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Transmittal

Date	September 17, 1996	**Transmitted Via**
To	Ms. Juliet Shin	☐ Messenger
	Alameda County Health Care Services Agency	
	Division of Hazardous Materials	☐ U.S. Mail
	Department of Environmental Health	☐ Overnight Mail
	1131 Harbour Bay Parkway	Tel. # 510-567-6763
	Alameda, California 94502	☐ Fax
Project Number	1736.14	Fax # 510-337-9335
Project Name	Marina Village, Alameda, California	Total Pages 26 including transmittal

Item	Description
1	Draft Health Risk Evaluation and Site Management Plan for the Northwest Area

Remarks:

For your review and discussion at our meeting tomorrow.

Sincerely, Elizabeth Nixon

From: Elizabeth Nixon

cc:

DRAFT

HEALTH RISK EVALUATION AND SITE MANAGEMENT PLAN FOR NORTHWEST AREA MARINA VILLAGE ALAMEDA, CALIFORNIA

Prepared For:

Alameda Marina Village Associates
1150 Marina Village Parkway
Alameda, California

September 1996
Project No. 1736.14

DRAFT

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HEALTH RISK EVALUATION AND SITE MANAGEMENT PLAN

Northwest Area
Marina Village
Alameda, California

1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix), has prepared this Health Risk Evaluation (HRE) and Site Management Plan (SMP) on behalf of Alameda Real Estate Investments (AREI) for the Northwest Area of the Marina Village Development (the Site) located in Alameda, California (Figure 1). This report has been prepared in accordance with our 30 July 1996 Work Plan for Additional Soil Sampling Program, Northwest Area, Alameda Marina Village in Alameda, California (Geomatrix, 1996a). The results of previous investigations at the Site indicate the presence of residual middle- to high-boiling petroleum hydrocarbons, a few associated volatile organic compounds (VOCs, i.e., benzene, toluene, ethylbenzene, xylenes [BTEX]), and lead in soil. Recent groundwater analytical data indicate the presence of low concentrations of benzene and toluene at one location. The HRE evaluates the potential health risks associated with exposure to these chemicals assuming future commercial development of the Site, and the SMP addresses the need for notification or other requirements following Site closure based on the results of the HRE.

2.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

Based on the results of site investigations performed since 1988, chemicals detected in soil at the Site include petroleum hydrocarbons characterized as weathered crude oil, total petroleum hydrocarbons (TPH) as diesel (TPHd), and motor oil/waste oil (TPHmo/wo); toluene; and lead. One other chemical, trichloroethylene (TCE), was detected only in one sample at a very low concentration (0.038 mg/kg) and, therefore, is not considered further in this evaluation.

Historical data summary tables showing concentrations of petroleum hydrocarbons, Toluene, and lead are presented as Tables 1 and 2. Table 1 summarizes data from investigations performed at the Northwest Area, and Figure 2 (from Levine•Fricke, 1989) shows the sample locations. These data primarily are from soil investigations conducted in 1988 and 1989 to investigate the distribution of petroleum hydrocarbons. Data from recent sampling (July 1996) of shallow soil to assess lead concentrations also are included in Table 1. Figure 3 (Geomatrix investigation) shows the sampling locations. It has been estimated that concentrations of petroleum hydrocarbon mixtures exceed 500 mg/kg in soil beneath an area of approximately 2.5 acres. Additionally, residual separate-phase weathered crude oil was identified in soil beneath an area of approximately 1 acre. Lead concentrations range from 33 to 520 mg/kg.

Table 2 summarizes data that are representative of a soil stockpile that was relocated to the Northwest Area in 1993. The soil stockpile was originally generated in 1988 from an excavation at a nearby property within Marina Village; the soil was used as a surcharge at another nearby property before being relocated to the Northwest Area. The data summarized in Table 2 represent petroleum hydrocarbon concentrations in the soil after the soil was excavated and stockpiled elsewhere (June 1988 samples), but before it was relocated to its current position. The position of the stockpile in the Northwest Area is shown on Figure 4. As part of the recent sampling of shallow soil to assess the presence of lead, one composite sample was collected from the stockpile. This data is presented in Table 2.

As shown in Table 4, the detected concentrations for toluene and lead are well below their respective industrial soil Preliminary Remediation Goals (PRGs) developed by the United States Environmental Protection Agency (U.S. EPA) Region IX (U.S. EPA, 1996). Based on these screening levels, these chemicals are not expected to pose a significant health risk assuming future commercial development of the Site and, therefore, are not considered chemicals of potential concern (COPCs). Industrial PRGs are not available for mixtures such as crude oil TPHd and TPHmo/wo; therefore, these chemical mixtures were identified as COPCs in soil at the Site.

Based on results of site investigations and groundwater monitoring performed since 1988, the presence of petroleum hydrocarbons in soil beneath the Site does not appear to be a significant source of dissolved petroleum hydrocarbon constituents to groundwater. Recent groundwater data, collected in 1995 and 1996, indicate that there are no petroleum hydrocarbon or BTEX constituents in Site perimeter wells, with the exception of intermittent, low concentrations of benzene and toluene that were detected in one well in the 1996 sampling event. Petroleum hydrocarbons (TPHd) were detected in one upgradient well (LF-10) during the 1995 sampling event at a very low concentration of 0.07 mg/l. Several inches of residual separate-phase degraded crude oil continues to be observed in Well LF-8, located at the northwest property boundary. However, the material appears to be stable, relatively insoluble, and is not migrating beyond its current distribution.

