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Erler &
Kalinowski, Inc.

AGENDA

Meeting with Sybase, Inc. and ACDEH

Closure of Former USTs at
6601/6603 Bay Street, Emeryville, California

2 October 1997

1. Introduction
   - Status of Property
   - Summary of Results of Prior Investigations

2. Results of Groundwater Monitoring Downgradient of Former USTs
   - Trend Analysis

3. Risk-Based Corrective Action (RBCA) Evaluation
   - Potential Risks to Human Receptors
   - Potential Risks to Aquatic Receptors

4. Closure Certification Letter for Former USTs

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

Well Number	Sample Date	Chemical Concentration in Groundwater (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	1100	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	<0.5	<0.5	NA
	10 Nov 92	240	<100	74	1	<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	<1	<1	NA
	14 Feb 94	140	NA	62	<0.5	<0.5	<0.5	NA
	16 May 94	310	NA	140	3	<3	<3	NA
	12 Aug 94	500	NA	95	34	4	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	<2	NA
	27 Dec 96	220	4,500	54	0.5	<0.5	<0.5	NA
	19 Jun 97	**210**	**4,800**	**38**	**<0.5**	**<0.5**	**<0.5**	**15**
								7.5

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

Well Number	Sample Date	Chemical Concentration in Groundwater (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	<0.5	<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	<2	3	NA
	19 Aug 93	110	NA	40	1	<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	<0.5	<0.5	<2	NA
	3 Nov 94	100	NA	3	<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	<0.5	<2	NA
	10 Aug 95	<50	NA	7	<0.5	<0.5	<2	NA
	13 Nov 95	90	NA	3	<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
	19 Jun 97	**200**	**2,500**	**59**	**1.2**	**<0.5**	**<0.5**	**8.2**

Notes:
(a) Samples in 1996 and 1997 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 ("<") indicates that the compound was not present above the detection limit indicated.

Table 2
Results of Trend Analysis of Groundwater Data from Monitoring Wells MW-5 and MW-7 (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California

Statistical Parameters	Well MW-5				Well MW-7			
	TPPH	Benzene	Toluene	Total Xylenes	TPPH	Benzene	Toluene	Total Xylenes
n (b)	20	28	20	20	20	28	20	20
S (c)	14	-176	-43	12	-60	-93	-6	-24
Mann-Kendall Probability (d)	0.339	NA (e)	NA	0.362	NA	NA	NA	NA
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 19 June 1997 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

Table 2
Results of Trend Analysis of Groundwater Data from Monitoring Wells MW-5 and MW-7 (a)
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California

Statistical Parameters	Well MW-5				Well MW-7			
	TPPH	Benzene	Toluene	Total Xylenes	TPPH	Benzene	Toluene	Total Xylenes
n (b)	20	28	20	20	20	28	20	20
S (c)	14	-176	-43	12	-60	-93	-6	-24
Mann-Kendall Probability (d)	0.339	NA (e)	NA	0.362	NA	NA	NA	NA
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 19 June 1997 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.

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(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

Table 3
Comparison of Maximum Detected Chemical Concentrations in Soil
with ASTM RBCA Tier 1 Risk-Based Screening Levels
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California

Investigation, Report Date	Number of Soil Samples	Maximum Concentration Detected in Soil (mg/kg) (a)			
		Benzene	Toluene	Ethylbenzene	Total Xylenes
William Dubovsky Environmental, July 1990 (b)	11	0.76	1.2	0.48	21
Erler & Kalinowski, Inc., August 1996 (c)	2	<0.005	0.0094	<0.005	0.015
RBCA Tier 1 Risk-Based Screening Levels (d)					
- Volatilization from Soil to Outdoor Air		1.3	RES (e)	RES	RES
- Ingestion, Dermal, and Inhalation from Surficial Soil		29	18,700	11,500	208,000
- Volatilization from Soil to Indoor Air		N/A (f)	N/A	N/A	N/A
- Leaching from Soil to Groundwater for Drinking Water		N/A (g)	N/A	N/A	N/A
Are applicable Risk-Based Screening Levels exceeded?		NO	NO	NO	NO

Notes:

(a) Only chemicals detected in soil samples collected near the former UST site are shown. Soil samples collected by EKI in 1996 were analyzed for polycyclic aromatic hydrocarbons ("PAHs") and methyl tertiary butyl ether ("MTBE"), but they were not detected.

(b) Maximum concentrations shown are for 11 soil samples collected from the excavation sidewalls and bottom.

(c) Maximum concentrations shown are for 2 soil samples collected from borings SB-3 and SB-4 which were located nearest to the tank excavation.

