue working with you on this project. If you have any questions, please do not hesitate to call.

Very truly yours,

ERLER & KALINOWSKI, INC.

Michelle Kriegman King, Ph.D.
Project Manager

Theodore G. Erler, P.E.
President

Enclosure

cc:

John Bruno, Sybase, Inc.
Tom Sullivan, AMB Corporate Real Estate Advisors, Inc.
Susan Lowenberg, Lowenberg Corporation
Anita Pickens, Ryerson

DRAFT

Erler & Kalinowski, Inc.

Draft Final Site Investigation Report for the 64th and 65th Street Properties Emeryville, California

Sybase, Inc., Emeryville, California
(EKI 940018.08)

pollution cond. management contained w/ planned

EXECUTIVE SUMMARY

Results of the investigations on the properties at 1410 and 1450 64th Street and 1465 65th Street ("the Site") in Emeryville, California indicate that chemicals in soil and groundwater are manageable in a manner that is consistent with the planned use of the Site.

< the existing facility & long term use

Overall, chemical concentrations detected in soil samples collected from the Site are very low and should not present a significant incremental human health risk to construction personnel involved in the development of the Site or to future occupants of the Site.

- Metals concentrations in soil samples collected from the Site are low or not detected.

- The highest concentrations of petroleum hydrocarbons in soil (i.e., up to 3,400 mg/kg) are likely associated with the former oil refinery present on the Site more than 50 years ago. The petroleum hydrocarbons are of low toxicity and are relatively immobile.

- Sybase, Inc.'s proposed redevelopment plan for the Site should (1) restrict further downward migration of petroleum hydrocarbons to groundwater by preventing infiltration of rainwater and (2) prevent or minimize direct contact with the soil by future building occupants and maintenance personnel.

- Volatile organic chemicals ("VOCs") were not detected in 30 of 31 soil samples collected from the Site. The VOC concentrations detected in the one soil sample are low (i.e., less than 1 mg/kg).

- Polychlorinated biphenyls ("PCBs") were not detected in 26 of 27 soil samples collected from the Site. The PCBs were present in one sample at a concentration 0.032 mg/kg.

- Polycyclic aromatic hydrocarbons ("PAHs") were not detected in 28 soil samples collected from the Site.

Results of investigations on the Site indicate concentrations of metals, petroleum hydrocarbons, and VOCs detected in groundwater are manageable.

- Arsenic, nickel, and zinc were the only metals detected at low concentrations in filtered groundwater samples collected from the Site (i.e., generally less than the Maximum Contaminant Levels).

- Petroleum hydrocarbons in groundwater in the vicinity of the former oil refinery are present at elevated concentrations. However, petroleum hydrocarbon concentrations detected in groundwater samples collected 110 to 160 feet downgradient of the Site are low (i.e., 110 to 250 ug/L), indicating that extensive migration of petroleum hydrocarbons from the former oil refinery area has not occurred.

- The chlorinated VOCs in groundwater on the Site appear to be migrating onto the Site from RIX Industries and possibly from other upgradient, currently unidentified, off-site sources.

- PAHs were not detected in 12 groundwater samples collected on the Site.

In accordance with discussions with Regional Water Quality Control Board ("RWQCB") and Alameda Department of Environmental Health ("ACDEH") staff, residual chemical occurrence in soil and groundwater at the Site can be addressed in a risk management plan. Sybase, Inc. will work with RWQCB and ACDEH staff to develop a risk management plan for the Site to address identified short-term and long-term risks. The objective of the risk management plan is to provide a framework to manage residual chemical occurrence in soil and groundwater on the Site in a manner that is consistent with a commercial/industrial land use and is protective of human health and water quality. The general components of the risk management plan are outlined in the report.

3.2.1 Former Oil Refinery Operation

Based on a review of a Sanborn Fire Insurance map for the Site from the year 1911, the Ryerson paved lot property and the west portion of the Lowenberg property were occupied by an oil refinery (Figure 2). Features of the oil refinery listed on the Sanborn map include "oil tanks, oil stills, coal oil department, oil reservoir, oil boiler, asphalt boiler, and refinery". The old refinery is not present in the earliest available aerial photographs of the Site (1949) or the next available Sanborn map (1950). As discussed below in Section 5, chemicals of potential concern have been detected in soil and groundwater in the area of the former oil refinery.