As shown in Table 5, the highest detected concentration of toluene is below its respective regulatory levels, including the maximum contaminant levels (MCLs) for drinking water. Benzene was detected at a concentration slightly above state MCL but below the federal MCL. Given these low concentration and the fact that site shallow groundwater is not a probable drinking water source, these chemicals are not considered to be COPCs in groundwater. As discussed previously, regulatory levels for mixtures of petroleum hydrocarbons are not available; therefore, petroleum hydrocarbons were identified as a COPC in groundwater.

As discussed in the work plan (Geomatrix, 1996a), the Alameda County Health Care Services Agency (ACHCSA) expressed a concern that wood fragments observed in shallow fill material at the Site might contain creosote. Review of available data from 1988 showed that a groundwater sample and a petroleum product sample from the shallow fill zone were screened for semi-volatile organic compounds in accordance with EPA Method 8270. No 8270 analytes (which includes creosote compounds) were detected in the groundwater sample (collected from well LF-8) or in the product sample (collected from northwest test pit 11 at a depth of 8 feet bgs). The locations of the well and test pit are shown on Figure 2 (from Levine•Fricke, 1989). It should be noted that detection limits in the product sample were higher than the method detection limits due to interference from the petroleum product, and therefore potential low concentrations would

not have been identified. Based on these data, creosote-related compounds have not been detected at the Site; however, if these compounds are associated with wood fragments in shallow fill material, they would not be expected to be present at concentrations that would pose a health risk assuming future commercial development of the Site. Therefore, they are not identified as COPCs in soil or groundwater at the Site.

3.0 HEALTH RISK EVALUATION

A site conceptual model was created based on our understanding of site conditions, potential future land use, and physical and chemical characteristics of the identified COPCs. As described in the U.S. EPA "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (1988), the purpose of a site conceptual model is to describe what is currently known about a chemical source, likely migration pathways, exposure routes, and possible exposure scenarios so that data necessary to complete a health risk assessment are identified. The Site conceptual model for the Northwest Area of the Marina Village Development is presented on Figure 5.

As shown in the Site conceptual model, potential receptors assuming future commercial development include future construction workers, future building occupants, and future maintenance workers. Potential exposures to future construction workers are expected to be short-term (less than 1 year), and should be addressed in a site-specific health and safety plan. Therefore, the only potential receptors addressed in this HRE are future building occupants and maintenance workers. Based on the types of commercial development of surrounding properties, it is expected that the Site will be covered by one or more buildings, asphalt or concrete paving, or landscaping after development. As such, direct contact with residual petroleum hydrocarbons in surface soil or fill material by future building occupants is not expected to occur. Future maintenance workers may be exposed to subsurface soil or fill material on a periodic basis during maintenance activities that require intrusion into the subsurface (e.g., repair of an underground utility). As shown in the Site conceptual model, these exposures could occur via incidental ingestion of soil, dermal contact with soil, or inhalation of soil particles. As discussed

in Section 1.0, groundwater across the Site generally occurs at depths greater than 5 feet bgs. Therefore, future maintenance workers are not expected to directly contact groundwater during maintenance activities, even those associated with repair of underground utilities.

A risk evaluation was conducted for high-boiling petroleum hydrocarbons remaining in sub-surface soil at a nearby property occupied by 1101 Marina Village Parkway (Geomatrix, 1993). This risk evaluation concluded that the potential human health risks were low based on limited potential for human contact associated with the planned commercial development of the property and the conditions under which high-boiling petroleum hydrocarbons exert their toxicity. Although characterized as "asphalt-like," it is expected that the petroleum hydrocarbon mixture remaining at 1101 Marina Village Parkway is similar to the high-boiling petroleum hydrocarbons detected at the Site. In addition, the concentrations of TPHmo/yo at the Site is similar (i.e., within an order of magnitude) to the concentrations of asphalt-like material at 1101 Marina Village Parkway. Therefore, it is not expected that the high-boiling petroleum hydrocarbons remaining at the Site will pose a significant human health risk.

Several risk evaluations also have been conducted for middle-boiling petroleum hydrocarbons such as diesel fuel (Anthony, et al., 1995; Stansbury and Forgét, 1995; Millner, et al., 1992). These assessments have concluded that the presence of fresh diesel fuel in soil, which is expected to contain higher concentrations of the lighter and generally more toxic components of diesel fuel, is not likely to pose a risk to human health under industrial or residential exposure scenarios. Given that soil analytical results indicate that the middle-boiling petroleum hydrocarbons are degraded and that the lighter components of diesel fuel (e.g., BTEX) are either not present or present at very low concentrations, and the fact that future development is assumed to be for commercial purposes, it is not expected that the middle-boiling hydrocarbons remaining at the Site will pose a significant human health risk.

DRAFT as part of disclosure

4.0 SITE MANAGEMENT PLAN

It is our understanding that the future development plans for the Site will be similar to other commercial developments in the Marina Village Area. Under this expected development plan, the stockpiled soil will be used as fill material and, along with the subsurface soil, will be covered by one or more buildings, asphalt or concrete paving, and/or landscaping. In addition, groundwater at the Site is not considered to be a potential drinking water source and could not be used as a domestic water supply now or in the future. Therefore, the SMP for this Site addresses construction safety measures, buyer notification, potential off-site disposal, and future changes to the expected Site construction and redevelopment plans.

Construction Safety Measures

Prior to any significant construction activities at the Site, the contractor must prepare a site-specific health and safety plan. The plan should describe the construction activities and address standard safety precautions such as protective measures for workers, dust control, odor control, and soil handling issues, as appropriate.

Buyer Notification

The environmental conditions at the Site must be disclosed to all future buyers of the property to the extent required by the law. The disclosure must contain information regarding the nature and extent of petroleum hydrocarbons in the soil and reference the various reports that contain chemical data and assess potential human health risks. The disclosure also must specify that during possible future excavation work, exposed soil should be prevented from eroding away from the Site and that off-site disposal be in accordance with applicable regulations.