(d) Risk-Based Screening Levels ("RBSLs") for commercial/industrial soil corresponding to 10^{-5} lifetime incremental carcinogenic risk or hazard quotient of 1 for each chemical (Table X2.1; ASTM, 1995). RBSLs for benzene were adjusted to account for the California carcinogenic slope factors for benzene. Although total purgeable petroleum hydrocarbons ("TPPH") quantified as gasoline and total extractable petroleum hydrocarbons ("TEPH") quantified as diesel were detected in the soil samples, no RBSLs exist for TPPH or TEPH as discussed in the text.

(e) "RES" indicates that risk level is not exceeded for pure compound present at any concentration.

(f) "N/A" indicates that exposure pathway is not applicable for detected chemicals at the former tank locations. Chemicals detected in soil are not located under or immediately adjacent to buildings.

(g) This exposure pathway is not applicable because shallow groundwater at the Site is not used for drinking water and is not likely to be used in the future.

Table 4
Comparison of Chemical Concentrations in Groundwater
with ASTM RBCA Tier 1 Risk-Based Screening Levels
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California

Well or Boring I.D. (b)	Sample Date (c)	Concentration in Groundwater (ug/L) (a)				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
SB-3	15 Jun 96	160	<50	<50	<50	<250
SB-4	15 Jun 96	5.0	<2	<2	<2	<10
MW-5	19 Jun 97	38	<0.5	<0.5	<0.5	7.5
MW-7	19 Jun 97	59	1.2	<0.5	<0.5	8.2
RBCA Tier 1 Risk-Based Screening Levels (d)						
- Volatilization from Groundwater to Outdoor Air		53,000	>S (e)	>S	>S	>S
- Vapor Intrusion from Groundwater to Indoor Air		210	85,000	>S	>S	4,000,000
- Ingestion of Groundwater		N/A (f)	N/A	N/A	N/A	N/A
Are applicable Risk-Based Screening Levels exceeded?		NO	NO	NO	NO	NO

Notes:

(a) MTBE = Methyl tertiary butyl ether.

(b) See Figure 2 for locations of monitoring wells and soil borings.

(c) Date of most recent sampling from monitoring well or date of collection of grab groundwater sample.

(d) Risk-Based Screening Levels ("RBSLs") for groundwater in commercial/industrial areas corresponding to 10^{-5} lifetime incremental carcinogenic risk or hazard quotient of 1 for each chemical (ASTM, 1995). The RBSL for benzene was adjusted to account for California carcinogenic slope factor for this chemical. RBSLs for MTBE were calculated using the procedure outlined by ASTM (1995) with an inhalation reference dose of 0.86 $(mg/kg\text{-}d)^{-1}$. Although total purgeable petroleum hydrocarbons ("TPPH") quantified as gasoline and total extractable petroleum hydrocarbons ("TEPH") quantified as diesel were detected in soil samples, no RBSLs exist for TPPH or TEPH as discussed in the text.

(e) ">S" indicates that risk level is not exceeded for all possible dissolved concentrations of this chemical (i.e., risk-based value exceeds saturation concentration).

(f) "N/A" indicates that exposure pathway is not applicable for detected chemicals at the former tank locations. Groundwater is not a water source at the site.

Table 5
Potentially Applicable Water Quality Objectives for Protection of Aquatic Life and Human Health
6601 and 6603 Bay Street
Sybase, Inc.
Emeryville, California

Reference	Protection Objective	Concentration in Water (ug/L) (a)						
		TPPH	TEPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
Maximum concentration detected in groundwater downgradient of the former USTs (1997 data, this report)		210	4,800	59	1.2	<0.5	<0.5	8.2
California Enclosed Bays and Estuaries Plan (SWQRB, May 1993)	Saltwater Aquatic Life	- (b)	-	-	-	-	-	-
	Human Health (c)	-	-	21	300,000	29,000	-	-
National Toxics Rule (57 Federal Register 60911, 22 December 1992)	Human Health (c,d)	-	-	71	-	29,000	-	-
U.S. EPA Region VIII Clean Water Act 304a Criteria Chart (U.S. EPA Region VIII, July 1993)	Aquatic Life	-	-	-	-	-	-	-
	Human Health (c,d)	-	-	71	200,000	29,000	-	-
Most Stringent Lowest Effect Concentrations (U.S. EPA Integrated Risk Information System, 1997)	Saltwater Aquatic Life	-	-	700	5,000	430	-	-

Notes:
(a) MTBE = Methyl tertiary butyl ether
TEPH = Total Extractable Petroleum Hydrocarbons quantified as diesel
TPPH = Total Purgeable Petroleum Hydrocarbons quantified as gasoline
(b) No water quality objective is provided for this chemical.
(c) Value for protection of human health related to human consumption of aquatic life exposed to compound of concern.
(d) Does not include water quality objectives that include water used as drinking water.