3.2.2 Lowenberg Property Former Underground Fuel Tanks

Two underground fuel storage tanks were removed from the 1410 64th Street property in February 1990 (Figure 2). At the time of tank removal operations, the tanks reportedly showed no signs of leakage (ENSR, January 1991). During the tank excavation, water was seeping into the excavation through a conduit created by a utility line running across the gasoline tank (ENSR, January 1991). Groundwater sampled from inside the tank excavation was found to contain total petroleum hydrocarbons ("TPH") quantified as diesel, TPH quantified as gasoline, and benzene, toluene, ethylbenzene, and xylenes ("BTEX"). Approximately 15,000 gallons of water from the excavation was pumped and hauled in a vacuum truck (ENSR, January 1991). Maximum concentrations of TPH and BTEX detected soil samples collected from the excavation sidewalls were as follows (ENSR, January 1991):

Compound	Maximum Concentration (mg/kg)
TPH as Diesel	2,000
TPH as Gasoline	270
Benzene	0.99
Toluene	2.0
Ethylbenzene	0.83
Xylenes	6.9

Three groundwater wells were installed near the former fuel tank site. Elevated concentrations of TPH and BTEX were detected in soil samples collected from the borings installed for monitoring well construction (Table 2; ENSR, 1991). The analytical results of groundwater samples obtained semi-annually from April 1990 to January 1993 indicate that concentrations of TPH as gasoline and BTEX in groundwater samples in upgradient wells TMW-1 and TMW-2 are low and have decreased or remained stable (Table 3). TPH

and BTEX have not been detected in downgradient well TMW-3 (Table 3).

ACDEH staff have indicated that they plan to close the Lowenberg tank site (EKI oral communication with Susan Hugo, ACDEH, 1995).

3.2.3 Ryerson Steel Facility Former Underground Tanks

A 10,000-gallon underground diesel storage tank was removed from the Ryerson Steel facility on 11 March 1993. Soil samples collected from the east and west ends of the excavation pit at depths of 9.5 and 8.5 feet below ground surface ("ft bgs"), respectively, did not contain TPH and BTEX above the method reporting limits (SEMCO, 1993). A grab groundwater sample collected from the excavation pit contained 850 ug/L TPH quantified as diesel (SEMCO, 1993).

Three monitoring wells (wells RMW-1, RMW-2 and RMW-3) surrounding the former tank location were installed on 6 August 1993 (Figure 2). Groundwater samples obtained since well installation have indicated the presence of the following compounds: TPH as gasoline in wells RMW-1 and RMW-2 at concentrations of 50 and 57 ug/L, respectively; free-phase hydrocarbons in well RMW-3; and benzene and xylenes in well RMW-2 at concentrations of 1.3 and 0.59 ug/L, respectively (Table 3; Hydro-Environmental Technologies, Inc., December 1993). It is not known if the free-phase hydrocarbons observed in well RMW-3 are related to the former Ryerson tank because petroleum hydrocarbon concentrations measured in groundwater samples collected within the former tank area (i.e., from well RMW-2) are significantly lower.

ACDEH staff have indicated that they plan to close the Ryerson tank site (EKI oral communication with Susan Hugo, ACDEH, 1995).

3.2.4 Ryerson Steel Facility Chemical Storage Areas

During the site walk-through of the Ryerson Steel facility by EKI, two chemical storage areas were observed (Figure 2). Chemicals stored included petroleum hydrocarbons and various solvents. According to Ryerson Steel personnel, these two areas represent the only two areas on the Ryerson Steel facility where chemicals have historically been stored. At the time of the walk-through, no significant ground surface staining or other indicators of potential releases were observed.

covered with buildings and the road, the planned redevelopment should limit further downward migration of petroleum hydrocarbons to groundwater by preventing infiltration of rainwater. Also, the construction of buildings and roads over soil containing elevated petroleum hydrocarbons concentrations will prevent or minimize direct contact with the soil by future building occupants and maintenance personnel.