Future Off-Site Disposal

Should future work at the Site generate soil that requires off-site disposal, the soil will need to be tested appropriately and disposed of at a facility licensed for such disposal.

Changes to Future Construction or Redevelopment Plans

The results of this risk evaluation indicate that soil containing residual levels of petroleum hydrocarbons and lead at the Site should not pose a significant health hazard to future building occupants or future maintenance workers assuming future development of the Site for commercial purposes. However, in the event that there is a significant change to these development plans, the potential health risks associated with residual petroleum hydrocarbons and lead in soil at the Site would need to be reevaluated.

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TABLES

TABLE 1

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE, AND LEAD DETECTED IN SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per kilogram (mg/kg)

Sample Location	Date Collected	Depth (feet)	TPHd	TPHmo/wo	Lead	Toluene
NWPIT2	3/14/88	7-9	--	52	--	--
NWPIT4	3/14/88	9-10	--	260	--	--
NWPIT9	3/14/88	4-5	--	110	--	--
NWPIT11	3/15/88	6.5	720	--	--	--
NWPIT11	3/15/88	8	11,000	--	--	--
NWPIT12	3/15/88	6	1000	--	--	--
5NW-2A	2/17/89	7-7.5	--	--	--	0.045
5NW-1A	2/17/89	7.5-8	2000	<100	--	0.70
5NW-2A-2B	2/17/89	7-8	<10	710	--	--
5NW-3A	2/17/89	7-7.5	<10	<20	--	0.023
5NW-4B	2/17/89	8-8.5	<5000	28,000	--	--
5NW-5A	2/17/89	7-7.5	<500	4600	--	0.46
5NW8	3/9/89	8-10.5	<500	1400	--	--
5NW10	3/9/89	10.5-11	<10	120	--	--
5NW12	3/9/89	9.5-10	<10	260	--	--
5NW12	3/9/89	11-11.5	<10	280	--	--
5NW7	3/9/89	7.5-8	<20	570	--	--
5NW7	3/9/89	10-10.5	<10	73	--	--
5NW9	3/9/89	8-10	<1000	4600	--	--
5NW6	3/9/89	8-9	<50	150	--	--
5NW6	3/9/89	10-12	<300	910	--	--
5NW6	3/9/89	13-13.5	<600	2000	--	--
5NW11	3/9/89	6.5-7.5	<20	1500	--	--
LF11	3/9/89	7-8	<10	32	--	--
5NW13	3/10/89	7-9	<20	740	--	--
LF13	3/10/89	6-8	<4000	8000	--	--
LF12	3/9/89	7.5-8.5	<20	140	--	--
5NW14	3/13/89	9-13	<20	280	--	--
1NW1	3/13/89	3-4.5	<200	1600	--	--
1NW2	3/13/89	7-9	<200	5700	--	--
5NW4B	3/16/89	8-8.5	--	--	520	--
5NW6B	3/16/89	11.5-12	--	--	130	--
2NW1	8/15/88	9.5-10	1600	--	--	<0.025
2NW1	8/15/88	11-11.5	14,000	--	--	--
2NW2	8/15/88	8-9.5	150	--	--	0.016
2NW3	8/15/88	7-7.5	<10	--	--	--
2NW3	8/15/88	8.5-9	37	--	--	--
2NW4	8/15/88	8.5-9	230	--	--	--

TABLE 1

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE, AND LEAD DETECTED IN SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Sample Location	Date Collected	Depth (feet)	TPHd	TPHmo/wo	Lead	Toluene
2NW4	8/15/88	10-10.5	<10	--	--	0.21
2NW5	8/15/88	7-7.5	<10	--	--	--
2NW5	8/15/88	10-10.5	120	--	--	--
TP-1	7/2/96	0-4	--	--	230	--
TP-2	7/2/96	0-4	--	--	400	--
TP-3	7/2/96	0-4	--	--	33	--
TP-4	7/2/96	0-4	--	--	130	--

Notes:

1988 and 1989 data from Levine•Fricke, Inc.
1996 data from Geomatrix, Inc.
"--" = not analyzed.
comp. = Composite sample.
TPHd = Total petroleum hydrocarbons as diesel.
TPHmo/wo = Total petroleum hydrocarbons as motor oil or waste oil.

TABLE 2

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE AND LEAD DETECTED IN STOCKPILED SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per kilogram (mg/kg)

Sample Location	Date Collected	TPHd	Toluene	Lead
PHFSP-1,2	6/23/88	170	--	--
PHFSP-3,4	6/23/88	230	--	--
PHFSP-5	6/23/88	85	--	--
PHFSP-6,7	6/24/88	320	--	--
PHFSP-8,9	6/24/88	300	--	--
PHFSP-10,11	6/24/88	170	--	--
PHFSP-12,13	6/24/88	87	--	--
PHFSP-14,15	6/24/88	150	--	--
PHFSP-16,17	6/24/88	98	--	--
PHFSP-18,19	6/24/88	280	--	--
PHFSP-20,21	6/24/88	190	--	--
PHFSP-22,23	6/24/88	160	--	--
PHFSP-24,25	6/24/88	150	--	--
PHFSP-26,27	6/24/88	370	--	--
PHFSP-10	6/24/88	--	0.014	--
PHFSP-11	6/24/88	--	0.018	--
PHFSP-26	6/24/88	--	0.013	--
PHFSP-27	6/24/88	--	0.014	--
TP-5	7/2/96	--	--	200

Notes:
1988 data from Levine•Fricke, Inc.
1996 data from Geomatrix, Inc.
"--" = not analyzed.
TPHd = Total petroleum hydrocarbons as diesel.