0 2500 5000

(Approximate Scale in Feet)

N

Erler & Kalinowski, Inc.

Site Location

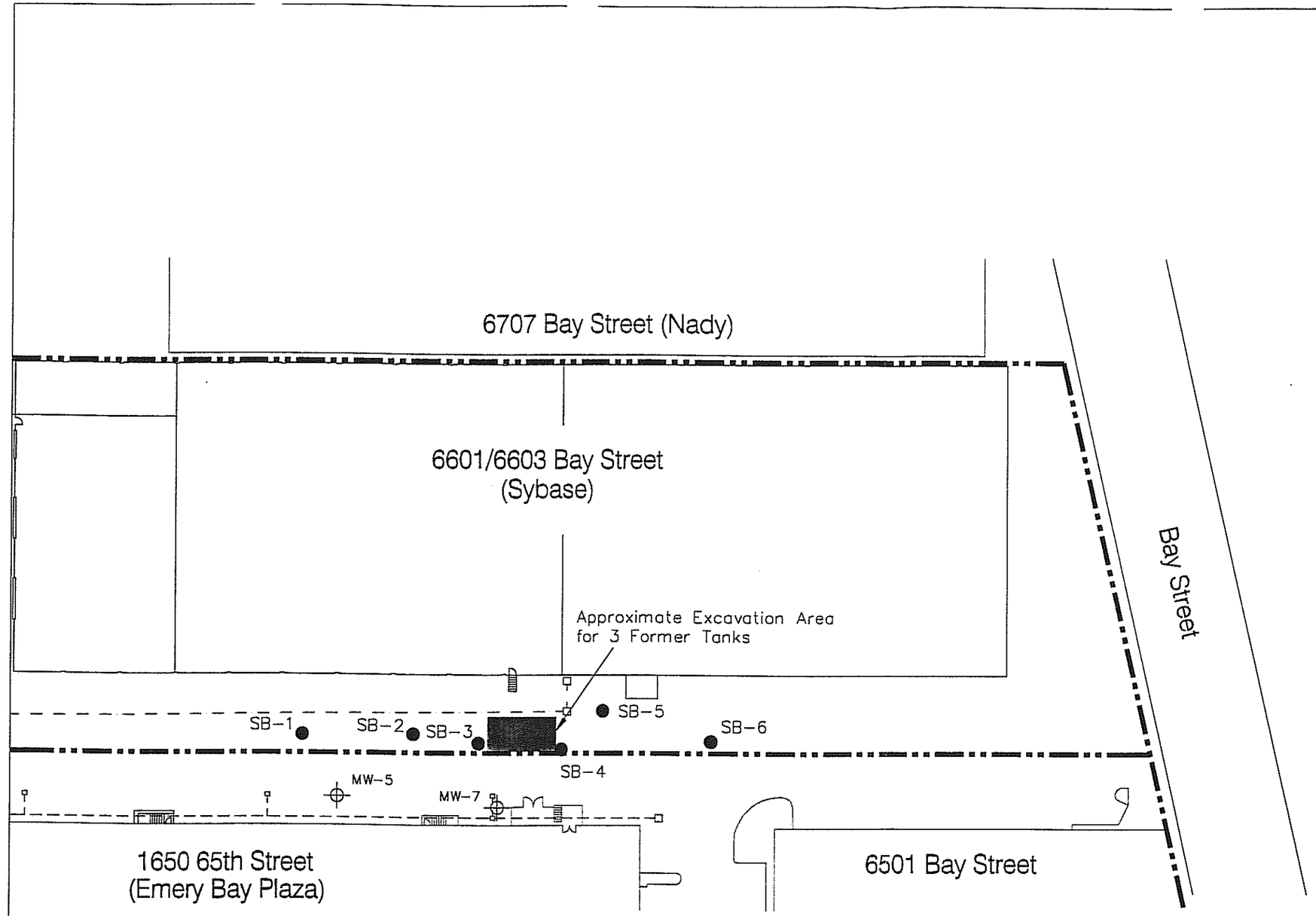
6601/6603 Bay Street
Emeryville, CA
August 1997
EKI 950074.03

Figure 1

Notes:

1. All locations are approximate.

97 Aug 06 08:09:27 G:\950074.03\AUG97\SITEMAP.DWG



N

0 50 100

(Approximate Scale in Feet)

LEGEND

- Property Boundary
- Sanitary Sewer Line
- Storm Drain Line
- Off-Site Monitoring Well Location
- Approximate Excavation Area
- Soil Boring Location

Notes:

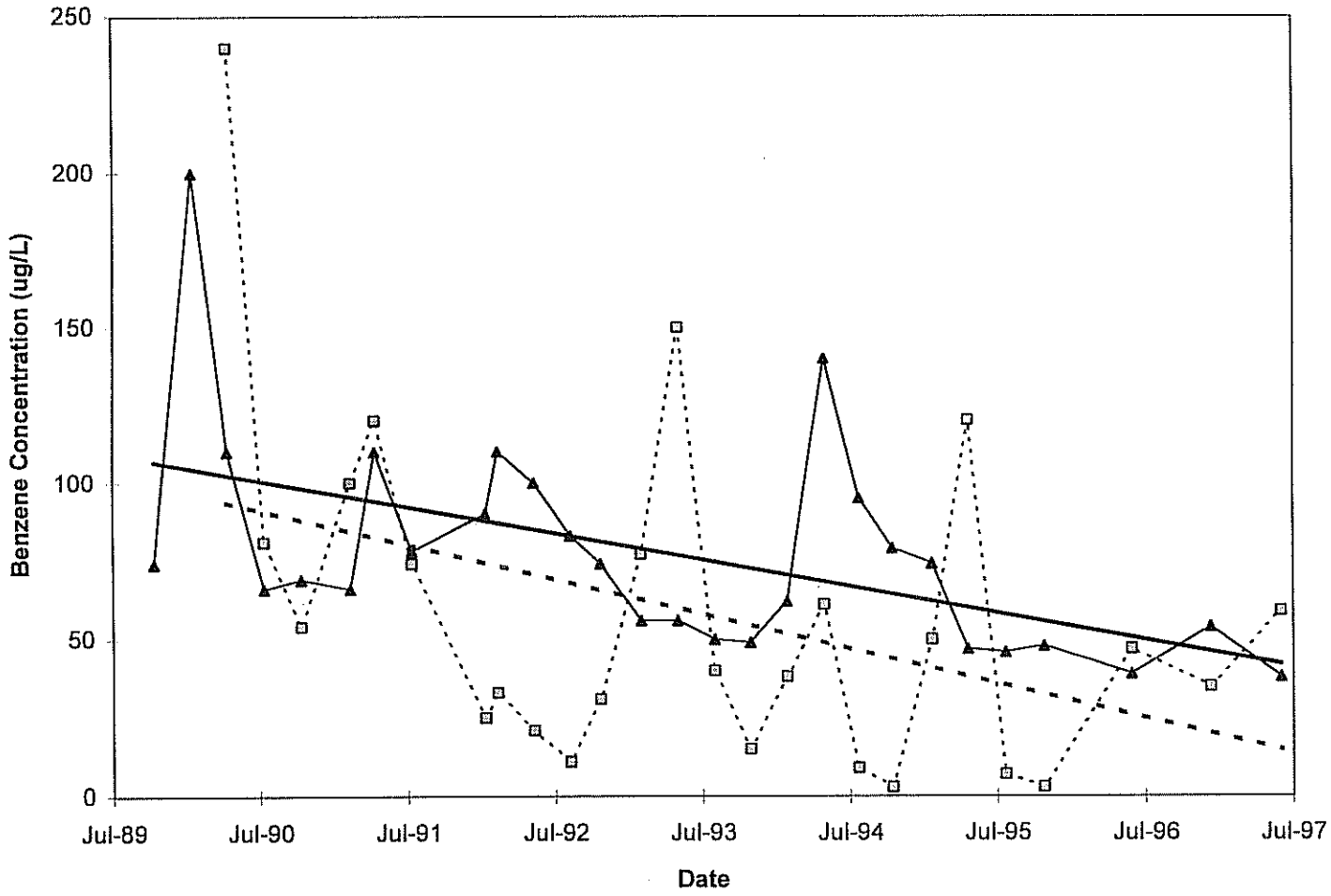
1. All locations are approximate.
2. Base map digitized from Alta Land Survey Title Map.

Erler & Kalinowski, Inc.

Soil Boring and
Monitoring Well Locations

6601/6603 Bay Street
Emeryville, CA
August 1997
EKI 950074.03
Figure 2

97 Aug 05 08:11:05 G:\950074.03\AUG97\AUG97-2.DWG



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