5.2.2 Groundwater

5.2.2.1 On-Site Petroleum Hydrocarbon Distribution in Groundwater

Petroleum hydrocarbons were detected in groundwater samples collected from all wells and grab groundwater sampling locations on the Site (Figures 7 and 8). Detected concentrations ranged from 71 ug/L to 11,000 ug/L for TPPH and from 97 ug/L to 130,000 ug/L for TEPH (Tables 7 and 12). The only groundwater samples in which the petroleum hydrocarbons resembled common petroleum hydrocarbon standards were MW-1 and TMW-1, which were quantified as diesel and gasoline, respectively (Tables 7 and 12).

For the other samples, the hydrocarbon patterns were reported as a range of carbon chain lengths (i.e., C9 to C24) because the laboratory indicated that gas chromatogram of the sample did not resemble typical hydrocarbon standards (Tables 7 and 12). In many of the samples, TEPH was quantified to C24, although the laboratory indicated that the hydrocarbon pattern on the chromatogram extended beyond C36. Hydrocarbons in the range of C9 to C36 represent middle- to high-boiling point petroleum distillates. Further evaluation of the sample chromatograms from downgradient wells MW-5 and MW-6, borings P-4 through P-7, and boring P-11 indicates that the hydrocarbons in these samples may resemble Fuel Oil #6 (i.e., Bunker C oil) or crude oil (see Appendix F for sample chromatograms and Appendix G for standard chromatograms).

There are several possible on-site sources for the hydrocarbons detected in groundwater on the Site: the former fuel tanks on the Lowenberg property, the former diesel tank on the Ryerson property, and the former oil refinery. Analytical results for samples collected in the vicinity of these possible on-site sources are discussed below. Potential upgradient, off-site sources are also discussed.

Former Lowenberg Tanks

Groundwater sample TMW-1, collected upgradient from the former Lowenberg fuel tanks, contained TPPH quantified as

gasoline at a concentration of 100 ug/L (Figure 8). Groundwater sample TMW-1 also contained BTEX compounds (i.e., benzene at 4.8 ug/L, ethylbenzene at 1.8 ug/L, and total xylenes at 3.2 ug/L; Table 12). As discussed in Section 3.2.2, TPH and BTEX concentrations in the vicinity of the former Lowenberg tanks have been stable or decreasing with time (Table 3). In prior investigations, TPH and BTEX have not been detected in well TMW-3, located downgradient of the former Lowenberg tanks (Table 3).

Former Ryerson Tanks

The groundwater sample obtained from well RMW-3, which is approximately 30 feet south of the former Ryerson diesel tank, contained high concentrations of both TPPH (11,000 ug/l) and TEPH (97,000 ug/l) (Figures 7 and 8, respectively). The source of the petroleum hydrocarbon concentrations measured in sample RMW-3 is not known. Concentrations of hydrocarbons detected in samples collected from wells RMW-1 and RMW-2, which are located closer to the former Ryerson underground tank, are more than 2 orders of magnitude lower than levels detected in samples from well RMW-3 (Figure 7). Furthermore, the chromatogram pattern from sample RMW-3 is more similar to that of sample MW-5 than samples RMW-1 and RMW-2 (Appendix F). These results indicate that the hydrocarbons detected in sample RMW-3 may originate from a source other than the former Ryerson tank.

Former Oil Refinery

The highest concentrations of TEPH in groundwater (i.e., greater than 10,000 ug/L) were measured in samples collected in the vicinity of the former refinery (i.e., sampling locations MW-5, MW-6, P-4, and P-11, Figure 7). The elevated concentrations of petroleum hydrocarbons measured in this area likely originate from the former refinery. Extractable petroleum hydrocarbon concentrations greater than 5,000 ug/L are suggestive of an immiscible hydrocarbon phase (Zurcher and Thuer, 1978). A measurable thickness of a floating hydrocarbon layer has not been identified on the Site. Rather, small globules of immiscible hydrocarbons were observed on the outside of the disposable Teflon bailer while sampling at locations MW-5, MW-6, RMW-3, P-4, and P-11. Because of the relatively high molecular weight of the petroleum hydrocarbons, they should not be particularly mobile in groundwater.