TABLE 3

SUMMARY OF PETROLEUM HYDROCARBONS AND BTEX DETECTED IN GROUNDWATER MONITORING WELLS, 1995 AND 1996

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per liter (mg/l)

Sample Location	Sample Date	TPHd	TPHmo/wo	Benzene	Ethylbenzene	Toluene	Xylenes	Petroleum Product Thickness (inches)
LF-6	7/12/95	<0.05	<0.2	--	--	<0.007	--	--
	4/17/96	<0.05	<0.25	--	--	<0.0005	--	--
LF-7	7/13/95	<0.05	<0.2	<0.0005	<0.0005	<0.0005	<0.002	--
	4/17/96	<0.05	<0.25	0.0007	<0.0005	0.0007	<0.0005	--
LF-8	7/11/95	--	--	--	--	--	--	Approx. 6
	4/17/96	--	--	--	--	--	--	Approx. 2
LF-9[1]	--	--	--	--	--	--	--	--
LF-10	7/14/95	0.06	<0.2	--	--	--	--	--
	7/14/95 (filtered)	0.07	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-11	7/13/95	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-12	7/13/95	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-13	7/14/95	--	--	<0.0005	<0.0005	<0.0005	<0.002	--
	7/14/95 (filtered)	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	--

TABLE 3

SUMMARY OF PETROLEUM HYDROCARBONS AND BTEX DETECTED IN GROUNDWATER MONITORING WELLS, 1995 AND 1996

Northwest Area
Marina Village
Alameda, California

Sample Location	Sample Date	TPHd	TPHmo/wo	Benzene	Ethylbenzene	Toluene	Xylenes	Petroleum Product Thickness (inches)
LF-14[2]	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-15[3]	4/17/96	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--
WC-3	7/14/95 (filtered)	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
GMW-2	7/12/95	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--

Notes:

"--" = not analyzed.
TPHd = Total petroleum hydrocarbons as diesel.
TPHmo/wo = Total petroleum hydrocarbons as motor oil or waste oil.
Petroleum product characterized as weathered crude oil.
[1] Monitoring well is not accessible.
[2] Duplicate sample of LF-10.
[3] This sample is a blind duplicate of LF-7.

TABLE 4

SELECTION OF SOIL CHEMICALS OF POTENTIAL CONCERN

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per kilogram (mg/kg)

Chemical	Maximum Detected Concentration	U.S. EPA Region IX Industrial Soil PRGs	COPC?
Lead	520	1000	No
Middle and High Boiling Point Petroleum Hydrocarbons	28,000	NA	Yes
Toluene	0.7	880	No

Notes:

COPC = Chemical of potential concern.
NA = not available.
PRGs = Preliminary Remediation Goals.
[1] Based on the U.S. EPA's Integrated Exposure and Uptake Biokinetic Model (IEUBK).

TABLE 5

SELECTION OF GROUNDWATER CHEMICALS OF POTENTIAL CONCERN

Northwest Area
Marina Village
Alameda, California

other than the product at site

Units are in milligrams per liter (mg/l)

Chemical	Highest Detected Concentration (1995/1996)	California and U.S. EPA MCLs	COPC?
Benzene	0.0007[1]	0.001-0.0005	No
Middle and High Boiling Point Petrolcum Hydrocarbons	0.07[2]	NA	Yes
Toluene	0.0007[1]	0.15-1.0	No

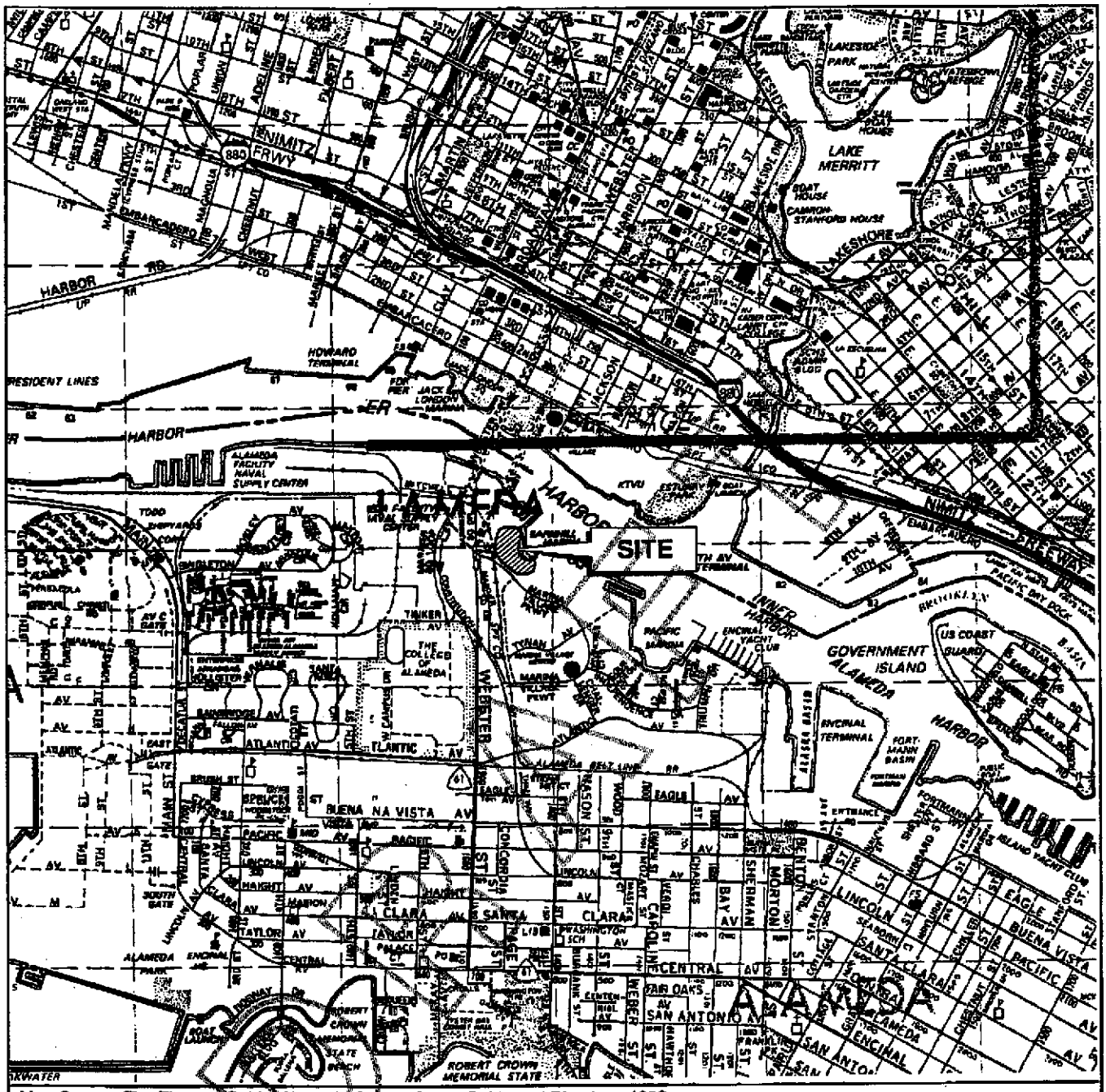
Notes:

COPC = Chemical of potential concern.
NA = not available.
MCLs = Maximum contaminant levels.

1 Detected in only one well in 1996.

2 Detected in only one well, which is located upgradient from the Northwest Area, in 1995. It was not detected in 1996 at a detection limit of 0.05 mg/l.

FIGURES



Map Source: The Thomas Guide, Alameda County Street Guide and Directory, 1993

0 1/2 Mile

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SITE LOCATION MAP
Marina Village
Alameda, California

Figure 1

Project No. 1736.14

1736.14.002

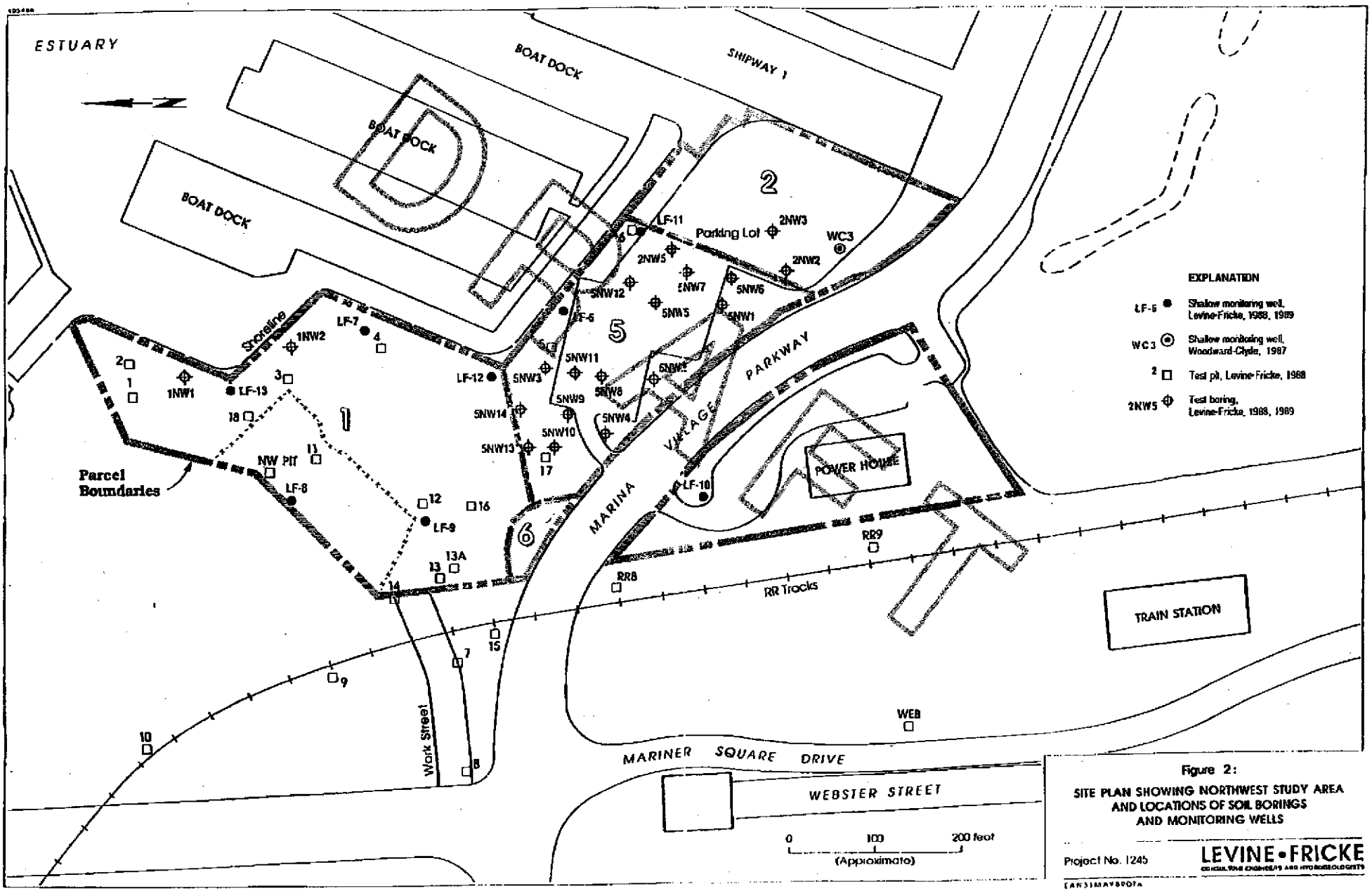
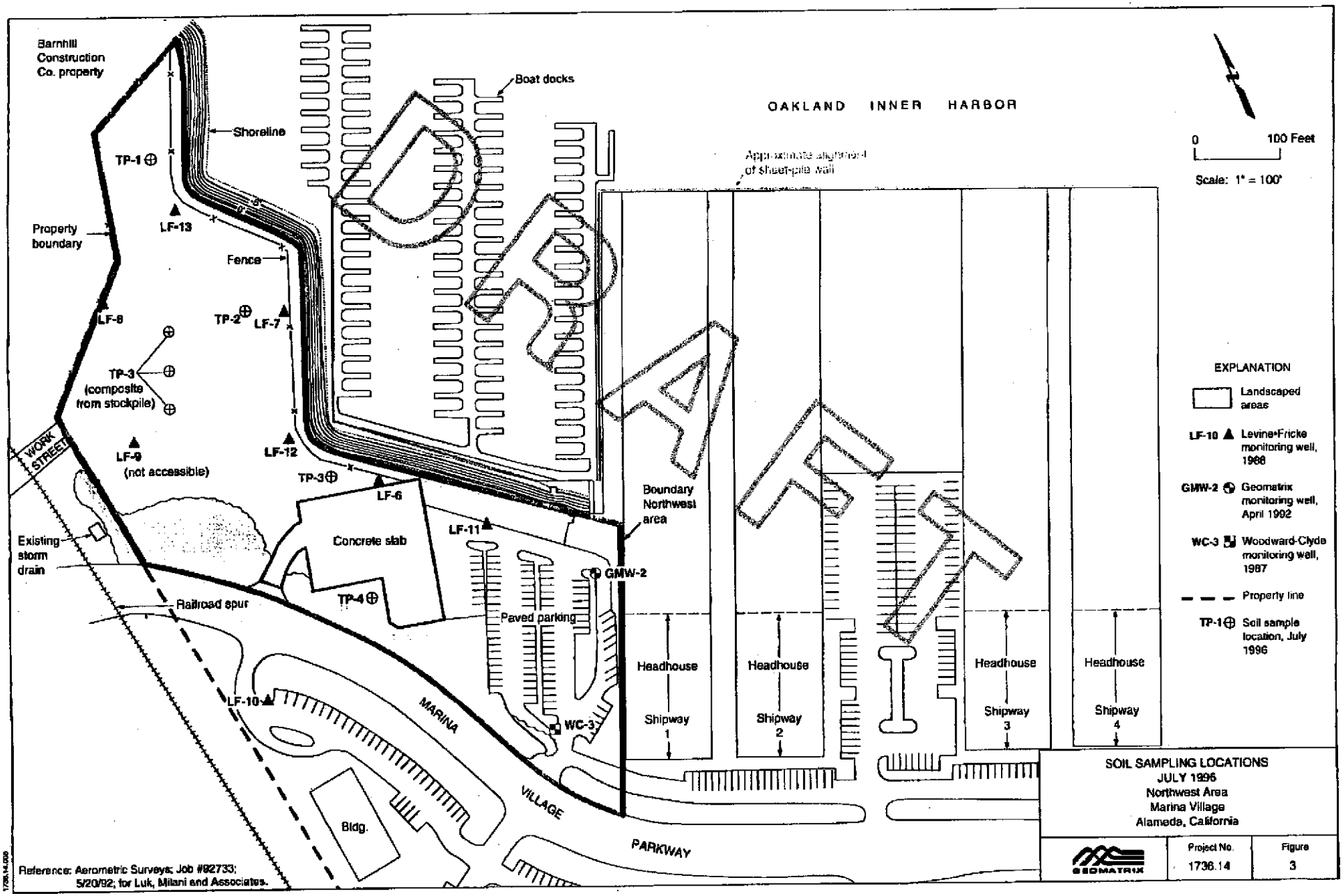
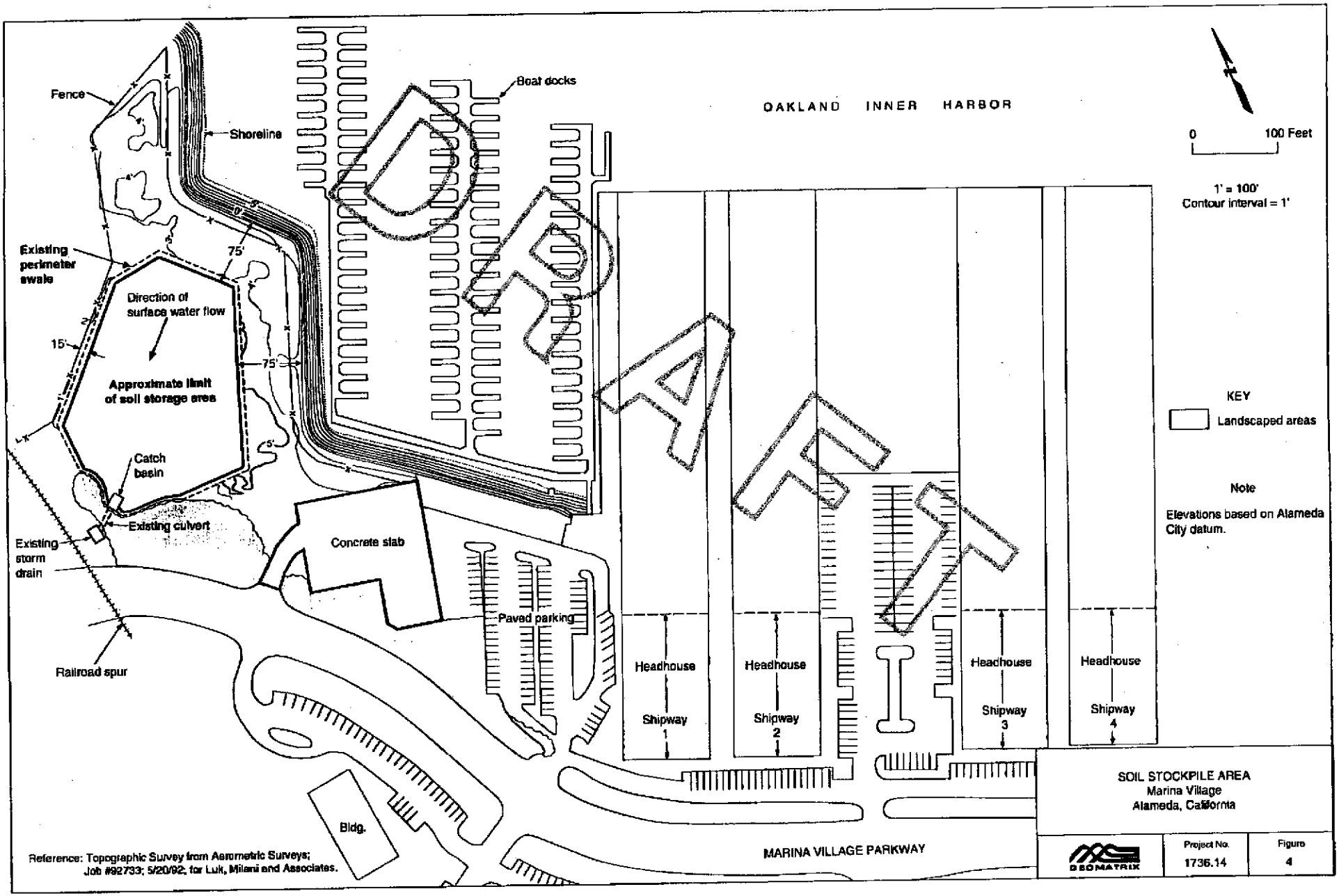


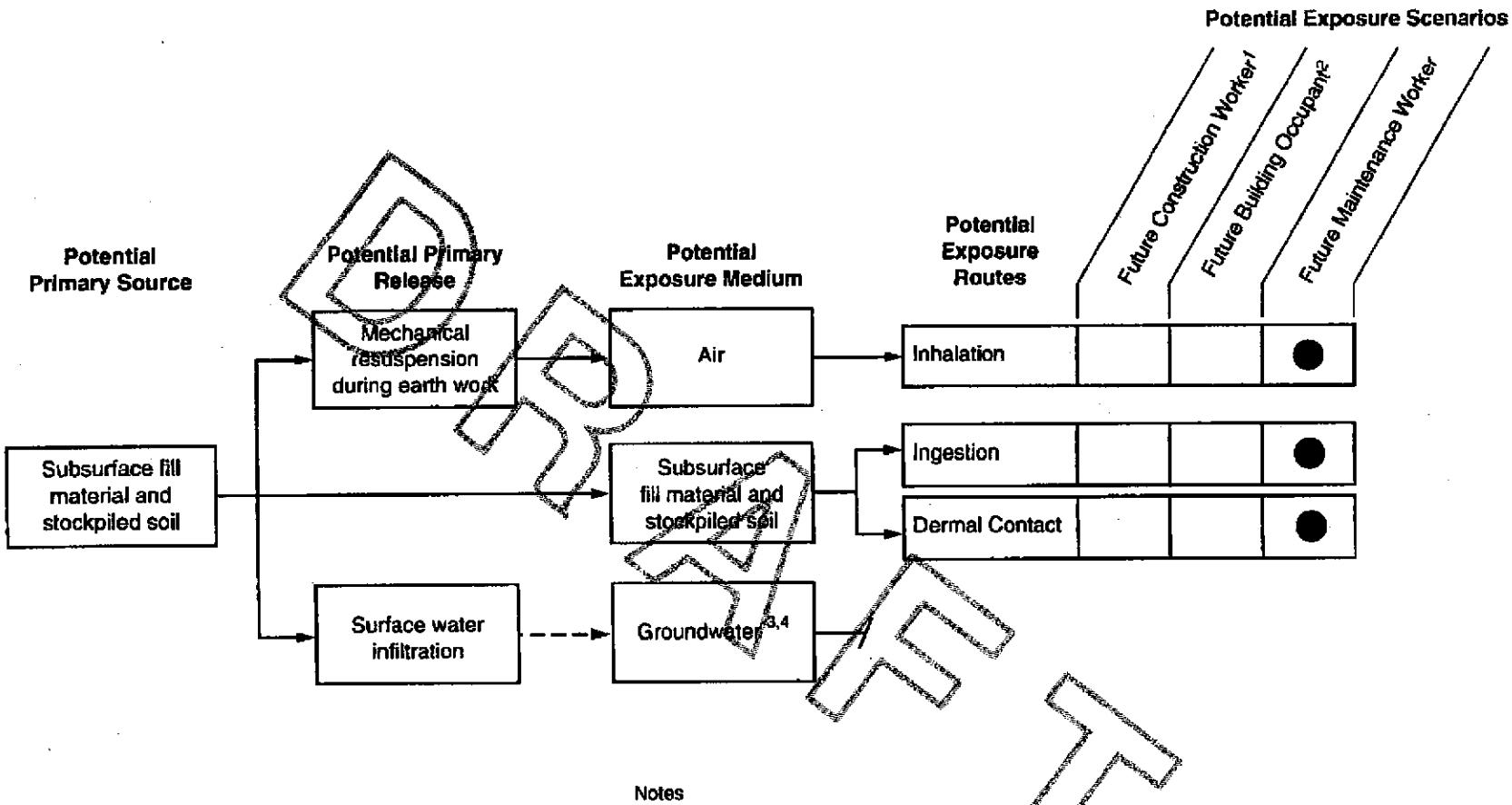
Figure 2:
SITE PLAN SHOWING NORTHWEST STUDY AREA AND LOCATIONS OF SOIL BORINGS AND MONITORING WELLS

Project No. 1245

LEVINE • FRICKE
CIVIL ENGINEERS AND HYDROGEOLOGISTS







Notes

[1] Potential exposures to future on-site construction workers will be addressed under a site health and safety plan.