Ethylbenzene was detected in duplicate samples collected from boring P-11 at a concentration of 17 to 21 ug/L (Tables 7 and 12). Xylenes were detected at concentrations ranging from 17 to 44 ug/L in samples collected from borings P-4 and P-11 (Tables 7 and 12). In addition to the former Lowenberg tank area, these are the only locations on the Site in which BTEX compounds were detected. The detected concentrations

and has lower detection limits than the industrial solvents method.

Because the chlorinated VOCs detected in groundwater samples collected from the Site originate from off-site sources, RWQCB and ACDEH staff have indicated that they will not require Sybase, Inc. to remediate groundwater for chlorinated VOCs (EKI personal communication with Sumadhu Arigala, RWQCB; Ravi Arulanantham and Susan Hugo, ACDEH).

5.4 PCBs AND PAHs

There were no PCBs detected in 26 of the 27 soil samples collected from the Site (Table 11). Soil sample MW-3, collected from a depth of 6 ft bgs, contained PCBs at concentration of 0.032 mg/kg. This concentration is an order of magnitude below the PRG of 0.34 mg/kg for industrial sites (EPA, 1995).

No PAHs were detected in any of the 28 soil or 12 groundwater samples collected from the Site (Tables 5, 7, 11, and 13).

5.5 TOTAL ORGANIC CARBON

The total organic carbon content of soil was analyzed in 4 soil samples collected on-Site and in the vicinity of the Site. The soil samples ranged from a clay to a clayey sand. The purpose of the total organic carbon analyses was to obtain site-specific soil property data in the event that fate and transport modeling was required. The total organic carbon content ranged from 86 to 440 mg/kg, or 0.0086 to 0.044 percent (Table 6). The measured organic carbon contents are low for these types of soils (Hassett et al., 1980).

6.0 CONCLUSIONS AND RECOMMENDATIONS

Results of the initial and final site investigations indicate that chemicals in soil and groundwater are manageable in a manner that is consistent with the planned use of the Site. On the basis of the current condition and planned use of the Site, completion of a risk management plan is recommended to assure that residual chemicals on the Site are managed to mitigate risk to human health or the environment. The components of the risk management plan are outlined in the Section 6.3 below.

6.1 SOIL

Overall, chemical concentrations detected in soil samples collected from the Site are very low and should not present a significant incremental human health risk to construction personnel involved in the development of the Site or to future occupants of the Site.

- Metals concentrations in soil samples collected from the Site are low or not detected. Because detected metals concentrations are more than an order of magnitude less than their respective PRG, the incremental human health risk due to exposure to soil from the Site that contains metals at these low concentrations should be negligible.

- The highest concentrations of petroleum hydrocarbons in soil are likely associated with the former oil refinery present on the Site more than 50 years ago. Analytical results of soil sampling indicate that the petroleum hydrocarbons associated with the former oil refinery do not contain PAHs or BTEX compounds, and thus, are of low toxicity. They are also of high molecular weight and thus relatively immobile.

- Sybase, Inc.'s proposed redevelopment plan for the Site should restrict further downward migration of petroleum hydrocarbons to groundwater by preventing infiltration of rainwater. Also, the construction of buildings and roads over soil containing petroleum hydrocarbons will prevent or minimize direct contact with the soil by future building occupants and maintenance personnel.

- VOCs were not detected in 30 of 31 soil samples collected from the Site. Because the VOC concentrations detected in the one soil sample were low (i.e., less than 1 mg/kg), there does not appear to be a significant source of VOCs to groundwater on the Site. Furthermore, the human health risk due to exposure to soil from the Site that may contain VOCs at these low concentrations should be negligible.

- PCBs were not detected in 26 of 27 soil samples collected from the Site. The PCBs were present in one sample at a concentration that is an order of magnitude less than the PRG for industrial soil.

- PAHs were not detected in 28 soil samples collected from the Site.

In accordance with discussions with RWQCB and ACDEH staff, residual chemical occurrence in soil at the Site can be addressed in a risk management plan.