[2] After redevelopment, the site will be covered by buildings, parking lot, and landscaping; therefore, direct contact with the soil by future building occupants is not expected.

[3] Groundwater across the site generally occurs at depths greater than 5 feet below ground surface. Therefore, future on-site maintenance workers are not expected to directly contact groundwater during maintenance activities, even at underground utilities.

[4] The residual degraded petroleum hydrocarbons do not appear to be mobile or a continuing source of dissolved petroleum constituents to groundwater; therefore, the potential for migration toward and impact to the Alameda Inner-Harbor is considered low.

GEOMATRIX

SITE CONCEPTUAL EXPOSURE MODEL
Northwest Area
Marina Village Development
Alameda, California

Figure 5

Project No. 1736.14

1736.14.009

APPENDIX A

SOIL ANALYTICAL DATA FOR LEAD (GEOMATRIX 1996)

GEOMATRIX CONSULTANTS

SAMPLE ID: TP-1
AEN LAB NO: 9607043-01
AEN WORK ORDER: 9607043
CLIENT PROJ. ID: 1736.14

DATE SAMPLED: 07/02/96
DATE RECEIVED: 07/02/96
REPORT DATE: 07/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Lead	EPA 7420	230 *	3	mg/kg	07/12/96
#Digestion, Metals AA/ICP	EPA 3050			Prep Date	07/08/96
Homogenization of sample		-		Prep Date	07/08/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: TP-2
AEN LAB NO: 9607043-02
AEN WORK ORDER: 9607043
CLIENT PROJ. ID: 1736.14

DATE SAMPLED: 07/02/96
DATE RECEIVED: 07/02/96
REPORT DATE: 07/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Lead	EPA 7420	400 *	3	mg/kg	07/12/96
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	07/08/96
Homogenization of sample		-		Prep Date	07/08/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: TP-3
AEN LAB NO: 9607043-03
AEN WORK ORDER: 9607043
CLIENT PROJ. ID: 1736.14

DATE SAMPLED: 07/02/96
DATE RECEIVED: 07/02/96
REPORT DATE: 07/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Lead	EPA 7420	33 *	3	mg/kg	07/12/96
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	07/08/96
Homogenization of sample		-		Prep Date	07/08/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: TP-4
AEN LAB NO: 9607043.04
AEN WORK ORDER: 9607043
CLIENT PROJ. ID: 1736.14

DATE SAMPLED: 07/02/96
DATE RECEIVED: 07/02/96
REPORT DATE: 07/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Lead	EPA 7420	130 *	3	mg/kg	07/12/96
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	07/08/96
Homogenization of sample		-		Prep Date	07/08/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

GEOMATRIX CONSULTANTS

SAMPLE ID: TP-5
AEN LAB NO: 9607043-05
AEN WORK ORDER: 9607043
CLIENT PROJ. ID: 1736.14

DATE SAMPLED: 07/02/96
DATE RECEIVED: 07/02/96
REPORT DATE: 07/12/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Lead	EPA 7420	200 *	3	mg/kg	07/12/96
#Digestion, Metals AA/ICP	EPA 3050	-		Prep Date	07/08/96
Homogenization of sample		-		Prep Date	07/08/96

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

R-4, 5-F 9607043

Chain-of-Custody Record

№ 8123

Date: 2 July 1996

Page 1 of 1

Project No.: 1736.14

Samplers (Signatures): Nathaniel A. Taylor '96

Date	Time	Sample Number		EPA Method 8010	EPA Method 8020	EPA Method 8240	EPA Method 8270	TPH as gasoline	TPH as diesel	TPH as BTEX	Lead	Cooled	Soil (S) or water (W)	Acidified	Number of containers
7/2	0945	TP-1	01A								X	X	S	N	1
↓	1015	TP-2	02A								X	X	↓	↓	1
	1030	TP-3	03A								X	X			1
	1045	TP-4	04A								X	X			1
↓	1110	TP-5	05A								X	X			1

ANALYSES

REMARKS

Additional comments

- Please homogenize each sample prior to analysis
- Analyze for Lead (Pb)
- Fax Results to Yvonne Pierce @ 415 +434-1365

Turnaround time: Standard

Results to: Y. Pierce

Total No. of containers: 5

Relinquished by:	Date:	Relinquished by:	Date:	Relinquished by:	Date:
Nathaniel A. Taylor	7/2/96				
Signature: NATHANIEL A. TAYLOR		Signature:		Signature:	
Printed name: GEOMATRIX		Printed name:		Printed name:	
Company:		Company:		Company:	
Received by:	**Time:**	**Received by:**	**Time:**	**Received by:**	**Time:**
Lori L. Prentt	7/2/96 1700				
Signature: Lori L. Prentt		Signature:		Signature:	
Printed name: LORI		Printed name:		Printed name:	
Company:		Company:		Company:	

Method of shipment: Pick-Up.

Laboratory comments and Log No.: Chain of Custody Seal intact upon arrival on Cooler. UP 7-2-96

Geomatrix Consultants
100 Pine St. 10th Floor
San Francisco, CA. 94111
(415) 434-9400