6.2 GROUNDWATER

Results of the initial and final site investigation indicate concentrations of metals, petroleum hydrocarbons, and VOCs detected in groundwater are manageable.

- Arsenic, nickel, and zinc were the only metals detected in filtered groundwater samples collected from the Site. Maximum concentrations of nickel and zinc were less than their respective MCLs. Arsenic concentrations exceeded the MCL of 50 ug/L at only one sampling location.

- Petroleum hydrocarbons in groundwater in the vicinity of the former oil refinery are present at elevated concentrations. However, petroleum hydrocarbon concentrations detected in groundwater samples collected 110 to 160 feet downgradient of the Site are low (i.e., 110 to 250 ug/L), indicating that extensive migration of petroleum hydrocarbons from the former oil refinery area has not occurred.

- The chlorinated VOCs in groundwater on the Site appear to be migrating onto the Site from RIX Industries and possibly from other upgradient, currently unidentified, off-site sources. Because the chlorinated VOCs detected in groundwater samples collected from the Site originate from off-site sources, the RWQCB and ACDEH have indicated that they will not require Sybase, Inc. to remediate groundwater for chlorinated VOCs.

- PAHs were not detected in 12 groundwater samples collected on the Site.

In accordance with discussions with RWQCB and ACDEH staff, residual chemical occurrence in groundwater can be managed through a groundwater monitoring program.

6.3 RISK MANAGEMENT PLAN COMPONENTS

On the basis of the results of the initial and final site investigations, ACDEH and RWQCB staff have indicated that the current Site conditions should not prevent development of the Site as planned by Sybase, Inc. Sybase, Inc. will work with ACDEH and RWQCB staff to develop a risk management

plan for the Site to address identified short-term and long-term risks. The objective of the risk management plan is to provide a framework to manage residual chemical occurrence in soil and groundwater on the Site in a manner that is consistent with a commercial/industrial land use and is protective of human health and water quality. The general components of the risk management plan are outlined in the sections below.

6.3.1 Short-Term Risk Management

The short-term risk management plan will address precautions that will be undertaken to ensure that human health and the environment are protected during construction for Sybase, Inc.'s planned redevelopment of the Site. Typical precautions are as follows:

- use appropriate level of personal protective equipment by earthwork construction personnel (e.g., workers who may directly contact soil containing chemicals of concern during Site preparation, grading, and foundation construction) who are health and safety trained to ensure that human health is protected during construction;

- pre-establish procedure(s) for earthwork construction personnel to manage soil that is obviously contaminated, as identified by visual observation or elevated OVM readings; and

- provide a narrative description of how the bay mud minimizes the risks to the deeper aquifer when piles are driven through shallow soil and groundwater containing chemicals of concern.

6.3.2 Long-Term Risk Management

The long-term risk-management plan will address precautions that will be undertaken to ensure that human health and the environment are protected after construction and redevelopment of the Site are complete. Components of the long-term risk management plan are as follows:

- confirm that potential risk to future on-site employees by inhalation of chemicals volatilizing from soil or groundwater is negligible;

- establish protocols for future on-site maintenance personnel engaged in subsurface excavation activities (e.g., utility repairs) to define adequate protective measures;

* General statement - any changes in the site H&S plan must be prepared

- establish perimeter groundwater monitoring wells to confirm that groundwater quality is stable or improving; and
- describe the hydrogeology of the Site and its vicinity to assess the site-specific factors restricting migration of chemicals in the shallow aquifer zone to the deeper aquifer zone.

The groundwater monitoring plan will recommend the approximate location and number of wells to be installed, the chemical analyses to be performed on groundwater samples, the frequency of monitoring, contingency options if chemical concentration trends significantly increase, and procedures to terminate monitoring once it is shown that conditions are stable or improving.

7.0 REFERENCES

American Society for Testing and Materials, July 1994, *Emergency Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*, ASTM Designation ES 38-94.

Blymyer Engineers, Inc., 13 February 1995, *Quarterly Groundwater Monitoring*, 1301 65th Street, Emeryville, California.

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